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| RESEARCH ARTICLE

Research on the Current Status of Resource Allocation Efficiency in China's Higher Education

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| ABSTRACT
Based on data from 2018 to 2022, this study investigates the current situation, existing problems, and potential countermeasures regarding the efficiency of resource allocation in China's higher education. While China's higher education system has been expanding in scale, there is a significant regional imbalance in resource allocation. Substantial disparities exist between the eastern, central, and western regions, as well as between economically developed and underdeveloped areas, concerning the number of regular higher education institutions, senior faculty talent, graduate output, and research productivity. Furthermore, challenges persist in aligning disciplinary offerings with market demands, enhancing internationalization levels, and improving the efficiency of fund utilization, all of which hinder the full optimization of resource allocation efficiency. To enhance the efficiency of higher education, this paper proposes measures such as optimizing the structure of fiscal investment across regions, expanding social and international educational resources, and establishing a scientific multi-dimensional evaluation system. These approaches aim to promote a more balanced and efficient allocation of resources, ultimately contributing to the equitable and high-quality development of higher education.

| KEYWORDS

Higher education; resource allocation efficiency; issues; measure.

| ARTICLE INFORMATION

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1. Introduction

Currently, China's higher education has entered a new stage of massification, cultivating a large number of high-quality professionals who are crucial for development across various sectors. The development of higher education institutions has achieved historic accomplishments and undergone structural transformations. China is currently advancing along a development path characterized by "using informatization to drive industrialization and using industrialization to promote informatization." "High technological content, good economic returns, low resource consumption, and minimal environmental pollution represent the sole pathway for developing new-type industrialization." On this new-type industrialization path, higher education institutions have already become a pivotal force. It is evident that higher education serves as a powerful driving force for the sustainable development of society(Chen et.al.2026), laying a solid foundation for it. Despite sustained attention and increased government investment in higher education, research indicates that problems persist in the allocation of higher education resources(Balza et.al.2026). On one hand, there are excessively large disparities in higher education resources between different regions(Yan et.al.2025;Zhang et.al.2024), leading to a significant "Matthew Effect" between the higher education system and the economic system(Wang et.al.2025). On the other hand, due to the heavy reliance of China's higher education on government fiscal revenue and a lack of effective performance evaluation constraints(Lyu et.al.2024;Zhang et.al.2024), some higher education institutions have not prioritized the rational allocation and efficient use of fiscal funds, resulting in fund idling or wastage(Li et.al.2024;Wu et.al.2024).

2. Analysis of the Current Status of Higher Education Development in China

2.1 Resource Investment and Development Trends in China's Higher Education Sector

Table 1 Investment in Educational Resources (billion yuan)

	2018	2019	2020	2021	2022	Mean	Rank
Jiangsu	167	167	168	180	180	172	1
Guangdong	154	160	160	179	179	166	2
Henan	152	156	156	184	184	166	3
Shandong	152	153	153	172	172	160	4
Sichuan	132	134	134	137	137	135	5
Hunan	128	128	128	137	137	132	6
Hubei	129	130	130	132	132	131	7
Hebei	125	123	123	128	128	125	8
Anhui	120	121	120	121	121	121	9
Liaoning	116	114	116	114	114	115	10
Zhejiang	109	109	109	109	109	109	11
Jiangxi	105	106	105	108	108	106	12
Shananxi	96	97	96	97	97	97	13
Beijing	92	92	92	92	92	92	14
Fujian	89	89	89	89	89	89	15
Shanxi	85	82	85	85	85	84	16
Yunnan	81	82	81	81	81	81	17
Heilongjiang	80	80	80	80	80	80	18
Guangxi	78	85	78	78	78	79	19
Guizhou	72	75	72	72	72	73	20
Chongqing	68	69	68	68	68	68	21
Shanghai	63	64	63	63	63	63	22
Jilin	62	66	62	62	62	63	23
Tianjin	56	56	56	56	56	56	24
Xinjiang	56	56	56	56	56	56	25
Nei Mongol	54	54	54	54	54	54	26
Gansu	49	49	49	50	50	49	27
Hainan	21	21	21	21	21	21	28
Ningxia	20	20	20	20	20	20	29
Qinghai	12	12	12	12	12	12	30
Xizang	7	7	7	7	7	7	31

Horizontal analysis reveals that the top six provinces/municipalities in terms of the number of higher education institutions are Jiangsu, Guangdong, Shandong, Sichuan, Hubei, and Hunan, while the bottom six are Inner Mongolia, Gansu, Hainan, Ningxia, Qinghai, and Tibet. Among them, Jiangsu, ranking first, possesses 172 institutions, whereas Tibet, ranking last, has only 7. The difference of 165 is quite substantial. It is evident that provinces with higher rankings are primarily concentrated in the central and eastern coastal regions of China. These areas benefit from flat terrain, convenient transportation, developed economies, and abundant resources, providing uniquely favorable conditions for education. In contrast, with the exception of Hainan, the lower-ranked provinces are all located in the less economically developed western regions of China. Due to the harsh environmental conditions in the west, both students and faculty are often reluctant to relocate there, leading to chronic shortages of talent and intellectual resources. Additionally, the predominantly mountainous and plateau terrain in the west significantly increases the costs of school construction. This combination of weak foundational education and a relatively closed educational environment contributes to the economic lag observed in the western regions(Zhang et.al.2023).

Longitudinally, overall, from 2018 to 2022, the scale of China's higher education has shown a continuous expansion trend. The number of higher education institutions in 19 provinces/municipalities—Hebei, Shanxi, Jilin, Jiangsu, Zhejiang, Jiangxi, Shandong, Henan, Guangdong, Guangxi, Hainan, Chongqing, Sichuan, Guizhou, Yunnan, Shaanxi, Gansu, Ningxia, and Xinjiang—increased year by year. The most significant change occurred in Henan Province, which increased from 120 institutions in 2018 to 184 in 2022, a difference of 64. This was followed by Guangdong, which increased from 154 institutions in 2018 to 179 in 2022, a difference of 25. The number of institutions in four provinces/regions—Inner Mongolia, Anhui, Tibet, and Qinghai—remained almost stable. Six provinces/municipalities—Beijing, Tianjin, Heilongjiang, Fujian, Hubei, and Hunan—exhibited a wavelike, fluctuating trend. Only two provinces/municipalities, Liaoning and Shanghai, showed a year-on-year decrease. It can be observed that the lower-ranked western regions of China, namely Gansu, Ningxia, and Xinjiang, have been striving to expand their educational scale and enhance regional educational resources over these five years.

2.2 Number and Development Trends of Teacher Talent Teams in China

Table 2 Status of Teacher Talent Teams

	2018	2019	2020	2021	2022	Mean	Rank
Beijing	22879	24023	25464	27501	29977	25969	1
Jiangsu	18582	19511	20682	22336	24347	21092	2
Guangdong	16801	17641	18700	20195	22013	19070	3
Shandong	14251	14964	15861	17130	18672	16176	4
Hubei	12413	13034	13816	14921	16264	14089	5
Hebei	10989	11538	12231	13209	14398	12473	6
Sichuan	10940	11487	12176	13150	14334	12417	7
Zhejiang	10796	11336	12016	12977	14145	12254	8
Henan	10491	11016	11676	12611	13746	11908	9
Shananxi	10333	10850	11501	12421	13539	11728	10
Liaoning	9998	10498	11128	12018	13100	11348	11
Shanghai	9367	9835	10425	11260	12273	10632	12
Hunan	8912	9358	9919	10713	11677	10116	13
Heilongjiang	8419	8840	9370	10120	11031	9556	14
Jilin	7209	7569	8024	8666	9445	8183	15
Anhui	6767	7105	7532	8134	8866	7681	16
Fujian	6662	6995	7415	8008	8729	7562	17
Jiangxi	5914	6210	6582	7109	7749	6713	18
Shanxi	5914	6210	6582	7109	7749	6713	19
Chongqing	5905	6200	6572	7098	7737	6702	20
Guangxi	5794	6084	6449	6965	7591	6576	21
Tianjin	5414	5685	6026	6508	7094	6145	22
Yunan	4547	4774	5061	5466	5958	5161	23
Gansu	4243	4455	4722	5100	5559	4816	24
Guizhou	3840	4032	4274	4616	5031	4359	25
Nei Mongol	3366	3534	3746	4046	4410	3821	26
Hainan	1706	1791	1899	2051	2235	1936	27
Xinjiang	1690	1775	1881	2031	2214	1918	28
Ningxia	1533	1501	1414	1406	1396	1740	29
Qinghai	724	760	806	870	949	822	30
Xizang	335	352	373	403	439	380	31

Horizontally, it can be observed that the top six regions in terms of the number of full-time senior professional title teachers are Beijing, Jiangsu, Guangdong, Shandong, Hubei, and Hebei, while the bottom six are Inner Mongolia, Xinjiang, Ningxia, Hainan, Qinghai, and Tibet. In 2024, Beijing, ranking first, has 29,977 full-time senior professional title teachers, whereas Tibet, ranking last, has only 439. The difference exceeds 20,000. Beijing also leads second-ranked Jiangsu by over 5,000 teachers. The primary reason for Beijing's high number of senior faculty is that, although it does not have the largest number of regular higher education institutions nationwide, it possesses the highest number of "Double First-Class" universities in China. This necessitates a greater number of senior faculty to support its teaching standards. Furthermore, compared with Table 1, the ranking of top provinces has changed significantly, indicating that the number of regular higher education institutions is not directly proportional to the number of senior faculty(Mo et.al.2023). This discrepancy is closely related to local economic development, education policies, population size, and other factors, which also contributes to the uneven distribution of teacher resources. While changes are observed among the lower-ranked provinces, the overall pattern remains largely consistent. Except for Shanxi, regions with teacher shortages are still concentrated in western China, aligning with the conclusions from Table 1. This is because western regions have fewer regular higher education institutions and even fewer "Double First-Class" universities, resulting in lower demand for senior faculty. As analyzed previously, the underdevelopment in western regions leads to less optimistic career prospects, making them less attractive for teachers. Although Shanxi has a moderate number of regular higher education institutions, it currently has only two "Double First-Class" universities, which is a key factor contributing to its low number of senior faculty. Therefore, to catch up with regions of similar development levels like Shandong and Beijing, Shanxi needs to strengthen the development of "Double First-Class" universities and actively attract talent.

Longitudinally, overall, from 2018 to 2022, the number of full-time senior professional title teachers in China's higher education has also shown a trend of continuous growth. The number of such teachers increased year by year in most provinces, specifically in Beijing, Tianjin, Hebei, Inner Mongolia, Jilin, Shanghai, Jiangsu, Zhejiang, Anhui, Fujian, Shandong, Henan, Hubei, Hunan, Guangdong, Guangxi, Henan, Chongqing, Guizhou, Yunnan, Tibet, Shaanxi, Gansu, and Ningxia—totaling 24 provinces. The growth rate of senior faculty significantly outpaces the increase in the number of regular higher education institutions because establishing a new institution takes far longer than recruiting talent. The most notable change occurred in Beijing, where the number increased from 22,879 in 2018 to 29,977 in 2022, a difference of over 7,700, averaging an increase of more than 1,000 senior teachers annually. This was followed by Guangdong, which increased from 16,801 in 2018 to 22,013 in 2022, a difference of over 6,600. In contrast, Qinghai showed an overall declining trend in the number of senior faculty over the years.

2.3 Resource Output and Development Trends of Higher Education in China

2.3.1 Analysis of the Number of Graduates from Undergraduate and College Programs

Table 3 Number of undergraduate and junior college graduates

	2018	2019	2020	2021	2022	Mean	Rank
Shandong	82.89	153	153	172	172	146.58	1
Henan	80.92	82.62	83.3	87	87.04	84.18	2
Guangdong	60.8	64.2	71	97	84	75.4	3
Jiangsu	57.8	61	63	73	73	65.56	4
Sichuan	47.16	43.3	63	62.84	63.75	56.01	5
Hebei	53.62	54.1	55	55.41	56.3	54.89	6
Hubei	49.4	48.62	48.05	49.63	50.21	49.18	7
Hunan	39.62	40	47.99	50.07	47.1	44.96	8
Anhui	34.78	35.02	35.21	48.46	49.65	40.62	9
Guangxi	38.89	38.2	38.3	39.64	45.25	40.06	10
Jiangxi	36.3	38.24	40.15	40.69	41.02	39.28	11
Shananxi	33.2	34.2	34.6	38.62	43.94	36.91	12
Zhejiang	32.5	34	35.9	39.7	40.2	36.46	13
Yunan	29.97	30.2	33.1	34.02	34.3	32.32	14
Liaoning	28.93	29.6	29.62	30.8	31.05	30	15
Chongqing	23.5	24.4	31.5	33.4	36.7	29.9	16
Heilongjiang	23.59	25.62	26.3	26.32	26.3	25.63	17
Shanxi	24.13	24.62	25.54	26.3	26.94	25.51	18
Fujian	23.24	23.62	24.62	26.62	29.3	25.48	19
Guizhou	20.18	22.19	27.3	27.4	28.2	25.05	20
Jilin	20.85	20.9	21.3	22.3	22.65	21.6	21
Shanghai	17.53	19.3	22.7	23.6	24.36	21.5	22
Gansu	15.57	16.2	17.62	19.62	21.5	18.1	23
Tianjin	14.3	14.3	15.5	16.8	19.8	16.14	24
Beijing	19.98	14.7	15.4	15.4	15	16.1	25
Xinjiang	11.7	13.02	14.6	15.67	15.68	14.13	26
Nei Mongol	13.38	13.38	13.39	13.52	14.03	13.54	27
Hainan	5.74	5.74	5.75	5.8	5.92	5.79	28
Ningxia	4.66	4.67	4.8	4.65	4.84	4.72	29
Qinghai	2.41	2.42	2.45	2.52	2.67	2.49	30
Xinzang	1.43	1.43	1.43	1.43	1.43	1.43	31

As shown in Table 3, the top five provinces in China in terms of the number of higher education graduates (including both undergraduate and junior college graduates) are Shandong, Guangdong, Henan, Jiangsu, and Sichuan, while the bottom five are Inner Mongolia, Hainan, Ningxia, Qinghai, and Tibet. From 2018 to 2022, Shandong, the province with the highest number of graduates, had an average of as many as 1.5 million graduates per year, while Henan, ranked second, had an average of 840,000 graduates annually over the same five-year period. In contrast, Tibet and Qinghai, ranked last and second to last respectively, had only about 10,000 and 20,000 graduates on average per year during this period, resulting in an annual gap of over 800,000 graduates. The analysis above indicates significant disparities among provinces and municipalities in China.

The most populous provinces in China are Guangdong, Shandong, and Henan, while the least populous are Ningxia, Qinghai, and Tibet. This suggests that the number of higher education graduates in each province is roughly proportional to its population size. For a country or region, population represents a resource—a larger population implies richer human resources. The greater the population, the higher the likelihood of individuals becoming university graduates. A larger pool of high-quality talent can drive local economic development. Therefore, each region should actively propose education-related policies and other measures to attract and retain talent. Additionally, it can be observed that the proportion of graduates in Beijing has been declining year by year. Moving to Beijing is no longer the first choice for many students due to factors such as high living costs, intense competition, work pressure, and traffic congestion, which are increasingly influencing students' decisions on where to study. Nowadays, young people are placing greater emphasis on their quality of life. Accordingly, it is necessary to provide subsidies or incentives for students based on local conditions to address their concerns when making decisions about where to pursue their education.

2.3.2 Analysis of Graduates' Professional Directions

Table 4 Graduate Specializations

	2018	2019	2020	2021	2022	Mean	Rank
Comprehensive majors	218	230	281	290	295	263	2
Science and Engineering	283	295	368	435	442	365	1
Agriculture	29	30	31	30	30	30	6
Forestry	6	7	8	8	8	7	11
Pharmaceuticals	52	56	60	61	61	58	5
normal category	83	80	78	77	77	79	4
Language category	12	12	13	12	12	12	8
Finance and Economics	80	82	90	95	95	88	3
Legal and Political Sciences	10	11	12	12	12	11	9
Sports Category	3	3	3	3	3	3	12
Arts Category	12	13	14	15	15	14	7
Ethnicity Category	7	8	9	9	9	8	10
Total	796	827	967	1047	1059		

Based on the classification of institutions in China according to their distinctive characteristics and data availability, twelve types of specialized universities were selected: comprehensive, science and engineering, agricultural, forestry, medical, teacher training, language, finance and economics, political science and law, sports, arts, and ethnic studies. As shown in Table 4, the top four most popular types are science and engineering, comprehensive, teacher training, and finance and economics, while ethnic studies, forestry, and sports are the three least popular categories. From 2018 to 2022, the number of graduates from these twelve types of institutions increased by 770,000, 1.59 million, 20,000, 10,000, 20,000, 90,000, -60,000, 0, 150,000, 10,000, 0, and 20,000, respectively, with corresponding growth rates of 35.32%, 62.54%, 6.89%, 16.67%, 17.31%, -7.22%, 0%, 18.75%, 20%, 0%, 25%, and 28.57%.

Compared with comprehensive universities, which offer relatively balanced resources across various disciplines, science and engineering universities tend to concentrate their resources more heavily on science and engineering fields, resulting in stronger specialization. Additionally, science and engineering disciplines often receive greater institutional support, making such universities relatively more popular. However, most key universities in China are either comprehensive institutions or are transitioning toward a comprehensive model. Enrolling in a comprehensive university is particularly suitable for students without clear future plans, as it allows them to explore and gradually identify their direction through academic exposure. The growth rates also indicate that comprehensive universities are expanding at a slightly higher pace than science and engineering institutions.Furthermore, finance and economics as well as medical fields remain highly popular in China. While maintaining development in major disciplinary categories, it is essential to preserve the diversity and distinctive characteristics of different types of institutions.

2.3.3 Research Output Analysis

Table 5 Research Output Status

	2018	2019	2020	2021	2022	Mean	Rank
Shanghai	9.23	11.08	32.52	39.02	46.83	27.74	1
Jiangsu	15.25	18.30	21.96	26.35	31.62	22.70	2
Beijing	11.54	13.85	16.62	19.94	23.93	17.18	3
Guangdong	11.39	13.10	15.06	17.32	19.92	15.36	4
Shandong	7.90	9.72	11.95	14.70	18.08	12.47	5
Shananxi	7.83	9.40	11.28	13.53	16.24	11.65	6
Hubei	7.64	9.17	11.00	13.20	15.84	11.37	7
Sichuan	7.45	8.94	10.73	12.87	15.45	11.09	8
Zhejiang	6.39	7.67	9.20	11.04	13.25	9.51	9
Hunan	5.92	7.10	8.52	10.23	12.28	8.81	10
Liaoning	5.57	6.68	8.02	9.62	11.55	8.29	11
Henan	5.22	6.42	7.90	9.71	11.95	8.24	12
Heilongjiang	4.38	5.26	6.31	7.57	9.08	6.52	13
Anhui	4.33	5.20	6.24	7.48	8.98	6.44	14
Chongqing	3.41	4.09	4.91	5.89	7.07	5.08	15
Jilin	3.28	3.94	4.72	5.67	6.80	4.88	16
Hebei	3.06	3.67	4.41	5.29	6.35	4.55	17
Tianjin	3.02	3.62	4.35	5.22	6.26	4.49	18
Fujian	2.57	3.08	3.70	4.44	5.33	3.82	19
Jiangxi	2.47	2.96	3.56	4.27	5.12	3.68	20
Guangxi	2.44	2.93	3.51	4.22	5.06	3.63	21
Shanxi	2.36	2.83	3.40	4.08	4.89	3.51	22
Yunnan	1.90	2.28	2.74	3.28	3.94	2.83	23
Guizhou	1.86	2.23	2.68	3.21	3.86	2.77	24
Gansu	1.57	1.88	2.26	2.71	3.26	2.34	25
Nei Mongol	1.15	1.38	1.66	1.99	2.38	1.71	26
Xinjiang	1.02	1.22	1.47	1.76	2.12	1.52	27
Ningxia	0.55	0.66	0.79	0.95	1.14	0.82	28
Qinghai	0.37	0.44	0.53	0.64	0.77	0.55	29
Hainan	0.35	0.42	0.50	0.60	0.73	0.52	30
Xizang	0.09	0.11	0.13	0.16	0.19	0.13	31

Table 5 illustrates the research output of universities across different provinces and municipalities in China. Horizontally, the top six regions in terms of research output are Shanghai, Jiangsu, Beijing, Guangdong, Shandong, and Shaanxi, while the bottom six are Inner Mongolia, Xinjiang, Ningxia, Hainan, Qinghai, and Tibet. Among them, Shanghai ranks first with an average annual research output of approximately 277,400, whereas Tibet ranks last with an average annual output of only about 1,90, resulting in a difference of nearly 275,500 between the two. It is evident that the top-performing provinces and municipalities are predominantly located in the economically developed central and eastern regions of China.

When compared with the educational scale inputs shown in Table 1, Shanghai's ranking rises from 22nd to 1st, Jiangsu drops from 1st to 2nd, Beijing improves from 14th to 3rd, Guangdong declines from 2nd to 4th, Hubei maintains its ranking, and Sichuan falls from 5th to 8th. This indicates that the quantity of research outputs is not entirely proportional to the number of higher education institutions. Despite relatively lower investment in physical infrastructure and institutional scale in regions such as Shanghai, Beijing, and Sichuan, their research outputs in social services are comparatively higher, reflecting improved efficiency in the utilization of educational resources.

Longitudinally, overall research output from Chinese universities from 2018 to 2022 shows a trend of initial increase, followed by a decline, and then a subsequent rise. Fourteen provinces and municipalities—Beijing, Shanxi, Liaoning, Jiangsu, Zhejiang, Jiangxi, Shandong, Hubei, Hunan, Guangdong, Chongqing, Sichuan, Guizhou, and Shaanxi—exhibit year-on-year growth in research output. The most significant change is observed in Guangdong, where output increases from 113,900 in 2018 to 199,200 in 2022. The remaining regions display fluctuating trends, though overall, an upward trajectory is evident.

3. Issues in the Development of Higher Education in China

3.1 Insufficient educational equity with significant regional and group disparities

There is a severe imbalance in the regional distribution of higher education in China, with high-quality resources excessively concentrated in the developed eastern regions. Universities in central, western, and rural areas lag significantly in terms of faculty, facilities, and funding. For instance, top-tier universities are predominantly located in cities such as Beijing and Shanghai, while institutions in remote provinces struggle to attract outstanding talent, resulting in uneven educational quality. Furthermore, the urban-rural divide exacerbates inequality in educational opportunities. Due to economic constraints and inadequate infrastructure, students from rural areas are at a disadvantage in the competition for further education, which further restricts social mobility. Such inequity is reflected not only in access to higher education but also in post-graduation employment prospects, thereby reinforcing social stratification. Although the state has implemented special enrollment programs, deep-seated structural issues still need to be addressed through balanced resource allocation and policy support.

3.2 Disconnect Between Discipline Design and Market Demand, and Lag in Talent Cultivation

The misalignment between discipline design and market demand, along with the lag in talent cultivation, reflects a systemic contradiction between higher education and the rapidly evolving socio-economic environment. The root cause lies in the inflexibility of discipline adjustment mechanisms. Universities often establish programs based on traditional disciplinary classifications and existing faculty strengths rather than tracking real-time industrial technological changes and labor market trends. This results in delayed development of programs in emerging fields such as artificial intelligence and green energy, while traditional disciplines continue to expand due to resource inertia.Furthermore, talent cultivation models rely excessively on theoretical instruction, with weak practical components. Industry-academia collaboration often remains superficial, and enterprises lack deep involvement in curriculum design, leading to a mismatch between student competencies and job requirements. The shortage of faculty with industry experience, coupled with slow updates in teaching content, further widens the structural gap between talent supply and market demands.Additionally, the absence of effective market demand forecasting mechanisms reduces universities'sensitivity to industry trends. Policy guidance sometimes deviates from actual market needs—for instance, certain disciplines expand blindly due to policy support, while interdisciplinary and emerging fields develop slowly due to inadequate resources.The imperfect evaluation system also hinders reform efforts. Educational assessments overemphasize academic achievements and paper publications while neglecting teaching quality and graduate employment outcomes. This discourages faculty and institutions from proactively optimizing curricula.Moreover, imbalanced resource allocation remains prominent. Popular disciplines attract excessive resources, whereas marginalized disciplines and emerging fields suffer from insufficient investment, limiting interdisciplinary integration and innovation. Finally, the collaborative mechanism among universities, enterprises, and the government is underdeveloped, with a lack of information-sharing and cooperation platforms, making it difficult to form synergistic responses to market changes.These intertwined factors collectively contribute to the disconnect between disciplines and market needs, as well as the lag in talent cultivation. Addressing these issues requires comprehensive measures, including deepening educational reform, strengthening industry-academia collaboration, and optimizing evaluation systems.

3.3 Low Internationalization and Insufficient Global Competitiveness

The low level of internationalization and insufficient global competitiveness stem from multifaceted factors, including economic structure, institutional environment, innovation capacity, and cultural awareness. From an economic perspective, some countries or regions rely excessively on traditional industries or single markets, leading to imbalanced resource allocation and difficulties in adapting to the dynamic changes in the global value chain. For instance, if manufacturing remains concentrated in low value-added segments while high-value areas such as R&D and design receive inadequate investment, bargaining power in the global market will be weakened.Regarding the institutional environment, insufficient policy stability, low administrative efficiency, or excessive trade barriers hinder cross-border cooperation and reduce attractiveness to foreign investment. Simultaneously, domestic enterprises often lack experience in aligning with international norms, making it challenging for them to expand overseas operations.Another critical factor is the deficiency in innovation capability. Education systems that emphasize theory over practice, coupled with fragmented investment in scientific research, result in slow breakthroughs in core technologies and homogenized products and services, which fail to meet the diverse demands of global consumers.In terms of cultural awareness, language barriers, inadequate cross-cultural communication skills, and low sensitivity to international market dynamics limit brand globalization and talent mobility, further eroding competitiveness. Additionally, the accelerated pace of technological transformation in the process of globalization, such as the rise of the digital economy and green economy, requires enterprises to undergo rapid transitions. However, some groups struggle to keep up due to information asymmetry or resource constraints, leading to a "digital divide."In summary, these intertwined factors collectively contribute to delayed internationalization and hindered improvement in global competitiveness. To overcome these bottlenecks, systematic efforts are required to optimize the economic structure, improve institutions, strengthen innovation investment, and cultivate a global perspective, thereby enhancing adaptability and leadership in response to external changes.

4. Recommendations for Enhancing the Allocation Efficiency of Higher Education in China

4.1 Optimizing the Resource Allocation Structure Across Regions

The allocation of national education funding should be appropriately tilted towards underdeveloped western regions.The government should emphasize balancing resources across regions, avoiding excessive investment of educational resources in developed areas or prestigious universities while neglecting economically disadvantaged regions and less prominent institutions. At the same time, it is essential to maintain a balanced proportion of fiscal higher education funding between developed and underdeveloped regions, as well as between key and non-key universities. Optimizing the allocation of regional higher education resources is a crucial measure for promoting educational equity and enhancing overall education quality. This requires dynamic planning and precise policy implementation to achieve efficient resource utilization.First, establish an early-warning mechanism for population mobility and degree demand. Based on urbanization trends and demographic changes, dynamically adjust the distribution of universities and enrollment scales to prevent resource underutilization or over-concentration. Priority should be given to establishing high-quality universities or branch campuses in central and western regions as well as areas experiencing population inflow.Second, strengthen fiscal and policy incentives. The central government should increase transfer payments, focusing on supporting infrastructure development and disciplinary advancement in universities in underdeveloped regions. Simultaneously, implement a pairing assistance mechanism between "Double First-Class" universities and regional institutions to enhance the overall quality of regional universities through faculty sharing, joint training programs, and other collaborative measures.Third, promote faculty mobility and digital resource sharing. Implement a cross-regional teacher rotation system to encourage key faculty from eastern universities to teach in central and western regions. Additionally, leverage online education platforms to enable cross-regional sharing of courses, laboratories, and other resources, thereby narrowing inter-institutional gaps.Furthermore, optimize discipline alignment with industrial needs. Adjust academic structures according to regional economic demands—for instance, supporting engineering disciplines in manufacturing-intensive areas and strengthening agricultural education in major agricultural provinces. Enhance the adaptability of talent cultivation through industry-academia collaboration.Finally, improve enrollment policies for migrant children, expand the supply of places in public universities, and ensure equal opportunities for children of mobile populations to access higher education.Through these measures, a more balanced distribution of higher education resources across regions can be gradually achieved, providing robust talent support for economic and social development.

4.2 Expanding Channels for Educational Resource Acquisition

Diversifying the sources of higher education resources is essential for enhancing educational supply capacity and meeting diverse demands. This requires multi-stakeholder participation and institutional innovation to expand resource availability.First, encourage non-governmental actors to establish higher education institutions. Relax entry requirements for private universities and attract enterprises, foundations, and other entities to invest in education through tax incentives, land allocation policies, and other supportive measures. Support vocational colleges in collaborating with leading industry enterprises to establish industry-specific colleges, fostering a "discipline + industry" collaborative education model.Second, deepen international education cooperation. Introduce high-quality resources from foreign universities through Sino-foreign cooperative education institutions and credit-recognition programs, sharing faculty, curricula, and research platforms. At the same time, support domestic universities in setting up overseas campuses along the Belt and Road routes to enhance international influence.Third, revitalize existing resources. Promote the joint construction and sharing of laboratories and training bases between universities and enterprises. Transform idle campus facilities into venues for continuing education or community learning. Additionally, open high-quality university courses through online education platforms to enable cross-regional and cross-group resource sharing.Fourth, innovate fiscal investment mechanisms. Establish special funds for higher education development to encourage increased matching investments from local governments. Explore financing methods such as social donations and education bond issuance to broaden funding channels.Moreover, strengthen industry-university-research integration. Support universities, research institutes, and high-tech enterprises in jointly establishing innovation centers. Use technology transfer and research commercialization to feed back into teaching resource development, forming a virtuous cycle of "research–teaching–industry."Finally, optimize the policy environment. Simplify administrative approval procedures, establish a classified management mechanism for private universities, and provide more support to non-profit institutions. Strengthen quality supervision to ensure that newly added resources comply with educational standards.Through these measures, a higher education resource supply system led by the government, participated in by society, and regulated by the market can be established, providing broader talent and intellectual support for economic and social development.

4.3 Establishing a Scientific Efficiency Evaluation System

Developing a scientific efficiency evaluation system is essential for optimizing the allocation of regional educational resources and enhancing resource utilization efficiency. This requires a multidimensional indicator framework and dynamic mechanisms to achieve accurate assessment.First, establish a tiered and categorized evaluation framework. For different educational stages—such as basic education, vocational education, and higher education—design differentiated indicators. For instance, basic education may emphasize equity (e.g., per-student funding, teacher distribution balance), vocational education may focus on industry-education integration (e.g., number of school-enterprise cooperation projects, employment alignment rate), and higher education may prioritize innovation capacity (e.g., research output, technology transfer rate), ensuring that evaluations align closely with educational objectives.Second, introduce dynamic monitoring and early-warning mechanisms. Utilize big-data analysis to track changes in population mobility and demand for educational resources, and adjust evaluation weights accordingly to avoid the lag associated with static indicators. For example, increase the weight of efficiency in providing student placements in regions experiencing population inflows, while emphasizing resource-utilization assessments in areas with idle capacity.Third, strengthen the integration of process-oriented and outcome-based evaluations. Focus not only on resource inputs (e.g., fiscal funding, equipment allocation) but also on output effectiveness (e.g., improvement in students' comprehensive competencies, societal contribution). Ensure objectivity and fairness by combining third-party evaluations with institutional self-assessments.Fourth, promote the application of evaluation results. Link efficiency assessments to resource allocation and policy adjustments, providing incentives for high-performance regions (e.g., priority in resource distribution) and implementing interventions for low-efficiency areas (e.g., optimizing layouts, strengthening guidance), thereby forming a closed-loop cycle of "evaluation–feedback–improvement."Finally, emphasize regional characteristics and equity. Incorporate considerations of urban-rural disparities in indicator design, while establishing cross-regional comparison mechanisms to facilitate experience sharing and collaborative improvement.Through these measures, a scientific, flexible, and goal-oriented educational efficiency evaluation system can be established, providing a reliable basis for optimizing resource allocation and advancing high-quality educational development.

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