

# Insights from the Practice of Hong Kong in Promoting Industry-University Synergy through Digital Platforms

Chen Chen

Wenzhou Polytechnic, Wenzhou Zhejiang, 325035, China

---

**Abstract:** Based on the human capital theory and systems theory, and considering the practical needs of China's economic transformation, Development of higher education should go hand in hand with that of industry. The types and levels of talents cultivated by higher education should align with the status of local industries. Currently, there is a lack of coordination between the structures of higher education and the industrial structure in China's mainland, and the functions of the government, enterprises, and colleges need to be further strengthened. The Hong Kong digital platform is an innovative initiative jointly promoted by the government, enterprises, and colleges to advance Industry-University collaboration. It has established a dynamic interaction mechanism centered on the linkage between job vacancies and courses. This platform provides valuable insights in terms of how to design the platform from user's perspective, how to properly play the role of government, and how to utilize the initiative of human capital.

**Keywords:** Industry- University Synergy; Hong Kong Digital Platform; Triple Helix Model.

---

## 1. The Necessity of Industry-University Synergy

### 1.1. Theoretical Basis

The theoretical basis for the synergistic development of higher education and Industry mainly includes the Human Capital Theory [1] and the Systems Theory [2]. The Human Capital Theory posits that higher education is the most important way to produce human capital, continuously impacting social and economic growth through the formation of manpower. Therefore, whether structure of higher education aligns with the industrial structure can reflect the degree of its contribution to economic development, and the development of higher education should coordinate with that of industry. According to the Systems Theory, the education system and the economy system are two subsystems within the social system, interacting with each other. Educational development depends on the economic development, evidenced by regional industrial structures determining the disciplinary and professional structures of higher education. Educational development also counteracts economic development, as the disciplinary and professional structures of higher education influence regional industrial structures through human capital as an intermediary.

### 1.2. Practical Necessity

A high degree of synergy between industry and university is necessary for high-quality economic development. Currently, China's economy has shifted from a phase of rapid growth to one of high-quality development, making it imperative to adjust the economic structure to transform the development model. The industrial structure is the core part of the economic structure, and its optimization and upgrading are of great significance for transforming the economic development model. The transformation of the industrial structure cannot happen without the intellectual support of human capital, and the supply structure of human capital is determined by the structure of higher education. Therefore, the compatibility between the supply of human capital from

higher education and the industrial structure, to a certain extent, determines the speed and quality of industry upgrading process, thus significantly affecting the level of economic and social development. Currently, the contradiction between the structure of higher education and the industrial structure is becoming increasingly prominent. The increasing number of colleges graduates each year is facing structural unemployment, leading to a series of social issues such as difficulty in finding employment for graduates and degree devaluation. The synergistic effect of Higher education and industry should be improved to achieve optimal allocation of higher education resources, which will effectively promote graduate employment, maximize the economic benefits of human capital, and harness the role of higher education in driving economic development.

### 1.3. Definition of Industry-University Synergy

The synergistic relationship between higher education and industry can be divided into two parts:

One is the synergy between the industrial structure and the disciplinary and professional structure of higher education. According to the Systems Theory, the industrial structure, including three major industrial structures and particular industrial structures, determines the disciplinary and professional structure of higher education, which cultivates and supplies professional talents for the industry. The other is the synergy between the levels of industry and the levels of talent depending on the higher education hierarchy. According to scholars Luo Wenbiao[3] and Hu Dexin[4], the stage and period of industrial development jointly determine the levels of talent required. That is, the process of industrial polarization requires a highly polarized talent structure. When regional industries shift to being technology-intensive and knowledge-intensive, there will be a strong demand for high-level technical and innovative talents. For industries that are declining or maturing, the focus is mainly on increasing the supply of application-oriented talents such as associate degree holders and undergraduates. For emerging high-tech industries, the focus is mainly on increasing the supply of research-oriented talents such as master's and doctoral

graduates.

In summary, Industry-University synergy refers to a positive interaction between the industrial structure and the structure of higher education, achieving a highly synchronized state of development, characterized by the types and levels of talents cultivated by colleges match the development status of local industries.

## **2. The Current State of Industry-University Synergy in China's Mainland**

### **2.1. The Lack of Coordination between the Disciplinary and Major Structure of Higher Education and Industrial Structure**

Yang Lin [5] analyzed the coordination between the changes in the disciplinary and major structure of higher education in China and the upgrading of the industrial structure based on the Euclidean distance coordination model. They found that from 2004 to 2013, the coordination level between the disciplinary and major structure of higher education and the industrial structure in China was relatively high, but the degree of coordination showed a declining trend, and the adjustment of the higher education structure lagged behind the actual needs of industrial structure upgrading.

### **2.2. Poor Adaptability between Higher Education Hierarchy and Industrial Structure**

There is already a substantial amount of quantitative analysis literature in the academic community on the adaptability between the higher education hierarchy and the industrial structure. To figure out the adaptability, Li Quansheng[6] used weighted employment elasticity, cointegration models, and error correction models, while Liu Zhilin[7], Chen Chunping[8], and others used regression analysis and grey relational analysis methods. Their conclusions are basically consistent: the higher education hierarchy generally adapts to the needs of economic development. However, the higher education hierarchy has clearly lagged behind the level of economic development, which is manifested in the rapid expansion of the scale of associate-degree students, the shortage of high-level talents (masters and doctoral students), and the saturation of middle-level talents (undergraduates).

### **2.3. Cause Analysis**

Regarding the discoordination between higher education structure and industrial structure, existing research mainly makes analysis from the perspectives of related entities including universities, government, and enterprises. First, the planning capability of universities in disciplines and majors need to be improved. The dynamic adjustment mechanism of disciplines and majors is not perfect enough, failing to timely adapt to the new trends in the industry. In addition to that, some universities blindly pursue large-scale student enrollment and a comprehensive discipline or major systems, making it difficult to highlight the professional characteristics and academic advantages. Guo Jianru [9] also proposed that different industries have different demands for specific professional skills and general skills of graduates, and different majors should adopt different labor market connection strategies. Second, the government's

macro-control role needs to be further developed. In order to achieve the optimal allocation of educational resources, the government should establish an university-industry information collection and feedback mechanism, especially a talent demand prediction mechanism to dynamically update the quantity, level, and quality of human resources needed by industries, and to reduce information asymmetry between industries and universities. Third, the initiative of enterprises should be strengthened. There is isolation of information and resources between universities and enterprises, the university-industry cooperation is insufficient, and the practicality and effectiveness of higher education in talent development need to be improved.

## **3. Case Analysis of Hong Kong's Practice in Promoting Industry-University Synergy through Digital Platforms**

### **3.1. The Triple Helix Model**

Hong Kong's higher education is well-developed, and the degree of Industry-University collaboration is quite high, with the digital employment platform playing a significant role. The platform is the result of joint efforts by the government, enterprises, and colleges. In the field of Industry-University collaboration, the Triple Helix Model is a classic theory used to analyze the division of responsibilities and interactive activities among government, enterprises, and colleges.

The term "Triple Helix" originates from the field of biology. This concept was introduced into the field of innovation studies by American sociologists Leydesdorff and Etzkowitz[10], who proposed the famous "Triple Helix Model". The main entities in the model are universities (including universities, research institutes, and other knowledge production institutions), industries (including high-tech startups, large corporate groups, and multinational companies), and governments (including various innovation policy-making bodies at the national and regional levels). These entities maintain relative independence while engaging in mutually beneficial and effective interactions, coordinating, complementing, and cooperating with each other, forming a spiral upward mode of three forces intertwined. Additionally, industries, governments, and universities can maintain their independent identities in different fields, while also "playing other roles." That is, in addition to fulfilling their own responsibilities, Those entities also undertake part of the responsibilities of other's. The three parties work together, forming a spiral structure model to jointly promote the entire innovation activity[11]. For example, universities can also act as industries, promoting the creation of new enterprises in incubator and accelerator projects [12].

### **3.2. An Overview of the Digital Employment Platform**

The digital employment platform is a sub-module of the one-stop portal named "GovHK" established by the Hong Kong Special Administrative Region Government (HKSAR Government), making information and services of the public sector more accessible. According to the service targets, Functions of the platform can be divided into two categories:

#### **3.2.1. Functions Provided for Job Seekers, Including:**

- (1) A one-stop online Manpower information portal. Job

seekers can learn about occupations, access training information, and search for job opportunities from this online portal.

(2) Training courses offered by the Employees Retraining Board (ERB). This includes courses organized by training institutions commissioned by the ERB, targeting all eligible employees in Hong Kong aged 15 and above with education levels of sub-degree or below.

(3) Labour legislation & Guidelines. Those rules covers core aspects for employees such as employees' rights & benefits, statutory minimum wages, and job transfer arrangements.

(4) Special column. A series of programs or pages provides information for a particular group of people, including the "Youth Employment and Training Programme" for out-of-school youths aged 15 to 24 with education levels of sub-degree or below, a specialized page providing employment information for highly educated job seekers, and a page providing relevant information for entrepreneurs.

### **3.2.2. Functions Provided for Employers, Including:**

(1) Recruitment service. Employers can post job vacancies on the platform and look for the suitable candidates.

(2) Special services. Employers can obtain specialized guidance on hiring local domestic helpers, young person and children, and persons with disabilities. Also, They can learn about services provided by the ERB.

(3) Labour legislation & Guidelines. The platform provides information on major labour rules in Hong Kong, codes of practice against discrimination in employment as well as answers to frequently asked questions(FAQs) about legislation on employment, employees' compensation and occupational safety and health, which gives employer a more profound understanding about their responsibilities under labor laws.

## **3.3. Role Distribution among the Government, Enterprises, and Colleges.**

### **3.3.1. Colleges: Providers of Educational Resources**

On the one-stop online Manpower information portal, a specially set up "Courses" module presents all existing higher education resources in Hong Kong. The courses range from Hong Kong Qualifications Framework level 4 to level 7 (which includes associate, bachelor, master and doctor degree), with study modes of full-time, part-time, distance learning, and online learning. Users can freely choose the course level, study mode, course provider, and discipline, and access detailed course information through relevant links. In addition to the dedicated module, links to the courses module are also attached to other functional modules. For example, the "Skills" column under the career exploration module, lists common skills and growing skills related to the occupation, each accompanied by relevant course information. What's more, under the job vacancies module, users can directly access information about courses related to the job requirements listed.

### **3.3.2. Enterprises: Buyers of Human Resources**

For enterprises, the primary purpose of using the platform is to find suitable candidates. To this end, the platform offers a series of functional designs to help enterprises identify candidates in the most efficient and convenient manner. In the recruitment process, the platform provides comprehensive and detailed information as a guidance, including viable recruitment channels, recruitment conditions, handling

personal data, interview processes, notification of results, and employers' responsibilities. Additionally, as providers of internships and on-the-job training opportunities for young people, employers can attain a detailed instruction of the "Youth Employment and Training Programme". The platform clearly explains the objectives and training period of the programme, employment relationship, salary, and other matters of concern to employers, encouraging them to participate in the program.

### **3.3.3. Government: Platform Builder and Rights Protectors**

First of all, HKSAR Government led the establishment of the digital employment platform, facilitating the matching of human resource supply and demand. By linking job vacancies with course resources, it created an educational and economic information collection and feedback mechanism, promoting Industry-University collaboration. Second, HKSAR Government provides relevant legal knowledge to both employers and employees through the platform, including labor laws, employee protection and compensation, occupational safety and health, etc. The digital legal service has two main features: Strong practicality and High level of humanization. As for the former feature, for example, the "Labour legislation & Guidelines" interface provides not only an overview of major labor legislation, but also FAQs about labour legislation, special guides and codes of practice on statutory minimum wages, anti-discrimination practices, and regulations on hiring youth and children. All those guides and codes of practice are highly targeted and practical, further clarifying core employees' rights & benefits and protecting the statutory rights of special employee groups. As for the latter feature, the platform not only provides a dedicated module for legal guidance but also includes relevant legal guidance in both the recruitment and job-seeking modules. For instance, under the job-seeking module, Sections on employees' rights & benefits, statutory wages, and job transfer arrangements are also setted. Such a user-centric design increases the possibility of relevant individuals encountering information about laws and policies related to their interests, enhancing the effectiveness of disseminating these rules. Third, HKSAR Government also uses the platform to fulfill public functions, including providing government incentives and retraining programs.

## **3.4. Interactions of Roles among the Three Parties: A Dynamic Mechanism Centered on Job-Course Connection**

From the perspective of the core functions of the government, colleges, and enterprises, the platform's operational process can be described as follows:

### **3.4.1. Enterprises Publish Job Vacancies, Forming Job Information**

Enterprises post information about vacancies, which is the starting point of the whole dynamic mechanism. In this process, the government also plays a role. When enterprises post job vacancies, they must first read and sign an agreement on matters such as statutory minimum wages, work-related injury compensation, and non-discrimination clauses, to proceed with posting the job. These preconditions ensure that employers acknowledge their responsibilities in writing, effectively enforcing legal provisions regarding employer responsibilities.

### 3.4.2. Link Job Vacancies to Courses Closely

The platform directly associates the job information posted by enterprises with the related courses offered by colleges, converting labor demands of enterprises into potential demands for higher education. This is the essence of the platform's interaction mechanism, linking both skill requirements and job vacancies directly to relevant educational resources.

### 3.4.3. Job Seekers Make Decisions

At this stage, job seekers actively filter job and course information. They can choose suitable positions to apply for or select course resources that match their conditions and send in an application for admission. Enrollment applications referred by the platform are a direct response to industrial human resource demands, helping colleges better determine the scale of the related disciplines and majors, and which direction the disciplines and majors should go in the future.

In this process, the roles of government, colleges, and enterprises merge and interact. Under the premise of fulfilling basic employer responsibilities, Enterprises provide information about demand for human resource. Such information is linked to course resources and becomes the decision basis for job seekers. Through job seekers' active selection, this information transforms into either human resource supply or educational resource demand, which is ultimately fed back to higher education institutions or employers. The mechanism makes a information cycle of "human resource demand - course information - human resource supply or educational resource demand", which is a dynamic and ongoing process.

## 4. Lessons from Hong Kong's Practice

### 4.1. A People-Oriented Approach

The digital platform is highly useful and user-friendly, fully considering user needs, with comprehensive and convenient functions, especially the core functional modules equipped with clear one-stop guidance. Both employers and employees can efficiently and easily obtain the information they need. The user's subjectivity is greatly emphasized, as they are allowed to make decisions based on sufficient information. For example, when users enter the course module, the rich and comprehensive course information is presented in a standardized form, enabling them to access the basic information of relevant courses quickly and directly, reducing the time cost of researching, comparing and selecting courses through other websites. In addition to that, Special programs of the platform also reflects a sense of humanistic care with giving more attention to specific groups such as young school leavers and people with disabilities. For instance, the dedicated employment service module for people with disabilities provides relevant information for job-seeking individuals with disabilities and employers. Youth employment issues receives great attention through various courses and programs offering practical guidance to the target youth group, including training courses provided by the Employees Retraining Board, the "Youth Employment and Training Program" conducted in collaboration with the government and enterprises, and youth training courses that assist 15-20-year-old out-of-school and unemployed youth in identifying future education or employment directions.

### 4.2. Backed by Government Credibility

First, the platform is built under the government's

leadership. Unlike platforms constructed by enterprises, government credibility endorses the authenticity and privacy of users' data, which greatly enhancing user's trust. Such endorsement also brings more users to the platform and thus produce more data, allowing its functions to be better utilized. Second, the government strengthens its role in providing legal guarantees and balancing labor and capital rights. The platform not only sets up a dedicated legal module but also includes relevant legal prompts in other related modules, enhancing policy promotion and implementation effects, ensuring better protection of both employer and employee sides. Finally, the government creates a positive employment cultural through the platform. The platform provides functional and emotional support for various types of job seekers, striving to bridge the information and skill gaps between job seekers and job suppliers, creating a society-wide environment that cares for employment.

### 4.3. A Job Seeker-centered Industry-University Synergy Model

The platform has created a job seeker-centered Industry-University Synergy model with four characteristics. First, it reflects the real and dynamic talent needs of the industry. Generally, colleges predict talent demand based on government industrial planning, industrial structure, and graduates employment rates. However, such prediction has lag and bias. The platform innovates the data source, takes the job vacancies released by the enterprise as the starting point, and establishes the connection between the job vacancies and related courses, so that the demand for professional skills and general skills of different jobs can be directly fed back to colleges, providing a data basis for colleges to carry out a dynamic and accurate talent demand forecasting. Second, educational resources are highly standardized and marketized. All higher education courses are integrated into a course market. Users can freely combine and select courses according to course level, learning mode, course provider, and subject category, just like shopping for products on Amazon. Third, job seekers' response is central. In a traditional Industry-University collaboration mode, the education end makes adjustments to adapt to the talent demand of the industrial end. The platform creates a new model which is centered on job seekers, who actively output information about human resource supply or educational resource demand, emphasizing the agency of human capital itself. At last, A Efficient collaboration is achieved. Through the interaction mechanism centered on "Job-Course Connection", Political, academic, and business entities achieve dynamic interaction and efficient communication of talent, education, and legal information, which greatly improving the quality and efficiency of Industry-University collaboration.

## Acknowledgments

This work was supported by the Fundamental Research Project for the Wenzhou Science & Technology Bureau under R2023094 and the Research Project of Wenzhou Polytechnic under WZY2023065.

## References

- [1] Schultz, T.W, Investment in human capital. American Economic Review, 1961, 51(1):1-17.

- [2] Pan Maoyuan. New Edition of Higher Education Theory. Beijing: Beijing Normal University Publishing Group, 2012.
- [3] Luo Wenbiao, Huang Zhaosheng. Research on the Interaction between Industrial Structure and Talent Structure. Science & Technology Progress and Policy, 2004(07):38-40.
- [4] Hu Dexin, Wang Man. Research on the Coordination between Discipline Structure and Industrial Structure in Higher Education. Higher Education Exploration, 2016(08):42-48.
- [5] Yang Lin, Chen Shuquan & Han Keji. Analysis of the Coordination of Higher Education Discipline Structure and Industrial Structure Optimization. Research in Educational Development, 2015, 35(21):45-51.
- [6] LI Quansheng, YANG Liang. Analysis of Adaptability between Higher Education Hierarchy and Economic Development. Journal of Beijing Institute of Technology (Social Sciences Edition), 2011, 13(05):142-146.
- [7] Liu Zhilin, Analysis of the Relationship Between the Hierarchical Structure of Higher Education and Social Economy in China. Research in Higher Education of Engineering, 2019, (05):120-126.
- [8] Chen Chunping, Hu Heqiong. Research on the Relationship between the Optimization of the Hierarchical Structure of Our Country's Higher Education and Economic Development. Forum on Contemporary Education, 2021, (03):12-18.
- [9] GUO Jianru', DENG Feng. A Study on the Adaptability of the Discipline Structure and the Industrial Structure of Higher Education -Based on the Perspective of College Graduates' Education-Job Match and Employment Quality. Journal of Hebei University (Philosophy and Social Science), 2023, 48 (01):112-122.
- [10] Leydesdorff L, Etzkowitz H D. Emergence of a triple helix of university-industry-government relations. Science and Public Policy, 1996, 23(5): 279-286.
- [11] ETZKOWITZ H, LEYDESDORFF L. The Dynamics of Innovation: From National Systems and 'Mode 2' to a Triple Helix of University- Industry- Government Relation. Research Policy, 2000, 29(1):109-123.
- [12] Pique J M, Berbegal-Mirabent J, Etzkowitz H. Triple helix and the evolution of ecosystems of innovation: The case of silicon valley. Triple Helix, 2018, 5(1): 1-21.