
| RESEARCH ARTICLE

Research on the Joint Training Path of China and Portugal Based on the Background of Digital Economy

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| ABSTRACT

With the rapid development of digital economy, higher requirements are put forward for the supply and quality of talent. China and Portugal are also facing this problem. Therefore, this paper proposes that China and Portugal jointly train the relevant talents needed for the digital economy, analyzes the current situation of the talents in the bilateral countries and the related problems, obtains the skills needed for the joint training, and sets the path for the joint training in the bilateral countries.

| KEYWORDS

China, Portugal, Digital economy, personnel training.

| ARTICLE INFORMATION

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1. Introduction

In recent years, with the continuous maturity of digital technology, the digital economy has gradually become an important factor in the development trend of the world, and the talent gap in the construction of the digital economy has also expanded. This situation has put forward new requirements for the talent training model of the digital economy. At the same time, the in-depth development of "the belt and road initiative" has led to exchanges between China and countries along the line. The common development of the digital economy has put forward a great test to the demand for talent. Portugal, as a country along the line and having signed a "Memorandum of Understanding on the Construction of" the belt and road initiative "with China, has, in recent years, carried out scientific and cultural exchanges with China through relevant platforms. Therefore, this paper will take the current situation of digital economy talent training between China and Portugal as the breakthrough point and study and analyze the current situation of digital economy talents in bilateral countries, the advantages of joint training, the skills required for talent training in bilateral countries and the cooperation path between bilateral countries.

2. Analysis of Digital Economy Talents in China and Portugal

2.1 Status quo of digital economy talents in China and Portugal

According to the data in the "Global Digital Economy Development Index Report (TIMG 2023)" and "Global Digital Economy Research Report" released in 2023, China's digital economy continued to grow steadily and rapidly from 2016 to 2022, and has become the second largest digital economy in the world. According to the data in the Digital China Development Report (2023), the scale of China's digital economy reached RMB50.2 trillion in 2022, ranking second in the world in terms of total volume, with a nominal year-on-year increase of 10.3%, and its share of GDP increased to 41.5%. According to the data in the report, as of 2022, the number of digital economy talents employed in China was approximately 36 million. By 2025, the scale of China's digital economy industry will reach 60 trillion yuan. The report estimates that by 2025, China's digital economy will absorb 379 million people, and China's digital economy will employ about 45 million people. Against this background, there are still the following two problems with digital economy talents. The Portuguese authorities have always implemented the training of digital talents as a strategic goal. In the "Portugal Recovery and Resilience Plan" released by the Portuguese government, it is proposed to train

more than 800,000 people in digital skills, promote the digital transformation of enterprises, and train 30,000 small and medium-sized enterprises with digital talents. On July 28, 2021, Portugal issued the Vocational Training and Qualification Agreement, which advocates digital skills training for all unemployed people in the country. Portuguese companies are also actively involved in this issue. Portuguese digital company JOVEM+ aims to train unemployed youth in digital technology. By the end of 2020, more than 8,000 people had participated in the program. With various efforts, by 2021, Portugal's ICT experts have reached 4.5%, and the number of graduates with ICT technology has reached 3.9%.

2.2 Analysis of the Problems of Digital Economy Talents in China and Portugal

The talent gap is huge. The development of the digital economy brings about the emergence of new industries and economic models, the increase of employment opportunities and the change of employment forms. At the same time, it puts forward new requirements for the training and transportation of "digital talents". The "2022 China Digital Economy Talent Development Report," released on August 5, 2023, pointed out that at present, the national digital economy talent supply with demand circles and the overall circular ecology has initially formed, but the digital economy talent gap continues to expand. According to the data in the report, by 2022, the digital talent gap in China exceeded 11 million. According to the "14th Five-Year Plan" for Digital Economy Development, the total demand for digital economy talents in China will approach 70 million by 2025. Judging from the overall supply and demand and the number of employees estimated in the report, the number of talent in the digital economy is in short supply, and the shortage of talent in the digital economy will exceed 25 million by 2025.

There is an imbalance in the supply structure. The trend of industry digitalization has gradually become a clear trend in the development of the digital economy. According to the research data of the Institute of Policy and Economics of the China Institute of Information and Communication in 2019, the number of jobs in digital industrialization will account for 32.6% of the total recruitment jobs, and the number of industrial digital jobs will account for 67.4%. At present, China's education system focuses on professional talents, which is different from the demand for compound talents required by the digital economy, resulting in an imbalance between the supply and demand structure of education output talents and talents required for the development of the digital economy. There is a shortage of relevant talents needed in the market. In 2022, the "2022 Talent Shortage Survey" conducted by Wanbao Shenghua Group showed that Portugal is the country with the most difficult recruitment of employers in the world. As we can see, 67% of Portuguese employers have difficulty in finding suitable candidates, while 18% of employers have encountered many difficulties in recruitment. The national talent shortage rate in Portugal reached 85%, 15 percentage points higher than in 2021. This is higher than the global average (75%). Correspondingly, in the development of Portugal's digital economy, the proportion of national ICT specialists in the total population is still lower than the EU average, while the employment level of ICT graduates is lower than the EU average. This situation led Portugal to rank only 14 out of 27 EU countries in the "DESI Index Analysis Report" released by the EU, which is only equal to the average development level of the EU.

Population Problem Causes Difference in Talent Output in Digital Economy. Portugal has a certain degree of population aging problem, which is accompanied by the differentiated distribution of the elderly and young people with the digital skills required for the development of the digital economy. According to the analysis report of the DESI index, 4.5% of Portugal's population are professionals with ICT skills, but only 3.9% of the total population are graduates with ICT skills. This phenomenon leads to the problem that talents have different ages in the development of Portugal's digital economy, and it is difficult for talents to be supplemented in a timely manner.

3. Analysis of Talents and Skills Required for the Development of Digital Economy in China and Portugal

3.1 Bilingual skills and understanding of bilateral culture

Type the text here. With the in-depth development of "the belt and road initiative", the cooperation in science and technology, culture and other fields between China and the countries along the line has gradually increased, and the relevant cases on transnational and transnational management have also increased accordingly. Under this situation, having bilingual skills and a certain degree of knowledge of bilateral culture will become a necessary skill for China and countries along the "the belt and road initiative", including Portugal, to jointly train talents. This skill training can not only eliminate the misunderstanding of the digital economy talents in the joint project between China and Portugal on the difference in the bilateral culture but also improve the talents' understanding and identification of the bilateral language and culture under the joint training mode, and improve the communication efficiency of the bilateral talents, which can play an important role in the future joint development and construction of the digital economy between China and Portugal.

3.2 Relevant digital skills

At present, academia has not yet clearly defined the specific concept of talents required for the digital economy. The key element of the specific requirements for digital talents in most of literature and research is to have ICT skills, which are all skills covered in the information and communication field. ICT skills include professional information and communication technology in programming, web design, big data analysis and cloud computing, existing various office software, professional related software

and hardware, intelligent equipment application operation technology, information search and evaluation skills, and auxiliary skills for collecting partner or customer demand information by using specific digital skills or information platform for work-based analysis. As mentioned above, there is a huge talent gap in the development of the digital economy between China and Portugal. Especially in the current stage of rapid development of the digital economy between China and Portugal, digital trade, digital governance, and other related fields have a greater test of digital economy talents. Therefore, in the process of joint training between the two countries, having relevant digital skills will become an important condition for digital economy talents in both countries.

3.3 Digital ethics and digital thinking

With the rapid development of digital technology, the number of new crimes committed through the use of digital technology is gradually increasing. Compared with traditional crimes, this form of crime is more covert, has a larger regional span, higher technical content and is more difficult to detect, posing a greater challenge to the world's human security. While strengthening the planning of laws and regulations in the digital field, we should start with the training of digital talents. Therefore, in the joint training of digital economy talents between China and Portugal, the planning of digital ethics should be added. Through communication and planning between bilateral countries, we will enhance the understanding of social responsibility, professional ethics and relevant laws and regulations of digital economy talents, strengthen the moral training of digital economy talents, enhance the moral sense of digital economy talents, and reduce the threat of digital talents to the development of digital economy from the root. It is not only a stable foundation for the development of a bilateral digital economy but also a guarantee for the security of a bilateral digital economy.

In addition to moral requirements, digital thinking is also an indispensable skill for the talents needed in the digital economy. While possessing digital skills, digital talents should also have digital consciousness and digital thinking of digital concepts, i.e. they can effectively use digital skills to integrate and analyze key information and data of work content when doing relevant work. At the same time, it can optimize the ideas and methods for managing and solving problems through relevant data and information and effectively transform digital information into the basis for digital operation decisions, etc. Especially under the background of joint training between China and Portugal, facing different national conditions and different markets, digital talents with digital thinking will effectively display their own digital skills and promote the development of the digital economy in both countries.

3.4 Ability of teamwork and innovation

Under the hypothetical background of joint training of talents between China and Portugal, bilateral digital economy joint projects will gradually increase, such as digital technology cooperation, joint construction of infrastructure required for digital economy, and cross-border and cross-regional cooperation, such as cultural exchange in the digital field, will increase. Compared with traditional multinational teams, the joint construction of the digital economy puts forward higher requirements for the cooperation ability and cooperation density of talents with digital knowledge reserve and digital skills learning ability from different educational backgrounds. At the same time, the digital economy is still in the development stage, and the digital technology in the high-tech industry is still continuously updated. The joint training of talents should enhance the learning and innovation ability in the actual work process to ensure timely follow-up of the digital technology update trend and continue to innovate on the basis of the existing digital economy development in both countries to promote the rapid development of the bilateral digital economy. Therefore, the bilateral joint training of relevant talents should include the training of team cooperation ability and innovation ability.

4. Sino-Portuguese Joint Training of Digital Economy Talents Cooperation Path Analysis

4.1 Communication with Macau and other relevant platforms

As a bridge of communication between China and Portugal, Macau has played an important role in the cooperation between China and Portugal in many aspects in recent years. In particular, the China-Portuguese-speaking Countries Economic and Trade Cooperation Forum established in Macau has also served as an effective platform for China to communicate with Portuguese-speaking countries, including Portugal. Secondly, in the Guangdong-Hong Kong-Macau Greater Bay Area's construction plan, Zhuhai Hengqin region, which is close to Macau, has carried out many scientific and cultural exchanges with Portuguese-speaking countries. Through these platforms, the relevant departments of China and Portugal can hold detailed discussions on the enrollment plan, training plan and employment plan for the joint training of digital economy talents so as to provide a favorable basic guarantee for the cooperation between China and Portugal in training talents, and at the same time, to promote the long-term cooperation between the two countries in the common development of the digital economy.

4.2 China actively cooperates with relevant Portuguese universities and enterprises

In September 2022, the Portuguese university of Lisbon, with the approval of relevant departments, started cooperation with Shanghai University to open a talent training base at Shanghai University, which became the first Sino-Portuguese cooperative school-running institution in Chinese mainland and the only Sino-foreign cooperative school-running institution jointly established

by China and Portugal. In May 2023, the Renmin University of China, the University of Macau and the University of Coimbra in Portugal signed the Memorandum of Understanding on Education and Research Cooperation among Renmin University of China, the University of Macau and the University of Coimbra in Portugal. The three universities will jointly train relevant talents. Therefore, in the training of digital economy talents, Chinese and Portuguese universities should actively carry out communication and cooperation, draw on bilateral effective resources and relevant teaching concepts, give full play to the teaching advantages of bilateral countries, and contribute more talents to the development of digital economy in bilateral countries through reasonable planning of training plans and employment-related arrangements, so as to fill the talent gap in relevant fields in bilateral countries.

4.3 Innovative management model

From an objective analysis, there are differences between China and Portugal in the management mode of higher education, and the related problems caused by the differences in management mode are easy to occur in the joint training of bilateral countries. Therefore, China and Portugal should make reasonable innovations in the management model of joint training of digital economy talents. For example, they can track the study and life of students in the bilateral countries in detail, set up an active incentive teaching mechanism, set up an effective supervision and testing system, standardize the behavior of students in the bilateral countries in school life, guarantee the employment destination of students after graduation, and effectively conduct scientific statistics and continuous innovation on the employment destination of students after graduation, employment income and salary, and related problems encountered in employment. Through the above means, under the premise of ensuring that the joint training can be carried out steadily, the trained digital economy talents will be exported to the digital economy related industries with good quality and quantity.

4.4 Establishing a bridge of effective communication and cooperation with relevant enterprises in bilateral countries

The ultimate goal of the joint training of talents between China and Portugal is to promote the development of a digital economy in the bilateral countries, and the composition of the digital economy is various industries existing in relevant fields. In addition, the ultimate destination of talent output under the joint training mode is still the enterprises and companies in the industries related to the digital economy. Therefore, while China and Portugal jointly train talents, they should build a bridge of effective communication and cooperation with relevant enterprises. Through cooperation with relevant enterprises, to carry out practical activities of talents in practical operation so that relevant talents can effectively practice the concept of "unity of knowledge and practice". To carry out on-the-spot investigation activities of talents in relevant enterprises so that relevant talents can have a certain understanding of the site environment for future work in advance. Jointly establish incentive mechanisms with relevant enterprises, such as the establishment of student aid funds, various types of scholarships mainly focusing on academic and innovation projects, and employment incentives, etc. To effectively publicize in the society, address the concerns of students when entering the joint school, improve the learning enthusiasm and innovation enthusiasm of students in the training model, and make talents in the joint training model more competitive.

5. Conclusion

The development of the digital economy puts forward new requirements for the quality and quantity of talent, and the talent gap is gradually expanding. China and Portugal also face this problem. Although the number of talents related to the digital economy in bilateral countries is on the rise, China is facing the problems of expanding the talent gap and an unbalanced supply structure. Portugal is facing the problems of talent exports that are difficult to meet the employment demand and talent supply imbalance under the population problem. Therefore, this paper draws up a joint training plan between China and Portugal. Through the training of digital talents' digital skills, bilingual skills, digital thinking, innovative thinking and team cooperation skills, and on the premise of innovating the management model and relying on relevant communication platforms such as Macau, the two countries will actively carry out communication activities among universities and enterprises in both countries, providing effective support for the training of digital economy related talents, providing a good foundation for the development of digital economy in both countries and also providing a reference for bilateral countries to carry out cooperation in many fields in the digital economy.

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References

- [1] Ding L. (2022). Discussion on the cultivation of compound talents for digital economy. *Research on higher engineering education* (06),1-4+24..2022-06-001.
- [2] Huang H & Li R Z (2022). Talent is the key to break through the bottleneck of digital economy. *Ningbo Economy (Financial Perspective)* (08),10-11..2022-08-007.
- [3] Han Y, Travel A & Fan W (2019). Research on the Training Model of Portuguese-Speaking Talents in China under the Background of "the belt and road initiative". *Science and Education Guide (Late Edition)* (06),63-66. 2019.02.029.
- [4] Jia Y. (2022). Research on the cultivation of technical and skilled talents based on digital economy. *China Management Informatization* (18),233-235..2022-18-073.
- [5] Suo H (2023). The development of digital economy on the innovation of vocational education personnel training model. *Tianjin Vocational College Joint Journal* (08),44-48.2023-08-009.
- [6] Sun W. (2023). Sino-foreign exchange and sharing of experience, building consensus-a summary of the international symposium on joint training of top-notch innovative talents in China and foreign first-class universities. *International exchange of education* (05),56-60.2023-05-015.
- [7] Sun W. (2023). Sino-foreign exchange and sharing of experience, building consensus-a summary of the international symposium on joint training of top-notch innovative talents in China and foreign first-class universities. *International exchange of education* (05),56-60..2023-05-015.
- [8] Shen Y & Wang W. (2023). Path analysis of talent cultivation in state-owned enterprises under the background of digital transformation. *Talent resource development* (16),82-84..2023.16.011.
- [9] Wang X (2021). "The belt and road initiative" initiative under the background of the Portuguese language talent training-zhejiang international studies university as an example. *Industry and Technology Forum* (07),170-172..2021-07-081.
- [10] Xu F & Li D. (2023). Innovative research on vocational education personnel training-based on the background of digital economy. *Journal of Taiyuan City Polytechnic* (08),73-75. 2023.0435.
- [11] Zhang Y, Li Y & Zhao Y. (2022). A Preliminary Study on the Diversified Mode of Joint Cultivation of Innovative Talents in Guangdong, Hong Kong and Macau .. (eds.) *Proceedings of the 17th Cross-Strait (Guangdong and Taiwan) Higher Education Forum* (pp.250-259). *Proceedings of the 17th Cross-Strait (Guangdong and Taiwan) Higher Education Forum*.