

Research on Talents Training of Software Service Outsourcing for Japan Based on School-Enterprise Cooperation

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Keywords: school-enterprise cooperation; software service outsourcing for Japan; talents training; requirement analysis; training path

Abstract: China's software service outsourcing industry for Japan has developed rapidly, the demand for talents has increased sharply, and the shortage of qualified software development talents has become a bottleneck for the development of software service outsourcing to Japan. Based on the school-enterprise cooperation model, this paper analyzes the demand for software service outsourcing talents to Japan, including talent level demand analysis and talent skill demand analysis. It proposes a training path for Japanese software service outsourcing talents based on school-enterprise cooperation: establish a new school philosophy about the software service outsourcing school-enterprise cooperation, promote the use of PDCA-based quality management mode, enhance the enthusiasm and communication mechanism of school-enterprise cooperation, build a scientific talent quality evaluation system based on skill needs, and optimize the innovation mechanism of school-enterprise deep cooperation.

1. Introduction

Software service outsourcing is a kind of service trade. It is a combination of the continuous division of social division of labor and the development of software technology. It refers to the contracting of all or part of the software project in order to focus on the core competitiveness business and reduce the cost of software projects. Software requirements activities completed by companies that provide outsourced services. The contracting countries use software service outsourcing to cooperate with the receiving countries to give play to their respective comparative advantages so that both parties can benefit and thus promote the development of international trade. The software outsourcing industry is characterized by no pollution, low energy consumption, high added value and a large number of jobs, which is in line with China's current industrial upgrading and transformation needs. Software service outsourcing brings not only economic development to the Chinese software industry, but also advanced software development management processes and strict software quality control systems. By developing the software service outsourcing industry, China's software industry will gradually bid farewell to the hands-on development era and enter the field of engineering and scale development.

China is close to Japan, and the cultural background is very similar. Under these unique conditions, the software service outsourcing undertaken is mainly based on Japanese software outsourcing. In cities such as Dalian, Shanghai and Beijing, there is a large number of outsourcing service companies engaged in Japanese software development work. IDC, CCID Consulting and GARTNER are all predicting that the scale of China's software service outsourcing market will continue to expand in the future and become an important force driving China's software industry. At the same time, the data also shows that more than half of China's overall software service outsourcing revenue comes from Japanese customers, followed by European and American markets. Corresponding to the rapid development of software outsourcing to Japan is the lack of talent. With the rapid development of China's software outsourcing industry to Japan, the demand for Japanese software outsourcing talents has increased sharply, and the shortage of qualified software

outsourcing talents to Japan has become a bottleneck for the development of software service outsourcing to Japan. In this context, the research on the training of software service outsourcing talents based on school-enterprise cooperation is of great significance for cultivating qualified software outsourcing talents to Japan, and it is also a practical problem that must be solved in the field of software service outsourcing in Japan.

2. School-Enterprise Cooperation Model

The cooperation mode between foreign and domestic schools and enterprises is different, and the brief description is as follows:

The more successful school-enterprise cooperation models abroad include: the "dual system" model in Germany, the "cooperative education" model in the United States, and the "management, production, and learning" model in Japan. Among them, the first, Germany's "dual system" mode. Binary refers to schools and enterprises, combining modern teaching concepts with new skills training. Before entering the school, the students have signed employment contracts with the company. They learn theoretical knowledge as students in the school and receive job skills training as apprentices. The enterprise is the main body of education and plays a leading role. Practice operational talents. The second is the US "cooperative education" model. The teacher finds the appropriate enterprise according to the professional and interest of the student, determines the cooperative education plan, and provides the place and conditions for the production practice according to the situation. The school and the enterprise determine the student's labor tasks, duties, time and remuneration according to the contract signed. Because cooperative education adapts to the needs of social production, it is welcomed by enterprises, schools and students. The third is Japan's "management, production, and learning" model. The government promulgated laws and regulations, increased capital investment, set up intermediary agencies, and encouraged the combination of industry and education. Enterprises invest a lot of money in the research of science and technology projects in schools. The scientific and technological achievements of the school research are quickly transformed into scientific and technological products and promoted to the society. The strong combination of education and industry has been achieved, and a large number of high-skilled and innovative talents have been cultivated. Japan's semiconductor technology has achieved world-renowned achievements, and it is the result of the "training, production, and learning" talent training model.

The domestic school-enterprise cooperation model mainly includes: First, the "enterprise introduction" model. It is necessary to introduce enterprises into schools, build on-campus production training bases, and provide practical training positions for students. The school provides support for enterprises in building factories, technology development and skilled workers, reducing production costs. The school has obtained opportunities for student internships and teachers to participate in technology development, and achieved a win-win result in production and teaching. The Second is the "device sharing" mode. Enterprises and schools jointly provide equipment, establish production training bases, and provide training positions for students while producing. The school's enterprise resources are complemented and shared, and the equipment has both teaching and production functions, which improves equipment utilization. The third is the "technology promotion" model. The company provides advanced production equipment and trains students and teachers on new equipment and new technology applications. Students have received technical training, mastered the operational skills of advanced equipment, and the company has developed potential customers. The fourth is the "post contracting" model. The school undertakes the enterprise production process outsourcing business, and carries out production under the support of the enterprise technicians. The teachers become the technical and management personnel in the production, and the students alternately work. Enterprises reduce production costs and labor costs, and teachers and students get production exercise. The fifth is the "training transplant" model. Transplanting employee training programs of multinational companies, enterprises provide equipment and teacher training, teachers obtain enterprise qualification certificates, train employees for enterprises, and implement "order-based" training for students. The school not only benefits

from equipment and technology, but also ensures the quality of student employment.

3. Talents Requirement Analysis on Software Service Outsourcing for Japan

The analysis of the demand for software service outsourcing talents in Japan includes two aspects: talent level demand analysis and talent skill demand analysis.

Talent level needs analysis, including senior, intermediate and junior talents, is briefly described as follows: First, senior talent. In the initial phase of the project, development costs and schedule estimates should be made, a well-structured development team should be established, and the various software and hardware resources required for the project should be deployed. In the course of the project, it is necessary to guide the software development work, monitor the progress of the project, effectively control the cost and quality, discover and solve various unexpected problems, and report the progress of the project to the Japanese side regularly. At the end of the project, it is also necessary to organize the test work in the later stage of the project, complete the work of the project transfer, and write the project summary report. The second is intermediate talents. Intermediate talents should be able to read Japanese documents proficiently and accurately understand the needs of Japanese customers and communicate them to other members of the project team. They can supplement or continue to design documents that are not perfect from Japan, and solve the problems encountered by project team members during the development process. problem. It should also be able to filter, summarize and organize questions that are in doubt or unsolvable, submit them to the Japanese side or discuss with Japanese technical personnel to improve the design. Intermediate talents must also be proficient in configuration management tools and techniques, be able to perform configuration management, and be able to assist senior talents in project progress, cost control, and quality management, and coordinate the various resources required by the project team. The third is junior talent. Under the guidance of the project manager, the Japanese document can be accurately understood, and the module development file can be written in Japanese. Under the guidance of the project manager, the junior talents can accurately understand Japanese documents, write module development files in Japanese, and complete code writing, Japanese annotation, code debugging and unit testing under the framework provided by the Japanese. The junior talents document the unsolvable problems, submit them to the project leader, or solve the problem by simple communication between Japanese and Japanese through the assistance of Japanese technical translators.

Analysis of talent skill needs, including Japanese knowledge, comprehensive quality, information technology and software engineering, is briefly described as follows: First, Japanese knowledge. Must have good oral communication skills, especially the understanding and expression of Japanese software outsourcing terminology, read and understand the software requirements documents and design documents written in Japanese. Strengthen Japanese language education in the process of talent cultivation, give full play to the advantages of Japan as a Chinese-speaking country, and understand Japanese culture, customs, and working methods. The Second is the overall quality. This part includes a comprehensive level of knowledge and ethics, as well as a variety of abilities. Talents with high comprehensive quality also have the potential for development and creativity, as well as the ability to analyze and solve problems. With the advent of the new era, social development is no longer a high-level talent that only needs to master a single skill. It also needs a comprehensive talent with high comprehensive quality, strong foundation and personality charm. The third is information technology. The level of information technology affects the development of software service outsourcing industry, and talent shortage has become the main factor restricting outsourcing services. China's current software service outsourcing focuses on data entry and coding testing. The core technology research and development level is relatively low, and there are few high-end and high-end projects. It has become a top priority to cultivate high-level information technology talents. The fourth is software engineering. Software engineering is a systematic approach to software development, operation, maintenance, and retirement. To be engaged in software outsourcing to Japan for a long time, software engineering ideas and methods must be used to guide software development. This requires the in-depth study and understanding of

the essence of software engineering for Japanese service outsourcing talents, and successfully applied to the actual software service outsourcing to Japan at work.

4. Path on Talents Training of Software Service Outsourcing for Japan Based on School-Enterprise Cooperation

According to the current situation of the training of software service outsourcing talents in Japan, combined with the analysis of talent demand, this paper proposes the following training path for software service outsourcing talents based on school-enterprise cooperation:

(1) Establish a new concept of software service outsourcing school-enterprise cooperation. The educational concept is the formation of the thinking of education subject and education, and it is the result of rational understanding. The educational concept is not the educational reality, but it is the reflection of the educational reality. It is the conscious reflection of the educational subject on the educational reality. Colleges and universities should establish a school-running philosophy that meets the needs of the market economy and the development of modern education, and faces the social, enterprise and economic construction, and comprehensively expands and exerts its educational functions. Enterprises should also recognize the advantages of universities in terms of scientific research, technology and comprehensive talents, and change the traditional concept of simply pursuing profits. The implementation of the software service outsourcing talent training mode of benign school-enterprise cooperation, based on the software-oriented outsourcing industry development-oriented universities and enterprises, the core of the win-win driving mode of jointly training software talents is to solve the problems of school education and enterprise employment. And from the core level of cooperation mechanism and operation mode, universities and software companies are fully realized to complement each other and cooperate in all directions.

(2) Promote the use of PDCA-based quality management models. The PDCA cycle divides quality management into four phases, namely "Plan, Do, Check, Act". The four phases are repeated in turn, each cycle solves some problems, and the unresolved problems enter the next cycle and rise step by step. Based on the PDCA model idea, a new type of school-enterprise cooperation model for Japanese software service outsourcing is established, and the society and enterprise needs are explored in time to flexibly adjust the school's training plan. First, the planning stages, professional talent planning, clear training content. Second, at the design stage, deepen the cooperation between schools and enterprises and improve the quality of training. Third, the inspection phase periodically checks the implementation effect. Fourth, deal with the steps, summarize the problems, and adjust the later planning. Based on the PDCA quality management model, the Japanese-language software service outsourcing school-enterprise cooperation practice focuses on the timely capture of enterprise needs. It is also necessary to adjust the training plan in time to narrow the gap between school education and business needs, and gradually achieve a win-win situation among schools, enterprises and students.

(3) Enhance the enthusiasm and communication mechanism of school-enterprise cooperation. The main obstacles to school-enterprise cooperation are poor communication, starting from the communication mechanism, improving the communication model, and using information as the main auxiliary technical means. First, give play to the government's regulatory functions and create a good atmosphere for school-enterprise cooperation. The government has done a good job of regulation and control at the macro level, established a common sense of developing higher education in the whole society, and fully developed and utilized high-quality resources to achieve a complete transformation of ideas. Second, improve the school-enterprise cooperation and communication mechanism and release communication power. Add communication channels and establish a scientific multi-directional communication model. Flexible communication processes improve the whole process of education. Improve the corresponding feedback mechanism and use feedback as an important communication mode. Third, build a school-enterprise cooperation network platform to achieve school-enterprise information communication. Add communication channels and establish a scientific multi-directional communication model. Flexible communication processes improve the whole process of education. Improve the corresponding feedback mechanism

and use feedback as an important communication mode.

(4) According to the skill needs, build a scientific talent quality evaluation index system. Educational evaluation refers to the process of scientifically judging various educational activities, educational processes and educational results implemented by using certain techniques and methods under the guidance of certain educational values and based on established educational goals. The evaluation index system construction is the basic work of evaluation. According to the analysis of talent skill needs, four first-level indicators such as "Japanese knowledge, comprehensive quality, information technology and software engineering" are constructed, and each level indicator includes several second-level indicators. Among them, Japanese knowledge includes secondary indicators such as "Japanese basic level, literature reading comprehension, writing ability, oral communication skills, Japanese cultural customs, IT professional vocabulary, and Japanese software common sense". The comprehensive quality includes secondary indicators such as "unity and cooperation, dedication, integrity, technological innovation, communication skills, self-learning, adapt to the new environment and English proficiency". Information technology includes secondary indicators such as "development tools, programming capabilities, analytical design, software testing, software knowledge, hardware knowledge, network knowledge, operating systems." Software engineering includes two indicators such as "software engineering standards, outsourcing process specifications, software project management, software development process, document writing, quality control, configuration management".

(5) Optimize the innovative mechanism for deep cooperation between schools and enterprises. "Mechanism" originally refers to the structure and working principle of the machine, and has been widely used in natural phenomena and social phenomena, referring to the laws of internal organization and operation changes. In any system, the mechanism plays a fundamental and fundamental role. In an ideal state, with a good mechanism, when an external condition changes indefinitely, it can automatically respond quickly, adjust the original strategy and measures, and achieve the optimization goal. The deep cooperation between schools and enterprises requires continuous innovation mechanism: First, establish a mutual benefit and win-win mechanism for schools and enterprises. Through school-enterprise cooperation, improve the skills of software talents, and timely add to the enterprise, the school also increased the employment rate and the quality of employment. Second, establish a school-enterprise cooperation and cultivation mechanism. Establish a professional steering committee to link education with business development, and companies participate in the development of talent training programs. Third, establish a school-enterprise resource sharing mechanism. The social division of labor between schools and enterprises is different. Enterprises share the education and cultural resources of the school and the universities share the equipment, projects and technical resources of the enterprise.

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