# An exploration on the cultivation and practice mode of digital intelligence financial talents based on modern apprenticeship system

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**Abstract:** With the continuous promotion of digital intelligence in the financial industry, the traditional training mode of financial management professionals has been unable to meet the market's demand for high-quality, practical and innovative digital intelligence financial talents. This paper first analyzes the current situation of financial technology talent training in domestic higher vocational colleges from the perspective of supply and demand, then analyzes some problems existing in the process of digital intelligence financial talent training based on two perspectives of enterprise research and graduate satisfaction survey, and discusses the training and practice model of digital intelligence financial talent based on modern apprenticeship. In order to provide new ideas and references for the financial science and technology education field.

**Key words:** Modern apprenticeship; Suzhi finance; Integration of industry and education; Path study

## Quotes:

Since 2015, the state has promoted the comprehensive integration of core technologies such as big data and artificial intelligence with the financial industry from a macro-strategic level, giving birth to a digital-intelligence financial service industry chain based on new technologies. In 2022, the People's Bank of China issued the Fintech Development Plan (2022-2025), which clearly proposed to promote the cultivation of fintech talents at the national macro level. In 2020, the Ministry of Education and nine other departments jointly issued the Action Plan for Improving the Quality and Training of Vocational Education (2020-2023), which proposes to deepen the integration of vocational education and production, and promote the precise docking of vocational education and industrial talent needs. In 2022, the Vocational Education Law clearly proposes to "promote apprenticeship with Chinese characteristics".

The new era of "digital intelligence and finance" has spawned new jobs and new job skill requirements. As the main position of talent cultivation, colleges and universities should cooperate with industries and enterprises in multiple ways to comprehensively build a high ground for the cultivation of digital intelligence financial talents. This paper studies how to give full play to the leading advantages of policies, attract high-quality enterprise resources, strengthen the integration of industry and education, and explore the training mode of digital intelligence financial talents based on modern apprenticeship, which has very important theoretical and practical significance.

## I. Analysis on the current situation of financial science and technology talents training in higher vocational colleges

1. Current situation of financial science and technology majors

With the rapid development of fintech, the financial industry has a sharp increase in demand for talents who understand both financial business and technology. In 2015, the Ministry of Education added the major of Internet finance to the Ministry's professional catalog, and in 2021, the application of fintech will be included in the Professional Catalog of Vocational Education. At the same time, the national and local governments have successively issued a series of policies to encourage and support the development of the fintech industry, including the establishment of fintech majors and personnel training. The Fintech Development Plan (2022-2025), issued by the central bank, has included fintech talent training into the national key talent training task to meet the industry's demand for talent.

Driven by both market demand and policy support, Chinese universities have opened fintech majors. By June 2024, there are more than 110 undergraduate colleges and universities offering fintech majors in China, accounting for about 29% of the total financial colleges and universities offering fintech majors, among which there are more than 60 public colleges and universities, more than 40 private colleges and more than 100 higher vocational colleges offering fintech applications. From the perspective of the number of graduates, the number of financial students entering the job market every year reaches about 150,000. From the perspective of the total number of schools, it has the following characteristics:

(1) The professional coverage is wide. According to statistics, the proportion of financial science and technology majors in finance and economics undergraduate colleges accounts for 38%, followed by comprehensive colleges and universities with financial science and technology majors accounting for 28%, and science and technology majors accounting for 20%, covering normal, language, ethnic and other types of colleges and universities.

(2) The curriculum is comprehensive and innovative. The curriculum of Fintech majors covers many subject fields such as economics, finance, statistics and computer science. The core courses include Introduction to Financial Technology, Finance, Big Data Finance, etc., as well as science and technology courses such as Data Mining and Artificial Intelligence, which reflects the intersectionality and

comprehensiveness of the curriculum system.

(3) Attach importance to practical teaching. In order to improve students' practical ability and innovation ability, institutions of higher learning offering fintech majors at all levels generally pay attention to practical teaching. Enhance students' understanding of the fintech industry through corporate lectures, internships, and order cooperation, and gain an in-depth understanding of the actual operation and cutting-edge technologies of the fintech industry.

2. The current situation of talent demand in financial institutions

(1) The financial industry has a large demand for the number of fintech employees

China's financial system has entered a stage of high-quality development, led by the development of new quality productivity, in response to the call of the central government to do a good job in science and technology finance, green finance, inclusive finance, pension finance, digital finance "five big articles", in urgent need of high-end financial talent to support, but the number of talent cultivation is obviously insufficient. Take the financial technology industry as an example. According to the Industrial Digital Talent Research and Development Report (2023), from 2021 to the next five years, the total demand for financial technology talents will exceed 1.15 million, and it is estimated that it will take at least 15-20 years to make up for the financial technology talent gap. By the end of March 2024, a total of 121 colleges and universities nationwide have offered undergraduate fintech majors, and more than 100 higher vocational colleges have offered fintech application majors, and the number of talents cultivated is far below the needs of the industry. In the future, will further increase the penetration rate of industrial digital finance, it is estimated that the scale of industrial digital finance will exceed 400 trillion yuan by 2025, and will have an even stronger demand for digital talents.

(2) There is a gap in the quality requirements of employees in the financial industry

With the rapid development in the field of financial science and technology and the promotion of digital transformation, shows a trend of diversified, digital and innovative talents. However, at present, fintech talents are mainly from traditional financial institutions and IT enterprises. Their discipline background is mainly in traditional finance or information technology engineering, and there is a large cross-border inflow of talents. It is very difficult to find compound financial talents who master digital technology or have cross-disciplinary background. From the perspective of the mobility of the talent team in the industry, the talents in the financial technology industry will change their jobs once every two years on average, with a high job-hopping frequency and greater instability of the talent team.

To sum up, whether it is based on the talent development plan of financial institutions or from the perspective of talent training in colleges and universities, it is necessary to break the definition of financial talents and achieve cross-border cooperation.

## II. Research and problem analysis on the training of financial talents with digital intelligence

This research group visited more than 10 financial institutions such as Hangzhou United Bank, Zhexhang Bank and Taiping Life Insurance, and conducted a survey on about 250 graduates majoring in financial technology application (Internet finance) from 2019 to 2023 of our school. 134 samples were effectively collected, and the sample efficiency reached 53.6%. In the process of investigation, we found the following problems:

1. The training goal of digital intelligence financial talents is not clear

The digital intelligent transformation of financial technology has brought great challenges to the operation of traditional financial institutions, and the structural demand for talents has also undergone great changes. On the one hand, traditional financial institutions should cooperate with fintech enterprises to seek technological breakthroughs; On the other hand, they should deeply explore the service value of middle and high-end customers by providing more high-quality and tender financial marketing services. Taking Hangzhou Branch of Zheshang Bank as an example, with the continuous advancement of digital finance, the bank has a great demand for new marketing talents such as hall marketing, big data marketing and live marketing, but such talents are very scarce in the recruitment process. When many colleges and universities set the training goals of digital intelligence financial talents, they are often too broad, lack clear description and positioning, and the training goals are vague. There is a big gap between the talent training goals and the needs of financial institutions.

2.The curriculum system of digital intelligence upgrade is insufficient

Financial institutions believe that the curriculum of financial science and technology application majors is not comprehensive and systematic, and the curriculum system is mainly focused on traditional financial courses. In the curriculum, too much attention is paid to the teaching of theoretical courses and the training of students' practical skills is ignored. On the other hand, the intersectionality and frontier of disciplines are also insufficient. The numerical intelligence subjects such as Artificial Intelligence are not reflected in the curriculum system, and the interdisciplinary courses are insufficient, which makes it difficult to cultivate students' cross-border ability and innovative thinking.

From the survey of graduates in the past five years, we found that 29.1% of graduates believe that the curriculum is very helpful to the actual employment, but 86.57% of students believe that courses should be more closely related to the job, and technical courses should be further increased.

3. Practical teaching is seriously out of line with the digital intelligence scenario of financial institutions

In the enterprise survey, we found that there is a gap between the current practical teaching and the business scenario of the financial industry, and it is difficult for graduates to directly start the real business in financial institutions, and they need to experience an average of 3-6 months of business training, which is difficult to meet the needs of financial institutions for "using" vocational students. On the other hand, in recent years, due to factors such as higher education, students do not pay enough attention to the study of professional knowledge and

skills.

70.9% of the students suggested that schools hire excellent enterprise teachers to participate in practical teaching and introduce financial business and scenes to campus; 58.96% of the students suggested improving practical teaching through school-enterprise co-construction of courses. 48.68 percent of the students suggested transferring practical courses directly to financial institutions to learn front-line financial business and improve business ability and level.

4. The major matching rate of graduates is relatively low

According to the survey data, only 2.92% of graduates are engaged in jobs with high professional relevance, 19.72% are relatively relevant, 40.85% are not very relevant, and 36.62% are not relevant at all. The professional matching rate of graduates is generally low, which reflects the unclear goal of talent training and the low degree of integration between industry and education. School-enterprise cooperation projects are mere formalities, and there is a big gap between talent training and the needs of financial institutions. The proportion of students entering school-enterprise cooperation units, apprentices making single class practice and employment is low. From the situation of students entering single class of apprentices making single class, due to the impact of factors such as upgrading to higher education in the first two years, the student mobility is large, and the retention rate of order class is low.

## III. Construct the training and practice model of digital intelligence financial talents based on modern apprenticeship system

This topic is based on the current situation of talent training in the application of financial technology, based on the preliminary research and research on how to effectively realize the multiple collaboration between the government, enterprises, scientific research and universities, and explore the mode of co-education of digital intelligence financial talents with modern apprenticeship as the link.

1. Strengthen the top-level design and explore the working mechanism of the training of digital intelligence financial talents

Give full play to the four-way linkage mechanism of "government, industry, financial institutions and schools", conduct in-depth research on various financial institutions, jointly explore and develop a feasible plan for the training of digital intelligence financial talents under the apprenticeship system, and start with the development of a single class of apprentices. In view of the three core issues of what kind of employees the bank needs in the next 3-5 years, how to train employees with the bank and how to build a modern apprenticeship model, jointly develop and improve the talent recruitment policy, talent training program, curriculum system and apprenticeship cooperation mechanism to achieve seamless docking between schools and enterprises, and participate in the talent recruitment and training of Hangzhou United Bank. Assist in the formulation of the bank's talent recruitment policy, incentive policy and talent identification policy, and jointly complete the formulation and implementation of the apprenticeship talent training program.

2. To explore the modern apprenticeship model of digital intelligence finance with "four-yuan drive and four-stage progression"

The school and financial institutions jointly formulate the "Modern Apprenticeship Work Measures", clarify the division of responsibilities, and carry out the four-stage progressive modern apprenticeship talent training process.

(1) Professional Initiation Stage (First semester)

Set up an apprenticeship working group composed of the relevant responsible departments of the school, the head of the secondary college and the head of the department of Hangzhou United Bank. In the freshman year, financial institutions will conduct recruitment publicity, help students make career plans, select and recruit students in a two-way way, and sign a tripartite agreement between the college, the bank and the students. To start professional enlightenment for freshmen, and gradually develop the basic financial professional quality.

(2) Professional Co-education stage (Semester 2-4)

The accepted students enter the professional learning stage as "apprentice + bank employee" and begin the professional co-education stage: the college and the bank jointly develop the apprenticeship talent training program, and carry out customized talent training for the order class students; The bank tutors mainly participate in the teaching of relevant professional courses and job skills guidance, highlighting the skills training of the three core positions of bank account manager, wealth manager and service manager, and deepening the apprentices' identification with Hanglian corporate culture through the "Hanglian Culture through train" platform.

(3) Pre-job training stage (the 5th semester)

Before the formal entry of apprentices, the pre-job centralized training will be arranged in a unified way, focusing on the theoretical knowledge of new employees, deepening the professional knowledge of basic banking etiquette, basic credit knowledge, bank product marketing, bank business operation, and supplemented by practical guidance. Each apprentice will be equipped with an experienced master to lead the marketing. Adopting the "1+2" management mode, the college and the bank carry out multiple evaluation and assessment of the students.

(4) Apprenticeship Stage (Semester 5-6)

After the pre-job training and assessment, the apprentice and the master sign the "help contract". Under the guidance of the teacher, the apprentice will make strange visits to the designated target market and customers, learn and gradually improve the marketing skills and risk identification ability. In the "help" stage, the apprentice passed the assessment and officially became an employee of the bank.

3. To build a digital intelligence financial course system of "financial foundation + core technology + job scenario"

Schools and financial institutions should closely combine the current development trend of the fintech industry, digital intelligence transformation and market demand, meet the job needs of financial institutions, and jointly build a digital intelligence financial course

system. Jointly build a three-level digital intelligence financial course system based on basic financial knowledge, supported by underlying core technologies, and applied to financial business scenarios. Based on the training goals of professional talents and the job needs of financial institutions, the three-level digital-intelligence financial course system is reconstructed comprehensively.

4. Build a digital-intelligence financial course resource construction database

Formulate a single-class cooperative course system based on apprentices, clarify the goal of fintech application course resource construction, and plan the structure and focus of course content according to the development trend and talent demand of the fintech industry. Integrate existing teaching results; In combination with the development of the industry and the curriculum construction needs of Hangzhou United Bank, completed the construction of 2-3 provincial-level open online courses such as "Financial Product Marketing Practice" and "Commercial Bank Practice", the number of school-enterprise co-construction courses reached 4-6, the construction of a national open online course, and the preparation of 3-5 new form textbooks such as "Digital Financial Product Marketing". 4-6 loose-leaf textbooks, practical training instruction book on Counter Skills of Commercial Banks, and 2-3 bilingual online open courses have been completed.

5. Build a team of service-oriented modern apprenticeship teachers

The school should integrate the resources of various industries and enterprises, establish a modern apprenticeship teacher ecological alliance, and build a service-oriented modern apprenticeship teacher team with diversified structure, professional combination and outstanding professional ability.

(1) Do a good job in the selection of enterprise tutors. The school and the bank jointly select corporate mentors to ensure that the mentor team has rich practical experience and a high level of skills. Enterprise mentors should be business backbone or team management personnel who have been working in Nanling for more than 5 years, with strong business ability, active work, dedication, able and willing to lead good apprentices, good at spreading, helping and leading.

(2) Try out the "double tutor system". Realize the "1+1" double tutorial system, with school tutors guiding theoretical knowledge and bank tutors guiding banking business. The two sides of the school and the enterprise respectively assign teachers and technical backbone to undertake the teaching work, and guide the students' practical training practice, and adopt the "one-to-one" tutor internship mode. Bank tutors work as part-time teachers in the school, and the school provides diversified training for part-time teachers; In addition to classes, bank tutors also participate in course development, research, practical training and other work; Full-time teachers take students to enterprises to exercise, participate in staff training, technological innovation and other activities.

(3) Establish and improve the incentive mechanism. Establish a multiple evaluation mechanism and assessment incentive mechanism for the tutor team composed of full-time teachers and bank tutors, incorporate the enterprise practice and technical services of teachers into the teacher job appointment and title evaluation system, the work of enterprise tutors into the workload assessment and promotion assessment system, and give recognition and rewards to both full-time teachers and enterprise tutors. Such as professional title evaluation, job promotion, bonus payment and other aspects are given priority.

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