

# *Research on Optimizing the Cultivation of Professional Talents in Financial Technology Applications in the Context of "1+X" System*

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**Abstract:** With the rapid development of information technology in society and the increasing demand for high-level technical and skilled talents from enterprises, the talent training mode of financial technology application majors in vocational undergraduate institutions needs to be developed and updated under the "1+X" system. This paper explores a practical path for vocational undergraduates to cultivate high-level technical skills talents under the background of the "1+X" certificate system through an in-depth analysis of the six current situations of the cultivation of financial technology application professionals in vocational undergraduate institutions. In this paper, we explore a practical path for cultivating mid-to-high-level technical skills talents in the context of the "1+X" certificate system, namely, constructing a book-certificate integrated curriculum system for financial technology application majors, developing mid-to-high-level vocational skills certificate courses and supporting resources that are compatible with undergraduate vocational education, building a cross-border integrated dual-mentor teaching team that meets the requirements of the times, and building a talent training base with in-depth integration between schools and enterprises led by qualification skills standards.

## 1. Research background

### 1.1 Definition of "1+X" certificate

In April 2019, the pilot of the "1+X" certificate system was officially launched nationwide. in which "1" refers to academic certificates, which reflect the quality of talent training in school education; "X" refers to several vocational skills level certificates, which reflect the comprehensive abilities required for vocational activities and personal career development<sup>[1]</sup>, and are credentials of the vocational skills level of graduates and members of society.

## **1.2 Background of the reform of fintech talent training mode in vocational undergraduate institutions from the perspective of "1+X"**

### **1.2.1 Financial technology innovation and development in line with the needs of the national strategy for the development of science and technology finance**

Fintech is based on a series of technological innovations such as big data, cloud computing, artificial intelligence, and blockchain, and is comprehensively applied to six major financial fields, including payment and clearing, lending and financing, wealth management, retail banking, insurance and transaction settlement, and is the mainstream trend of the financial industry in the future. FinTech is in line with the needs of the national science and technology financial development strategy, the country has long deployed the development of FinTech from a strategic level, and in 2019 the country has made a top-level design for FinTech. early 2022, the People's Bank of China issued and implemented the "Financial Technology Development Plan (2022-2025)", clearly proposed to promote China's FinTech from plan proposes to promote China's financial technology from "establishing pillars and beams" to a new stage of "building up momentum", and strive to achieve a leap forward in overall level and core competitiveness by 2025. According to the "FinTech Talent Demand and Development Report (2021)", according to the statistical analysis of the recruitment demand released by large state-owned banks, joint-stock banks, agricultural and commercial banks, insurance companies, securities companies, futures, venture capital companies, small loan companies, guarantee companies, factoring companies and fintech companies, it is expected that there will be about 230,000 talents each year in the next five years, and the total demand for talents is over 1.15 million. According to the research, the core competencies that fintech talents should master are ranked: "data analysis ability" is the highest ranking, reflecting that the digital transformation of financial institutions is in full swing.

### **1.2.2 Implications of the publication of the National Vocational Education Reform Implementation Programme for the reform and innovation of talent training models**

In February 2019, the Ministry of Education released the red-headed document "National Vocational Education Reform Implementation Programme" (the Programme), which launched the implementation of the reform of high-level vocational colleges and professional construction with Chinese characteristics and the launch of 20 articles of vocational education, providing a good market environment for the development of vocational college and undergraduate education, as well as a policy basis for the implementation of the "1+X" certificate system. It also provides a policy basis for the implementation of the "1+X" certificate system. Specifically, the announcement of this programme has the following implications for the reform and innovation of the talent training model:

Firstly, it promotes the integration of school-enterprise cooperation with industry education.

The Programme sets out a methodology for reforming the talent training model, namely the "1+x" system reform and the integration of industry and education. At the same time, the Programme proposes to form a "community of destiny between vocational colleges and industry enterprises"<sup>[2]</sup>. The construction of a community of destiny between vocational colleges and industry enterprises requires the joint efforts of vocational colleges and industrial enterprises, and the organic integration of the two will certainly generate great synergy. Based on the "1+X" certificate system, the two sides cooperate deeply to innovate the training mode of composite talents for vocational undergraduate financial technology application majors in the context of industry-education integration. In other words, through the cultivation of 1+X vocational skills, the financial technology application major can effectively connect with financial technology jobs, and

adjust the professional curriculum and teaching content according to the job requirements to ensure the quality of talent training.

Secondly, it has promoted the pace of construction of the curriculum system and teaching materials system for vocational education.

The Programme proposes to speed up the pace of construction of curriculum and teaching materials systems, "select and recognize a large number of online high-quality vocational education courses, and build a large number of national planning teaching materials developed in cooperation between schools and enterprises"<sup>[2]</sup>. Here, to improve the social practicality and relevance of teaching materials, what the Programme proposes is that teaching materials should be developed in cooperation between schools and enterprises, which provides new clues for the development of professional teaching materials for vocational education.

Thirdly, it has promoted the level of VET professional teachers.

The development of VET professions cannot be achieved without a high level of teaching staff. The Programme proposes to build a "dual-teacher" teaching force. To this end, the Programme proposes the implementation of a teacher quality improvement plan, the implementation of a teacher rotation system, and the regular sending of teachers to study abroad, "at least one month a year in enterprises or practical training bases, and the implementation of a five-year cycle of teacher rotation system"<sup>[2]</sup>. In addition, the Programme also proposes that vocational colleges can appoint teachers on their own, to achieve two-way interchange and two-way mobility between highly skilled talents from enterprises and teachers from vocational colleges. All these can effectively promote the construction of professional teachers in vocational education.

Finally, promote the establishment of high-level vocational education professional training bases and scientific quality evaluation mechanisms.

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The Programme proposes to "build several high-level vocational education training bases with shared resources, integrating practical teaching, social training, real production of enterprises and social and technical services"<sup>[2]</sup>, which will vigorously promote the establishment of high-level vocational education professional training bases. At the same time, the development of VET majors cannot be separated from the establishment of a scientific quality evaluation mechanism, which can assess the development status of VET majors and thus provide a basis for rectification and improvement. "Improve the quality evaluation mechanism with the joint participation of the government, industries, enterprises, and vocational colleges, actively support third-party institutions to carry out evaluations, and take the results of the evaluations as an important basis for policy support, performance assessment and the results of the assessment will be used as an important basis for policy support, performance assessment, and recognition and reward".

## **2. Analysis of the current situation of fintech application talents training in vocational undergraduate institutions**

The major of financial technology application is an emerging major in the vocational undergraduate category, and the country only has such a vocational undergraduate major name in 2021. The field of financial technology is an emerging field, and with the implementation of the "1+X" certificate system, there are still some problems in the cultivation mode of vocational undergraduate financial technology application talents, as follows:

## **2.1 The goal, mode, and specification of training talents in financial technology applications need to be innovated**

Financial technology is a cross-composite discipline, which requires the cultivation of composite talents who understand both finance and new technology. As a vocational undergraduate institution, the fintech application major takes finance + technology as its talent cultivation orientation, and this orientation is very clear. Due to the wide distribution of fintech career positions, mainly in the direction of product, operation, technology, marketing, business and management, including product managers, operation personnel, engineering technicians, platform operation and maintenance personnel, product sales, project managers, investment and financing business, risk management business, analysts, digital RMB management posts and other occupations. The wide range of employment involved has caused problems in the process of developing talent training programmes, and most institutions' talent training programmes can now be involved, instead of appearing to have no characteristics. Only financial big data-related competencies are common to fintech talents, while other internet and new technology conditions product design competencies are unfolded with financial big data competencies. As a vocational undergraduate institution, students should at least master these generic competencies. Therefore, with the implementation of the "1+X" certificate system, the objectives, modes and specifications for the training of talents in FinTech applications have also been innovated, i.e. with financial big data competencies as the core, various other talents training competencies have been spread out.

## **2.2 The curriculum and teaching content of the fintech application majors lag behind the needs of enterprises**

Although the talent training program of the fintech application majors in vocational undergraduate colleges and universities is based on the talent training needs of enterprises and jointly formulated by enterprise experts, however, due to the rapid development of the fintech industry, not only China but also the whole world is developing fintech. The financial policies of various countries gradually cover segments such as digital currency, mobile payment and crypto assets. Following closely on the heels of this is the fact that fintech regulatory innovation has also gained international attention, and in recent years, China's fintech regulatory-related policies have been updated annually. The goal of the "1+X" certificate system is to develop technical skills and help students achieve better development. In the "1+X" certificate system, 1 stand for an academic certificate and X stands for several vocational skills certificates, with the X certificate being open to third-party social training and evaluation organizations and recognised by a wide range of industries and enterprises, reflecting that students have N core skills<sup>[3]</sup>. However, some vocational undergraduate institutions are upgraded from higher vocational institutions, and the construction of their financial technology application professional curriculum lags behind the ever-changing industry development, especially disconnected from the N job core skill levels, and there are problems of varying degrees in various aspects such as curriculum objectives and content settings. Even though the curriculum system of the current vocational undergraduate financial technology application majors is built with professional competence as the core, the cultivation of professional competence is only the cultivation of a certain aspect of competence, and the cultivation of professional competence is too single, which does not meet the requirements for the cultivation of composite talents.

In addition, in terms of professional curriculum design, some vocational undergraduate colleges and universities are more inclined to modularity in the design of professional courses in financial technology applications, based on projects and tasks, while the professional skills standards for financial technology applications are not translated into the curriculum, and the teaching contents

are not quite in line with the skills standards. At the same time, the financial industry is developing rapidly, and with the application of more and more science and technology, new knowledge, concepts, and skills such as artificial intelligence, blockchain, cloud computing and big data have emerged in the financial technology application profession, but these have not been integrated into the construction of the curriculum system in time, which is not conducive to the cultivation of composite talents and deviates from the "1+X" certificate system.

### **2.3 Insufficient professional knowledge enhancement of the faculty**

With the rapid development of the financial industry, the professional knowledge enhancement of the faculty has also emerged as a problem. This is mainly reflected in, firstly, the lack of professional orientation and academic background of the teachers. As the application scenario of financial technology requires a large number of emerging technologies, the existing finance teachers in colleges and universities are more teachers with backgrounds in economics, accounting and other disciplines, lacking engineering backgrounds, especially those with practical experience in innovation and entrepreneurship, and such a situation exists in all colleges and universities. There is an urgent need to make up for their shortage through various ways and means. Secondly, there is a lack of practical teaching faculty, especially those with experience in various fields of the financial technology industry, which is detrimental to the development of practical teaching in the cultivation of financial technology application talents. Thirdly, the social service capability of FinTech is weak. At present, social services mostly follow the previous forms of social services of finance majors, mainly professional teachers carry out corporate training services, while there are very few services in financial technology decision-making and consultation, policy research, etc., and corresponding social service institutions have not been established, so the scope of services is narrow. Fourthly, the investment in faculty is insufficient, and there is a lack of incentives and guarantee mechanisms to attract industry experts in financial big data, blockchain finance and smart investment advice. In the existing teaching system, teaching activities mainly rely on the existing faculty, which makes it more difficult to mobilize students' enthusiasm for learning, and the level of faculty limits the leapfrog development of teaching standards.

### **2.4 Insufficient depth of school-enterprise cooperation**

The "1+X" certificate system has given a new goal to higher vocational education, which is manifested as diversified schooling, integration and openness, and innovation-based<sup>[3]</sup>. In other words, the "1+X" certificate system needs the cooperation between schools and enterprises to carry out, and the 9th to 12th articles of "20 articles of vocational education" are "to promote the integration of industry and education, school and enterprise" dual element The "20 Articles of Vocational Education", articles 9 to 12, are to "promote the integration of industry and education, school and enterprise" dual education. However, today, school-enterprise cooperation is still mostly a formality<sup>[4]</sup>. From the enterprise side, most financial enterprises lack strategic thinking and practical experience in school-enterprise cooperation, so they are in a passive and passive state in school-enterprise cooperation, so that school-enterprise cooperation in the guise of industry colleges and sell software, which is inseparable from the short-term economic benefits of enterprises. And education is not a big success overnight, but a slow inculcation, the process of gradual internalization, which is a deviation from the purpose of school-enterprise cooperation. The two sides of the school enterprise or two skins, away from interactive intervention, mutual integration, in-depth cooperation, and the formation of a community of interests between schools and enterprises there is a large gap. As a matter of fact, financial technology talents require a high level

of professionalism, and higher education institutions rely solely on the inculcation of theoretical knowledge, which is far from meeting the quality standards of financial talents training.

## **2.5 The overall quality of students does not meet the needs of enterprises**

Through the 1+X examination, students may not be able to meet the needs of companies even though they have passed the 1+X certificate at primary, intermediate or advanced levels. For example, under the "1+X" certificate system, students of financial technology applications in vocational undergraduate institutions study to determine the level of vocational qualifications, but after students have obtained the corresponding vocational qualification level certificate, the school does not arrange for follow-up education, even if students have obtained the certificate, but the practical skills are still not up to the requirements of enterprises. Even if students have obtained the certificate, their practical skills still cannot meet the requirements of enterprises, so they cannot adapt to the workplace quickly after entering the society, which affects their competitiveness in employment<sup>[5]</sup>. At present, financial institutions are in urgent need of cross-border composite talents who master database principles, data analysis and other technologies, but also know finance, management and other financial knowledge, while the intersectional and interdisciplinary training environment of university talent training is lacking. On the other hand, there is no clear definition of the objectives of 1+X junior, intermediate and senior level talents training, and the standards of talents training are also vague, the work tasks and vocational skills requirements of each job group are not clear, and there is a big deviation between the trained talents and the knowledge, ability and quality requirements of actual employers, which makes it difficult to meet the vocational ability requirements of employers.

## **2.6 Disconnect between practical teaching and actual job requirements**

It is manifested in three points. First, the content of practical teaching in financial technology lags behind. Under the background of financial technology, the financial industry is changing rapidly, and the practical teaching content is easy to lag behind the development trend of the financial industry. This will lead to the training of graduates who lack the financial skills required by the industry and enterprises, and the talents cultivated will hardly meet the needs of society. Secondly, the teachers' concept of financial practice teaching needs to be improved. The traditional concept of "teacher-centered, textbook-centred and classroom-centered" is too rigid and theoretical<sup>[6]</sup>. In the process of learning the theory of books, practical experience in big data finance, blockchain finance and digital currency should be imposed at the same time. This will allow students to truly appreciate the book theory and real-world core technologies of FinTech and promote their independent personality development.

## **3. Optimization of talent cultivation mode of financial technology application majors under the background of "1+X" certificate system**

In recent years, through the practice of 1+X financial big data and 1+X intelligent investment, our financial technology application majors have explored a practical path to cultivate middle and high-level technical skills talents under the background of the "1+X" certificate system.

### **3.1 Constructing a book-certificate integration curriculum system for financial technology application majors**

The curriculum system is mainly composed of teaching concepts, training objectives, course

structure, course content, teaching process, teaching mode and evaluation methods, etc. The purpose of book-certificate integration and course-certificate integration is to integrate the technical skills and professional qualities required by the 1+X intermediate and senior vocational skills certificate in finance into various elements of the curriculum system. Vocational undergraduate institutions should work together with the 1+X certificate training and evaluation organizations to research the main work areas, jobs and job competencies required of mid- and high-end technical skills personnel in industrial enterprises, study the elements of vocational competencies and qualities and the logic of their formation, and sort out the correspondence between the standards of the Intermediate and Advanced Vocational Skills Certificate and the teaching objectives of the curriculum. In addition, the curriculum is structured according to typical work areas and work tasks, and the curriculum system is designed in an integrated manner.

Specifically, the FinTech application major should focus on cultivating the operational capabilities of new technologies such as big data, blockchain, cloud computing and artificial intelligence in its curriculum, and develop corresponding curriculum systems for blockchain finance, digital RMB, credit risk control, customer profiling, credit assessment, blockchain supply chain finance, risk evaluation and smart finance. According to the characteristics and actual business of the financial industry, the course can be divided into two parts: professional basic knowledge and professional operational ability based on determining the professional quality requirements of financial industry job holders. The basic part needs to highlight the mastery of the basic knowledge of financial technology, and the operational part needs to highlight the skills training required for working in the financial industry. As financial big data is the core skill required by the financial technology application majors, the course system is set up with financial big data as the core competency, with the professional basic knowledge corresponding to the "1" part of 1+X and the operational part corresponding to the "X" part of 1+X. The course will be revised according to the requirements of the industry. The course system will be revised, optimized and improved according to the requirements of the industry development, to achieve dynamic adjustment and cultivate composite high-quality talents with both financial expertise and new technology thinking.

### **3.2 Develop intermediate and advanced vocational skills certificate courses and supporting resources that are compatible with undergraduate vocational education**

The content of the Intermediate and Advanced Vocational Skills Certificate courses is aligned with the professional teaching standards and vocational skills level standards, focusing on mid-to-high-end industry and job technical skills, requiring learners to apply the technical skills acquired in the preceding professional courses in typical work situations, solve practical technical problems in industrial enterprises and creatively complete new types of work projects, to meet the knowledge, ability and quality requirements of mid-to-high-end technical skills positions<sup>[7]</sup>.

The 1+X financial certificates include the Certificate in Financial Intelligent Investment, the Certificate in Digital Marketing of Financial Products, the Certificate in Financial Big Data Processing, the Certificate in Financial Data Modelling Applications, and so on, all of which can be found in the curriculum of the training programme of the FinTech application. By analyzing the vocational skills level standards of these "1+X" certificates, the relationship between the skills requirements and the leading courses is listed; then course modules, learning projects and learning tasks and evaluation indicators are designed; at the same time, loose-leaf certificate training materials are built, and the "teaching, learning, doing and evaluating" integrated learning task list is used as the basis for the curriculum<sup>[7]</sup>. "Finally, supporting teaching resources are developed, including web-based resources to support intermediate and advanced technical skills for learners to study, check and practice.

### 3.3 Create a cross-border and integrated dual-mentor teaching team that meets the requirements of the times

In the context of the "1+X" certificate, it is necessary to have a teaching team that truly understands the connotation of the "1+X" certificate system, grasps the vocational skill level standards, masters the high-end technical skills of the industry, and can design learning tasks and implement project-based teaching in accordance with the latest trends of the profession. A "dual-teacher" teaching team that combines the latest trends in the profession to design learning tasks and implement project-based teaching. Financial technology application majors in vocational undergraduate institutions can implement a school-enterprise dual-teacher system, employing senior experts from training and evaluation organizations or leading financial cooperation enterprises as professional enterprise leaders; selecting key teachers within the school and trainers from training and evaluation organizations or experts from financial technology enterprises to form a cross-border integrated dual-teacher teaching team, and through the "Financial Technology Thinking Skills Enhancement "Through a series of capacity enhancement projects such as "Financial Technology Business Practice Enhancement", the professional capacity and business level of teachers will be strengthened to meet the needs of cross-border integrated teachers for the construction of financial technology application majors and talent training.

### 3.4 Building a talent training base with in-depth integration between schools and enterprises led by qualification skill standards

Skill standards are comprehensive level regulations for theoretical knowledge and skill requirements of practitioners according to the content of professional activities. Leading students to learn practical training with qualification skill standards will improve the relevance and enthusiasm of students' practical training. Therefore, vocational undergraduate colleges and universities should build an integrated platform for the deep integration of industry and education that integrates the functions of talent training, certificate training, technical services and scientific research, and vocational experience by attracting enterprises into schools and running schools in enterprises, and applying information technology to build a talent training base for the deep integration of schools and enterprises with online internship space and intelligent practical training, to realise three learning scenarios: on-campus, off-campus and online in real-time Connection.

Specifically, we will strengthen the cooperation between schools and enterprises, establish a professional fintech talent training base, take the needs of emerging fintech jobs as the guide, and through joint school-enterprise collaborative education, continuously strengthen the construction of practice and internship bases and targeted order-based training, to cultivate more distinctive and competitive fintech talents and achieve a win-win situation for both schools and enterprises. We have set up an open and flexible teaching and learning mechanism, cooperated with enterprises in various aspects of teaching and learning, combined school education with practical work in the front line, and built a collaborative innovation platform for financial technology talents. Through in-depth cooperation between industry, universities and research institutes, we will strengthen technical exchanges and cooperation, achieve resource sharing and co-creation, improve the quality and level of training of complex financial technology talents, and jointly cultivate financial technology-oriented innovative talents.

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