

# The Reform of Talent Training Mode of Financial Engineering Specialty under the Background of Big Data

Meixiang Hong

School of Business, Heze University, Heze, 274015, China (phone: +86 18953028118)

E-mail: mumeiheyue[at]163.com

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**Abstract:** *In the context of big data, great changes will take place in the financial format, financial pattern and even the whole financial ecology, which will lead to changes in the training mode of financial engineering professionals. Big data puts forward new requirements for talent training mode and teacher literacy, and provides new opportunities for education and teaching reform. This paper puts forward the reform scheme of talent training mode of financial engineering specialty under the background of big data from six aspects: talent training objectives, talent training standards, curriculum system, teaching mode, faculty construction and school enterprise cooperation. There are three aspects the salient features of the first mock exam: interdisciplinary characteristics, the application of modular courses, pay more attention to the combination of theory and practice.*

**Keywords:** Big data, financial engineering specialty, talent training mode

## 1. Introduction

At present, with the advent of the big data era, the state has incorporated the big data industry into strategic emerging industries and issued a series of policies and measures to promote the development of the big data industry. The financial system and capital market are important areas where big data plays a role. From the perspective of big data, great changes will take place in the financial format, financial pattern and even the whole financial ecology. In the era of big data, the training of talents majoring in financial engineering is facing completely different challenges from the past. How to cultivate compound talents who are familiar with financial business and master big data technology is a subject we urgently need to study.

Talent training mode is the core factor affecting the quality of talent training in Colleges and universities. However, the current talent training mode can not well meet the needs of social economy and student development. There are some problems, such as the disconnection between talent training and social needs, the lack of obvious professional characteristics, the narrow thinking of training mode, the outdated teaching mode and methods and so on. For the financial major, it has a long way to go to connect with the society, cultivate innovative professionals and meet the needs of the development of society and the times. Now computer technology is advancing by leaps and bounds, and the emergence of big data relying on computer technology has changed everyone's life. There is no doubt that the era of big data has come. In the era of big data, people get information faster, and people can use a variety of ways to get data information. The era of big data also brings some challenges to financial engineering. In the process of education and teaching, how to face the big data background, do a good job in teaching reform, seize the opportunities in the new era, cultivate innovative talents, and make full use of big data to identify more information is the problem that

colleges and universities should solve.

## 2. New Requirements of Big Data on the Training of Financial Engineering Specialty

Big data brings new opportunities and challenges to higher education: on the one hand, big data provides new opportunities for higher education research; On the other hand, big data also challenges the talent training of colleges and universities.

### A) New Requirements of Big Data for Talent Training

Big data promotes the continuous emergence of new financial formats such as mobile finance and Internet finance, and traditional finance is rapidly moving towards information finance. How to actively respond to the opportunities and challenges brought by information finance in the era of big data, keep pace with the times and face the future to promote financial education and financial talent training is an important topic of current financial education. The training of financial talents is about to face not only the change of concept, but also the change of systematic paradigm. The talent training mode of financial engineering specialty should jump out of the traditional pattern of increasing and decreasing courses, and carry out an overall paradigm transformation from the aspects of training objectives, training standards, training process and training evaluation, so as to promote the innovation of talent training mode of financial engineering specialty. On the one hand, the financial industry is developing rapidly, and there is a shortage of high-end financial talents represented by financial engineering; On the other hand, big data will bring about the reconstruction of the financial system, the reform of the capital market and the development of information finance, so that the professional background and technical reserves of existing financial talents can not better meet the current needs. It is urgent to cultivate a large number of

compound talents with multiple knowledge and skills such as financial business, information technology and management. Especially in the field of big data, it requires talents to have strong business understanding ability, data asset management ability, data processing ability and data mining ability. To some extent, the learning and application of big data technology is also a new requirement for the training of financial engineering professionals.

### **B) Big Data Provides New Opportunities for Education and Teaching Reform**

Big data is a knowledge system, which has changed the research object of knowledge and social theory in many fields. At the same time, it also has the potential to change the management decision theory (Boyd D, Crawford K., 2012). Data mining is an important tool for predicting and classifying data collected from customers. Nowadays, many industries use data mining to make decisions and formulate marketing strategies for target segments to achieve their goals. But many universities ignore the application of data mining technology. Colleges and universities can use big data analysis to change the existing administrative, teaching, learning and academic work processes, which will help to improve the practical results of policies.

Big data can provide colleges and universities with the prediction tools they need to improve individual students' learning outcomes and ensure that academic courses meet high quality standards. Colleges and universities can customize modules, assignments, feedback and learning trees in the curriculum to meet the needs of students, so as to promote students to learn better.

### **C) Big Data Poses New Challenges to Teachers' Literacy**

In the era of big data, teachers should further innovate teaching concepts and teaching models, reform talent training programs, constantly improve themselves and keep up with the pace of the times. However, because big data is relatively new, many teachers do not understand big data and are not aware of the potential crisis (Hongtao C, Dandan Z., 2018). In fact, the professional development of teachers in the era of big data is facing great challenges.

First, the challenges brought by the reform of talent training mode. In the era of big data, students are no longer limited to acquiring knowledge through classrooms and teaching materials. Teachers are no longer the only source of knowledge. Learning problems can be solved through the network, and students can truly obtain personalized learning. In order to adapt to this change, teachers should understand each student's interests, hobbies and concerns from a large amount of data, and provide personalized learning solutions according to the situation of students. Teachers should explore the potential of data education ideas and laws, and pursue the flexibility and diversity of talent training. Without the knowledge of big data, we cannot achieve the talent training goal in the era of big data.

Second, the challenges brought by education and teaching reform. Big data provides opportunities for education and teaching reform, but the implementation of big data analysis technology in Colleges and universities also faces many challenges. Some of these challenges include making users

accept big data as a channel for adopting new processes and change management. Collecting, storing and developing algorithms for mining data will also bring huge costs, which is often time-consuming and complex. In addition, bringing together management data, classroom data and online data may pose additional challenges (Daniel B K, butson r J., 2013). The challenge of data integration is particularly prominent, especially when data appears in structured and unstructured formats and needs to be integrated from different sources, most of which are stored in systems managed by different departments. Data cleansing during structured and unstructured data integration may result in data loss. There are also challenges to the quality of data collected and reported. The lack of standardized measures and indicators makes it difficult to compare data, because the quality of information generated by big data completely depends on the quality of data collected and the robustness of the measures or indicators used (Daniel B., 2015).

## **3. Main Contents of Talent Training Mode Reform of Financial Engineering Specialty**

Higher education should adapt to the development of the times, change ideas, deepen reform, and build a talent training model in line with the needs of economic and social development. According to the connotation of talent training mode, the extension of talent training mode should be the whole process of talent training. Under the guidance of certain educational philosophy and ideology, educators should first determine the talent training objectives according to the needs of economic and social development, and determine the talent specifications and quality structure according to the talent training objectives. On this basis, they should build a talent training scheme, determine the teaching content and curriculum system of talent training, and then adopt scientific teaching methods and means. Finally, a talent training evaluation system is established.

### **A) Adjustment Principles of Talent Training Objectives**

When colleges and universities determine what kind of people to cultivate, they are mainly affected by three factors, namely, students' own actual needs, social needs and educators' wishes (SAI Q., 2017). Traditionally, the goal is mainly determined by the wishes of educators, paying attention to the knowledge base, discipline system and professional system, and paying little attention to the actual and social needs of students' development. With the realization of the popularization of higher education, the talents cultivated by colleges and universities gradually move towards the market, and the needs of the society are paid more and more attention. However, due to the influence of traditional educational ideas, the actual needs of students themselves are not paid attention to. It can be seen that the traditional educational thought is the biggest obstacle to establish the people-oriented educational concept and an important restrictive factor in the reform of undergraduate talent training mode in China.

The basic function of education is to cultivate talents, and educators must cultivate a sound person and devote themselves to cultivating a natural person's basic knowledge, ability and morality no matter what training method they adopt. The fundamental purpose of the reform of talent

training mode is to improve the quality of talent training. It can be seen that no matter what reform measures are taken, they must be conducive to the growth of students. Under the new situation, we should carry out the reform of talent training mode under the guidance of new talent concept and new quality concept. In February 2019, the CPC Central Committee and the State Council issued China's educational modernization 2035, which clearly proposed to cultivate socialist builders and successors with all-round development of morality, intelligence, physique, beauty and labor, pay more attention to all-round development and face everyone. The adjustment of training objectives of financial engineering professionals should also be based on this principle.

### B) Determination of Talent Training Standards

Knowledge, ability and quality are the three basic aspects of determining talent training standards. Knowledge is the basis of cultivating talents, ability is the goal of cultivating talents, and quality is the guarantee of cultivating talents (Chen W., 2017).

Knowledge is the carrier of ability and quality, mainly including basic knowledge, professional knowledge and adjacent discipline knowledge related to professional knowledge. In the context of big data, undergraduates majoring in financial engineering should have basic knowledge of economics, finance, accounting and other disciplines; Professional knowledge of financial engineering; Knowledge of mathematics, statistics and computer; Have other professional related knowledge, etc.

Ability is the skill to complete certain activities. Ability is formed through certain practice on the basis of mastering certain knowledge. Ability mainly includes knowledge absorption ability, learning ability, knowledge application ability and innovation ability. In the context of big data, undergraduates majoring in financial engineering should have proficient English application ability; Have the ability of quantitative analysis and scientific research of financial market; Have the ability of financial business judgment and decision-making; Have the ability of communication, coordination, management, innovation and entrepreneurship; Have the ability of lifelong learning, etc.

Quality aims at relatively stable physical and mental development, mainly including extensive knowledge, unique personality characteristics, stable psychology, firm and brave judgment, etc. In the context of big data, undergraduates majoring in financial engineering should have high political quality, strong national consciousness, social responsibility consciousness and national revitalization consciousness; Have a wide range of humanistic and scientific literacy, and develop words and deeds respected by the society; Have a certain sense of professional ethics; Have strong physique, positive attitude, etc.

### C) Changes in Curriculum System

Curriculum system is the basic framework of talent training plan, and teaching content is the main carrier of talent training. In the context of big data, financial engineering professionals should be positioned as applied and comprehensive talents with interdisciplinary backgrounds such as economics, finance, computer and mathematics,

which determines that the curriculum system must be adjusted to a large extent. Moreover, interdisciplinary is not a hodgepodge. In the context of big data, the talent training of financial engineering does not mean that the more subjects involved, the better the effect.

In the context of big data, the training mode of financial engineering professionals should focus on cultivating application-oriented talents with interdisciplinary background to meet the market demand. In this way, there needs to be corresponding modular design in curriculum design. Generally speaking, the curriculum system of financial engineering is composed of three platform modules: general education curriculum, professional education curriculum and centralized practical teaching. The impact of big data is mainly reflected in professional education courses and centralized practical teaching. On the basis of strengthening higher mathematics teaching, professional teaching courses should add courses such as big data finance, data analysis, data mining and information system operation. The centralized practical teaching link should strengthen the application training of big data technology in the comprehensive practical training of financial engineering. In short, modular courses should be based on economics, finance, mathematics and computer courses, flexibly set up courses in combination with different application fields, and combine theory and practice as much as possible.

### D) Reform of Teaching Mode

In the context of big data, on the one hand, the training of financial engineering professionals should pay attention to the teaching of financial theoretical knowledge and cultivate excellent talents with solid theoretical foundation; On the other hand, we should emphasize the cultivation of application ability and strengthen practical teaching through various means; Cultivate students' ability to deal with complex financial problems. The traditional teaching mode can not meet this requirement and must be changed. First, use scientific research projects to teach. Through the discussion of case study and teaching mode, let students contact more practical problems in a professional field and cultivate students' ability to solve problems, so that graduates can quickly adapt to work and learn to use. Second, adopt multi tutorial system. In the context of big data, the new training mode of financial engineering professionals involves interdisciplinary and multi-capability integration. It is very difficult for a single tutor to undertake all the guidance work. The joint training mode based on multi tutor system can make full use of its advantages and avoid its weaknesses. Teachers complement each other and can provide high-quality guidance to students from both theoretical and practical aspects. Third, implement student-centered teaching organization forms and teaching methods to enhance students' learning initiative; Cultivate students' scientific spirit and scientific literacy; Promote students to learn big data knowledge through interactive teaching between application-oriented teachers and students. Fourth, guide teachers to improve teaching contents and methods according to the actual needs of students' growth and development. By strengthening the evaluation of the teaching process, teachers can promote strict teaching and strengthen the management of the teaching process. Formulate incentive policies to encourage teachers to

increase teaching investment. Fifth, adopt creative teaching method to improve students' innovative ability. Teachers should follow the general law of creation, guide students to carry out innovative thinking, give full play to students' autonomous learning ability, let students learn and absorb scientific knowledge, and explore unknown problems in the teaching process.

#### **4. Conclusion**

With the development of economy and the innovation of computer network technology, big data has been widely used in various fields. The traditional training mode of financial engineering talents is too narrow, the curriculum is unreasonable, the theory is divorced from practice, and can not meet the market demand. In the context of big data, we need to explore a new training mode for financial engineering professionals. The first mock exam is marked by three interdisciplinary characteristics: economics, mathematics and computer science. Second, the application of modular curriculum, highlighting comprehensiveness and applicability; Third, pay more attention to the combination of theory and practice.

The reform of talent training mode is the core content of deepening the reform of education system, the inevitable choice for the connotation development of higher education, and the key to improve the quality of higher education in China. Only by grasping this key point can the quality of talent training be continuously improved.

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