

FinTech Talents Education in China: The Perspective of Financial Ethics

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Abstract: Cultivating FinTech talent is an essential aspect of developing a new liberal arts major in finance and a crucial guarantee for responding to the latest changes in China's economy and finance. However, the ethical conflicts arising from the development of FinTech are increasing daily, posing new challenges for the education of FinTech talent. Firstly, this study analyzes the new causes of ethical anomie resulting from the development of FinTech. Secondly, it discusses the importance of financial ethics from a historical perspective and puts forward new ethical requirements for FinTech talent. Finally, this study summarizes new ideas for FinTech education and introduces a practical case study from the Beijing University of Technology.

Keywords: Financial ethics; FinTech; Talent cultivation

1. Introduction

Significant changes have occurred in China's financial market since the beginning of the reform and opening up. New economic forms, lifestyles, operating models, and thoughts and cultures, driven by new technologies such as big data, artificial intelligence, and cloud computing, have brought new challenges to the finance major in China. In particular, the collision and interweaving of new ideas, cultures, and viewpoints make it urgent to strengthen the guidance of thoughts and behaviours in training FinTech (financial technology) talents to cope with the increasingly complex financial market and social problems. As a technology-driven financial innovation, FinTech is the superposition and integration of disruptive innovative technologies and traditional financial business scenarios, mainly including big data finance, artificial intelligence finance, and blockchain finance ^[1]. It makes FinTech an essential development direction for constructing a finance major. Strengthening the training of FinTech talents is conducive to promoting cross-integration and cross-disciplinary integration of finance with other disciplines, adapting the training concept and teaching content of financial talents to the new era, and improving the ability of students to cope with new changes and solve practical economic and financial problems.

However, while FinTech is promoting the in-depth development of the financial industry, the ethical conflicts accompanying it are also increasing. Frequent disturbances in the development of FinTech, such as "big data kill the ripe," "blockchain money laundering," and "highly leveraged lending," reflect the lack of ethical quality of some FinTech practitioners. Therefore, the construction of humanistic ethics regulation is increasingly important, and financial ethics education under the impact of modern innovative technology needs to be strengthened ^[2]. Colleges and universities should fully play the educational function of financial ethics and cultivate FinTech talents with ethics, financial theory, and technical ability. This study includes analyzing the new causes of ethical anomie caused by the development of FinTech, discussing the importance of financial ethics from a historical perspective, putting forward new ethical requirements for FinTech talents, summarizing new ideas for the education of FinTech talents, and introducing a practical case study from Beijing University of Technology.

2. New causes of ethical anomie caused by the development of FinTech

FinTech is a financial innovation that integrates the financial industry and technology; its essence still belongs to finance. However, some financial scientists argue that finance is an objective science that relies only on visible facts and does not involve ethical value judgments. With the deep integration of FinTech into commercial society and public life, many FinTech practitioners rely on big data technology

to collect customer privacy data. More significantly, some FinTech companies use artificial intelligence algorithms to buy low and sell high in financial markets, posing a greater risk for ordinary investors. Based on the financial system's nonlinear, dynamic, and complex characteristics^[3], the development of FinTech cannot simply regard finance as an objective science with considerable facts without considering the ethical value judgments behind it. Therefore, from the perspective of the three core relationships of financial ethics (trust and agency, self-discipline and heteronomy, and rights and obligations), the new causes of ethical anomie in the development of FinTech are reflected in the following aspects:

2.1. Product complexity increases information asymmetry

Financial and ethical problems that arise in the principal-agent relationship stem from the fact that the principal cannot effectively supervise the agent's behaviour, which is essentially due to information asymmetry between the two^[4]. FinTech uses new technologies such as big data, artificial intelligence, and blockchain to create complex FinTech products, further increasing information asymmetry due to their sophisticated technical principles. However, ordinary clients are only attracted by the high returns of these products, making it difficult for them to understand the moral hazards hidden in them. Furthermore, FinTech products are mainly sold through the Internet, which means that many agents may conceal accurate information about the products to enhance their information advantages, putting clients at a disadvantage^[5]. As a result, clients need help to fully understand and recognize the complexity of the products, which in turn increases information asymmetry. For example, virtual currencies based on blockchain technology attract investors by promoting their sophisticated distributed technology and infinite future value-added space. However, this complexity also increases information asymmetry, and when some agents go bankrupt or lose contact, the principal suffers losses.

2.2. The lag of regulation reduces the self-discipline standards of practitioners

Self-discipline and heteronomy are core relationships in financial ethics. "Heteronomy" refers to using laws, regulations, rules, and other complex and binding means to restrict behaviour, while the construction of ethics and morals relies on self-discipline. However, when faced with the temptation of financial interests, it is necessary to achieve self-discipline through heteronomy, which requires ensuring the realization of self-discipline through compulsion in the form of laws and regulations^[6]. FinTech has opened up new avenues for the development of the financial industry. However, excessive innovation in FinTech can increase the difficulty of financial supervision, and a lack of transparent laws and regulations can fail to restrain FinTech behaviours, resulting in regulatory lag. The lag in FinTech regulation can cause insufficient heteronomy, leading some practitioners or senior management to lower their self-discipline standards when faced with the temptation of money. For example, some FinTech company executives used FinTech lending platforms to create Ponzi schemes, sacrificing the public interest for personal gain and lowering their professional ethics standards.

2.3. Monopoly profit-driven weakening of corporate social responsibility

Rights and obligations are equal, whether for individuals or enterprises. There is no obligation without rights and no right without obligations. It is the fundamental right of FinTech enterprises to use their social resources to operate and pursue profit maximization. Enterprises should fulfil their obligations and assume social responsibilities. In creating profits, enterprises should abide by laws and regulations and implement development goals that benefit society and the public. However, the FinTech industry is characterized by large-scale monopoly competition, which quickly leads to a winner-takes-all pattern. For instance, some FinTech enterprises pursue monopoly gains and ignore social responsibility through profit-seeking behaviours such as highly leveraged lending. This shifts risks to other cooperative financial institutions, increasing systemic financial risks and affecting national financial stability.

2.4. Technology-oriented neglect of ethical value judgement of financial services

Modern financial theories focus on using mathematical models and econometric analysis to conduct research, which has contributed significantly to the development of financial theories but has also led to the "devaluation" of financial theories^[7]. Due to the inherent technical gene associated with FinTech, the technical trend of financial development is constantly reinforced. The "devaluation" of mathematical models is reflected in the research of financial theories, while the technology-oriented "devaluation" is mainly reflected in financial services. FinTech, which relies on artificial intelligence, is widely used in banking, securities, insurance, and other traditional financial institutions, reducing repetitive work and

improving the efficiency of financial services. Additionally, FinTech inevitably brings technology to the physicochemical effect, blurring the boundary between man and machine and losing human mutual sympathy and compassion^[8]. Based on technology-oriented approaches, FinTech promotes the concept of technology supremacy, replacing humans with machine algorithms for financial decision-making. It lacks a review and reflection on the relationship between trust and agency, self-discipline and heteronomy, rights and obligations, and ignores the ethical value judgment of financial services.

3. New financial ethics requirements for the cultivation of FinTech talents

The development of FinTech can easily lead to the problem of ethical anomaly, which highlights the need for new requirements of financial ethics for the training of FinTech talents. Human society has had different ethical norms in different stages of historical development. The emergence of financial ethics was a response to the need for financial development and endowed financial activities with an ethical spirit. In the period of agricultural society, financial activities were less active. However, transaction ethics based on borrowing and paying back and principles of interest and principal were often found in physical or monetary lending. In the industrial society, economic growth was driven by technological progress, and the prosperity of the commercial society made financial activities more frequent. The contract ethics based on integrity, justice, and equality gradually became the basic norms of financial activities and interpersonal communication. In the era of information society, the financial industry has thrived with the help of information technology, and financial services are inseparable from economic and social life. However, non-standard and immoral financial operations are likely to cause financial risks. Therefore, the financial ethics of fairness, trustworthiness, dedication, and law-abiding are highly valued.

Given the new causes of ethical anomaly caused by the development of FinTech, it is necessary to put forward new requirements of financial ethics in line with the training of FinTech talents in the new era, in combination with the new changes in the social environment and the new stage of technological development. The value of financial ethics in the current times is prominent, and the cultivation of FinTech talents should pay more attention to ethical requirements. The specific requirements are as follows:

3.1. FinTech talents should establish a fair and just mind

Fairness and justice are the basic principles of financial ethics, which require that everyone be treated equally and fairly in economic and financial activities such as resource allocation, contracts, and financial transactions. The development of FinTech has made the transaction behaviour of the financial market more complex and diversified. However, regardless of the changes, all transaction behaviour is just reaching an agreement and signing a contract. Fairness and justice are essential because FinTech talents must treat their counterparties (investors) as equal rights subjects in trading, regardless of their technical and information advantages. Identity discrimination is not allowed, and they should be given due benefits. Therefore, FinTech talents should establish a heart of fairness and justice and internalize the belief in equal rights into the basic code of conduct in the FinTech industry.

3.2. FinTech talents should be honest

Honesty and trustworthiness are traditional virtues of the Chinese nation and the basic principles of financial ethics. Honesty means communicating accurate information in line with one's subjective thoughts, while being trustworthy means being consistent with words and deeds and the information conveyed. Honesty is a kind of ethical relationship naturally formed by human beings in countless interactions^[9]. Given the complexity of FinTech products, it is difficult for ordinary investors to understand their rationale. The virtuality of the Internet reduces the default cost of financial transactions, which requires FinTech talents to truthfully inform investors about the risk factors of products and deliver promised investment returns on time. Currently, FinTech products are sold online, and the transaction parties do not meet in person, which gradually makes honesty and trustworthiness one of the most important ethical principles in the development of FinTech. Therefore, FinTech talents should uphold the foundation of honesty and trustworthiness and conduct their business with integrity. Only by honouring commitments and keeping promises can FinTech talents achieve stability and long-term success.

3.3. FinTech talents should adhere to the bottom line of professional ethics

FinTech professional ethics are the code of ethics that all FinTech practitioners should abide by according to the professional needs and logic of FinTech. Considering the particularity of the development of FinTech, the FinTech field is more prone to unethical behaviours than other financial fields. The importance of FinTech professional ethics lies in the restraint and guidance of FinTech talents to prevent inducing investors to make deals because of their knowledge advantages or engaging in fraud, manipulation, and unfair trading. Therefore, FinTech talents should adhere to the bottom line of professional ethics and avoid violating ethics due to greed. They should base their work on strengthening their working ability, improving their service skills, taking pride in winning the praise of investors, safeguarding the interests of investors, and strictly observing professional ethics standards.

3.4. FinTech talents should have the courage to assume social responsibilities

Social responsibility is an essential principle of financial ethics, requiring FinTech professionals to regulate their risky behaviours in the financial market, maintain a wise and prudent investment attitude, adhere to the correct value orientation, actively carry out inclusive finance, serve small and micro enterprises and the population in remote areas, and pay attention to the responsibility of ecological protection. FinTech has extended the depth and breadth of financial markets, making the financial product system more complex and increasing the agglomeration and linkage effect of financial risks. Regardless of how FinTech innovation changes the financial industry, financial risk management remains a focus of attention in the financial field. The primary social responsibility of FinTech professionals is to balance the relationship between return and risk, long-term and short-term, scale, speed, and quality while avoiding excessive pursuit of short-term interests while ignoring financial risks. Therefore, FinTech professionals should actively assume social responsibilities and focus on developing inclusive and green finance. While safeguarding the public interest, we should strengthen the identification, monitoring, disposal, and management of financial risks to create benefits and achieve steady development.

4. New ideas for cultivating FinTech talents in the new era

General education and professional education are two crucial components of higher education, and they are equally significant and cannot replace each other^[10]. They play a crucial role in talent training. The training of FinTech professionals in the new era should be based on the study of financial theory and ethics education, focusing on developing practical FinTech skills to combine effectively and continuously train general and professional education.

On one hand, in general education, it is essential to strengthen courses such as Chinese Excellent Traditional Culture and Ethics to shape correct ethical values. Through the use of information technology, big data science, mathematics, statistics, and other course teachings, the technical skills of FinTech professionals can be enhanced. On the other hand, it is essential to strengthen professional education in finance, pay attention to the cultivation of financial risk awareness, and integrate financial ethical values throughout the entire process of finance professional education. It is also necessary to emphasize practice and training and cultivate composite FinTech professionals in the new era with solid professionalism, skills, and responsibility through school-enterprise cooperation and collaborative education.

4.1. Strengthen the guidance of ideological education and shape financial ethics values

In training FinTech talents, it is essential to strengthen the guidance of socialist core values, such as patriotism, collectivism, and socialist ideology, to shape the ethical values of FinTech practitioners. At the same time, it is necessary to play the educational function of ideological and political education fully. This involves adhering to the guidance of Marxism and combining theoretical knowledge related to FinTech with ideological and political elements from the dimensions of history and reality, theory, and practice. Such an approach can help guide students to have a deep understanding of socialist core values.

Moreover, China's excellent traditional culture is extensive and profound, encompassing rich ethical philosophies such as fairness, justice, honesty, trustworthiness, service to the country and people, and harmony between nature and humanity. Education can be cultivated by introducing excellent traditional Chinese culture, cultural classics, and a humanistic spirit that can be used to moisten thoughts. This helps shape FinTech talents' financial ethical values, including fairness, justice, honesty, trustworthiness, dedication, law-abidingness, and social responsibility. In addition, abandoning the narrowness of thought

can help establish the correct concept of justice, interests, and social responsibility.

4.2. Focus on FinTech training and teaching and strengthen FinTech capabilities

FinTech is a new generation of information technology-driven financial innovation, which involves the cross-integration and application of information technology and finance. Therefore, the training of FinTech talents should attach great importance to education and teaching in information technology and finance. On the one hand, it is necessary to strengthen the teaching of cutting-edge theoretical knowledge of information technology and focus on integrating big data technologies, such as data mining and machine learning, with finance in the curriculum setting. It is also necessary to optimize the Finance professional curriculum system. On the other hand, the financial experimental training course can effectively simulate business scenarios for financial innovation and is the most effective method to integrate cutting-edge technologies such as big data and artificial intelligence into the training of financial professionals ^[11]. Therefore, it is necessary to reconstruct the experimental training course system according to the development trend of financial technology innovation ^[12]. Practical teaching of information technology and financial applications, including using the Python programming language on the computer, can help students become familiar with the basic process of web crawling, big data analysis, visualization, machine learning, and other technologies. Furthermore, they can understand the basic principles of emerging technologies to achieve financial innovation, master the applications and methods of financial technology, and strengthen their financial technology skills. Students can also learn Python analysis of bond pricing, stock fundamentals investing, and options trading through practical teaching of information technology and financial applications.

4.3. Promote the combination of general education and professional education and cultivate compound talents

Cultivating FinTech talent requires not only general education to provide a comprehensive knowledge system but also professional education to strengthen the theoretical foundation of finance. The connection between general education and professional education can effectively play a role in general education, break down the barriers between them, and make some professional education courses the carrier of the width and depth of general education ^[13]. FinTech is an interdisciplinary knowledge system comprising finance and information technology, supplemented by other natural and social sciences. Based on the necessary theoretical knowledge, it is widely involved in general courses focusing on information technology, data science, statistics, and traditional Chinese culture to combine general and professional training and mutual promotion. This promotes cross-discipline integration, improves students' problem-solving skills, and cultivates new-era compound financial technology talents.

4.4. Deepen school-enterprise cooperation and improve professional ethics

Deepening school-enterprise cooperation and carrying out industry-university-research projects are essential for cultivating FinTech talents. On the one hand, strengthening school-enterprise cooperation and building a dual-professional team can help hire staff with rich practical experience in FinTech enterprises as off-campus teachers. These teachers can then regularly visit the classroom and give special lectures on the application of FinTech, teaching practical skills related to FinTech. On the other hand, collaborative education should be given importance, and the construction of practice and practice bases should be strengthened. This can be achieved by conducting order training, selecting and sending senior students to visit and practice in FinTech enterprises, and training students on FinTech professional ethics and industry standards. Such initiatives will help in improving students' professional ethics.

5. Practical experience in FinTech Talent Training

The finance discipline at Beijing University of Technology has a complete training system for bachelor's, master's, and doctoral degrees. The training of doctoral and master's degree candidates focuses on financial technology, while undergraduate candidates are provided with general education and professional education courses related to financial technology. In order to cultivate FinTech talents, a series of practices have been implemented in the education, teaching, and experimental training of FinTech, and training experience has been accumulated. The following section mainly describes the practical experience of cultivating undergraduate talents in FinTech.

5.1. Implement a teaching model that combines general education with professional education

The general education at Beijing University of Technology covers a wide range of humanities and social fields, such as philosophy, history, literature, linguistics, sociology, psychology, and law, as well as natural science fields like information technology, mathematics, statistics, physics, and engineering. General education courses like traditional Chinese culture, ethics, and life, college-level translation and analysis, philosophy, and civilization are used to cultivate students' humanistic spirit and shape ethical values. Courses like an introduction to big data technology, data mining, artificial intelligence, machine learning, and mathematical grand view are used to train students in the technical application ability of financial technology.

In addition to core courses like finance, financial engineering, international finance, and corporate finance, professional education also includes popular courses in FinTech, such as frontiers of FinTech, financial big data analysis, and R language, to strengthen the financial theoretical foundation for cultivating FinTech talents. By actively carrying out a teaching model that combines general education and professional education, Beijing University of Technology integrates the cultivation of financial ethical values throughout the entire process of financial technology education and teaching, ensuring that the shaping of financial ethics and the learning of professional skills complement and promote each other.

5.2. Adopt the "online + offline" mixed teaching mode

With the widespread use of information technology in education and teaching, Beijing University of Technology is actively promoting the transformation of traditional teaching to a "hybrid" model that combines online and offline teaching. To cultivate FinTech talent, blended teaching has been widely implemented, combining professional education courses such as finance, financial supervision, and financial engineering with courses in artificial intelligence, big data analysis technology, mathematics, operations research, traditional Chinese culture, ethics, and general education courses such as life. These courses have been launched on the university's online teaching platform. Teachers have divided the teaching content based on the advantages of online and offline teaching to achieve the organic integration of online self-learning and offline classroom teaching. Given the challenges of learning courses such as artificial intelligence and big data, an online learning team has been established to facilitate mutual discussions and track students' learning progress. Additionally, to enhance the international level of FinTech talent training, Beijing University of Technology supports students' participation in short-term overseas online exchange programs, such as the Massachusetts Institute of Technology's "Machine Learning" program and Harvard University's "Data Science and Big Data Analysis" program. Through blended teaching, students' learning enthusiasm has been continuously improved, and the effectiveness of FinTech talent training has been significantly enhanced.

5.3. Deepening the reform of teaching content of experimental training courses

The experimental and practical training course is an essential component of the practical teaching of FinTech and a vital way to combine theory with practice. It is conducive to cultivating scientific thinking and innovative ability in FinTech talents. Beijing University of Technology has established various teaching laboratories, including the Beijing Artificial Intelligence Research Institute, Blockchain Research Center, and Financial Simulation and Simulation Laboratory. In line with the development trend of financial technology innovation, the university has deepened the teaching content reform of experimental and practical training courses while maintaining traditional practical training courses such as banking business simulation, securities investment simulation, and financial derivatives trading simulation. The teaching applies new-generation information technology, such as big data and artificial intelligence, to the training of FinTech talents and sets up experimental and practical training courses such as machine learning, data mining, financial big data, and R language. By learning programming operations using Python, R, and other languages, students can master the fundamental methods of FinTech application and enhance their practical skills in using FinTech.

5.4. Strengthen the teaching of ideological and political education in courses

Firstly, the innovative professional teaching mode is mainly based on the "heuristic teaching" approach in cultivating financial technology talents. This mode combines the teaching content with practical elements of financial technology, ideology, and politics through case sharing. For example, when teaching "digital RMB" related content, students are guided to explore the origin of the "RMB"

name to enhance their patriotic feelings. Secondly, modern educational concepts are utilized to take the teaching goal as the orientation and students as the center. This approach gives full play to the enthusiasm and initiative of students and enhances the integration of professional knowledge and ideological and political knowledge. For instance, combining in-class and out-of-class teaching can improve the teaching effect of ideological and political courses. Based on in-class lectures, students are guided to visit the Coin Museum and watch a series of financial material documentaries such as "The Rise of Great Powers" after class. This aims to stimulate students' cultural confidence in their country's financial history. Finally, for practical courses related to FinTech, the flipped classroom approach is implemented to allow students to explore and actively integrate ideological and political elements. This is done to guide students to think independently and improve their ideological and political literacy and moral level.

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