

# Training Scheme of Information Technology Ability for Applied Undergraduate Accounting Talents under the Background of Internet + Accounting

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**Abstract:** With the rapid development of mobile internet, cloud computing, big data, artificial intelligence and other technologies, it is very urgent to cultivate high-quality comprehensive financial talents in the new era. It is urgent to build a new financial and accounting education model featuring the Internet and information management, and integrating cloud computing, big data, Internet of Things and other intelligent technologies. This paper focuses on the inevitability of accounting professional transformation under the background of “Internet + Accounting”, and the composition of information technology capabilities of accounting professional applied talents under the background of “Internet + Accounting”. Taking Chongqing University of Technology as an example, it sorts out the practice and exploration of the cultivation of information technology ability of accounting talents under the background of “Internet + Accounting”. Finally, the paper puts forward the train of thoughts on the information technology ability of accounting professional applied talents under the background of “Internet + Accounting”.

## 1. Introduction

“Internet +” refers to a new format, which is based on mobile Internet, cloud computing, big data and other emerging technologies, with information interoperability and sharing development as the core, and the integration of traditional industries and emerging technologies to promote industrial upgrading and promote the development of human society towards the Internet economy. But + is not a simple addition, but should be understood as the integration and reconstruction of emerging technologies and traditional industries.

In March 5, 2015, Premier Li Keqiang put forward in his government work report that for the first time since the “Internet plus” action plan, major changes have taken place in the organizational form, management mode and working mechanism of all walks of life in China. In December 2015, President Xi Jinping proposed that during the “13th Five-Year” period, China will vigorously carry out the “Internet +” action plan and effectively manage the Internet. Therefore, in the future, “Internet +” will penetrate into all fields of work, study, life and so on.

The emergence of the “Internet +” era is the inevitable result of the informatization process, an important symbol of the transformation of the industrial society into the information society, and a new stage for the deep integration of modern information technology and various social industries. Similarly, the “Internet +” era will also affect the development of the old and heavy accounting industry [1]. With the rapid development of mobile Internet, cloud computing, big data, artificial intelligence and other technologies, it is urgent to cultivate high-quality comprehensive talents in the new era. At present, the education sector is actively exploring educational reforms in the “Internet” environment. The “Internet +” challenge to traditional accounting undergraduate education is beginning to emerge. With the characteristics of Internet and information management, the emerging accounting education model that integrates smart technologies such as cloud computing, big data, and Internet of Things is urgently needed to be built by undergraduate accounting educators. Only in this way can accounting education conform to the trend of the times and train students into complex application-oriented talents that meet the needs of society.

## **2. Definition of Internet + Accounting**

Ma Huateng, President of Tencent, published an article in “people's Daily” in April 21, 2014, first putting forward the concept of “Internet +” publicly. He thinks that “Internet +” is a trend, and “+” is traditional all walks of life. At the two sessions in 2015, Ma Huateng put forward a proposal to speed up the promotion of “Internet +”. In this proposal, his explanation of “Internet +” is “using the platform of the Internet, making use of information and communication technology to connect the Internet and all walks of life including traditional industries, and create a new ecosystem in the new field.” Another domestic Internet giant Alibaba then launched the “Internet +” research report through Ali Research Institute. The report puts forward the so-called “Internet +” refers to the “Internet based information technology (including mobile Internet, cloud computing, big data technology”) in various sectors of the economic and social life of the proliferation and application process. In the “Guiding Opinions on Actively Advancing the “Internet +” Action” issued by the State Council in July 2015, the interpretation of “Internet +” is “to integrate the innovation results of the Internet with the economic and social fields to promote technological progress and efficiency.” Enhance and organize change, enhance the innovation and productivity of the real economy, and form a new form of economic and social development with Internet-based infrastructure and innovation elements.” Scholar Zhang Yan (2016) believes that from the perspective of information dissemination, “Internet + “The information revolution is based on the new generation of Internet technology. From the perspective of economic transformation, “Internet +” is an economic form in which the real economy and the Internet are deeply integrated. From the perspective of social governance, “Internet +” is an effective means to promote social governance innovation [2].

“Internet + Accounting” is an accounting fusion and reconstruction driven by modern information technology innovations such as mobile Internet, cloud computing, big data, artificial intelligence, and blockchain. The “+” in “Internet + Accounting” is not only a technical “+”, but also a “+” in concept, thinking, and mode.

## **3. The Inevitability of the Transformation of Accounting Major under the Background of “Internet + Accounting”**

In the era of data technology revolution, in the face of new technologies such as big data, intelligence, mobile internet, cloud computing, internet of things and block chain, the transformation of accounting and finance is inevitable.

### **3.1 National policy level faces the requirements of financial and accounting transformation**

In recent years, the Ministry of Finance has successively issued policy documents such as guidance on the construction of management accounting systems and guidelines for the application of management accounting. For example, the “Guiding Opinions of the Ministry of Finance on Promoting the Construction of the Management Accounting System” and the “13th Five-Year Plan for Accounting Reform and Development”. It can be seen that the direction of the state to promote the implementation of management accounting has been clear, and the system has been basically established.

The use of big data financial thinking to analyze the past, control the present, and plan for the future of management accounting talent has become a major trend of financial transformation.

The focus of financial accountants' work is no longer a simple and repetitive accounting process, but more on financial analysis and decision support, business management and control. The accounting staff should be more integrated with the business to find out the problems in management. It is necessary to actively adapt to the changes of the times, improve efficiency through intelligence, transform from simple labor of large amounts of data and voucher processing to analyzing data, applying data, strengthening management, and completing the transformation from accounting accounting to management accounting. The new type of finance will be more

reflected in the continuous improvement of corporate value, the awareness of financial services, and the implementation of strategic control.

### **3.2 Ministry of Education “Gold class” Construction Background**

On June 21, 2018, Minister Chen Baosheng put forward for the first time at the National Conference on Undergraduate Education in New Era that it is necessary to effectively “increase the burden” on College students. It is necessary to enhance the academic challenge of College students, reasonably increase the difficulty of courses, expand the depth of courses and expand the selectivity of courses. In August 2018, the Ministry of Education issued the Notice on the Implementation of the Spirit of the National Conference on Undergraduate Education in Higher Institutions in the New Era (No. 8 of the Higher Education Letter). It was proposed that “all colleges and universities should sort out the teaching contents of various courses in an all-round way.” It is necessary to eliminate the 'Water class' and build the 'Gold class', reasonably improve the academic challenge, increase the difficulty of the course, expand the depth of the course, and effectively improve the quality of the course.” The creation of the “Gold class” is crucial for the cultivation of talents in the new era. All colleges and universities have adjusted the teaching model and reconstructed the curriculum system in order to achieve high-quality teaching goals.

Under the background of the education industry actively promoting the creation of the “Gold class” under the new era, effectively improving the quality of curriculum teaching has become the focus of education reform. The accounting undergraduate accounting profession can only cultivate talents with technical integration through the creation of the “Gold class”.

### **3.3 China's Accounting Information Reform and Opening Up for 40 Years**

#### **3.3.1 Three Stages of the Development of Accounting Information in China**

Since the Ministry of Finance started the pilot computerization pilot project in Changchun First Automobile Manufacturing Plant in 1979 (Liu Yuting, 2009), China's accounting informationization has experienced 40 years of development. The development of accounting information in China for 40 years has experienced three stages: accounting computerization, accounting informationization (narrow sense) and accounting intelligence.

#### **3.3.2 Technical Trend of Accounting Information**

The development of modern technology has a profound impact on accounting. Among many technologies, the impact of large (data), intelligent (energy), mobile (dynamic interconnection), cloud (computing), internet of things (IOT) and area (block chain) technologies will continue to emerge [3].

(1) With the development of accounting intelligence, the application of machine learning, in-depth learning, natural language understanding, knowledge mapping, expert system and other technologies in the accounting field will tend to mature.

(2) The development of financial sharing will rely more on RPA, electronic invoice, electronic archives, mobile computing, image recognition, financial cloud, 5G communication, big data analysis, business intelligence and other technologies.

(3) The development of block chain and strong artificial intelligence technology and the emergence of a large number of mature application scenarios will be accompanied by the emergence of new financial management models, which will lead to changes in enterprise decision-making models, management and operation models, production and operation models, service innovation models and data analysis models.

#### **3.3.3 Talent Training System under the Background of Accounting Information**

Since the publication of the first textbook of higher financial institutions in 1982, the computerized accounting education in China has gone through three stages: undergraduate, master and doctoral. In 1994, the Ministry of Finance promulgated Opinions on Developing Computerized Accounting in China, which clearly put forward three-level training plans for accounting

practitioners on the knowledge of computerized accounting. In 1998, the Ministry of Education promulgated the Catalogue of Undergraduate Specialties in Common Colleges and Universities. Under the category of management, only two secondary majors, accounting and financial management, were set up. Most colleges and universities in China cancelled the enrollment of accounting computerization majors, but most of them still have the direction of accounting computerization. In 2004, the Ministry of Education and the Academic Degrees Office of the State Council approved the establishment of master of professional accounting (MPAcc) in order to train accounting talents with theoretical and practical knowledge. In order to meet the impact of modern information technology on accounting work, the Ministry of Finance proposed in 2009 that it will make every effort to build a contingent of accounting informatization talents in the future. With the continuous application of the technology of “moving great wisdom to cloud”, the National Steering Committee for Postgraduate Education of Accounting Major has suggested that courses such as cloud accounting and intelligent financial sharing, machine learning and financial intelligence, big data mining and business intelligence should be added to the personnel training system.

### **3.3.4 Impact and Influence of Information Technology on Accounting Discipline**

Nowadays, new technologies are changing the process, organization and methods of traditional accounting, and even strategic thinking with the momentum of the wind (Liu Qin et al., 2014). The new technology utilizes high-speed, accurate and intelligent features to help accountants collect economic data in real time, accurately and safely, store and process accounting information quickly, accurately and efficiently, and present it to managers conveniently, intelligently and humanely. Financial information required. In turn, it helps organizations reduce accounting work costs, improve efficiency, and improve quality. In turn, strengthen risk management, support financial transformation and support the rapid development of the organization.

In 2019, Professor Chen Zhibin, the national high-end accounting talent special support planner, dean of Jiangsu High-Quality Development Comprehensive Evaluation Research Institute and director of the Department of Finance and Accounting of Southeast University, used “Plus,” at the round Table of “The Future of Information Technology and Finance”. “Subtraction, multiplication, and division” summarizes the impact and impact of information technology on accounting disciplines.

(1) Add: Information technology increases the breadth, breadth and depth of accounting disciplines

Accounting disciplines should study the service tenet of accounting information, and grasp the opportunities brought by the new technology to change the scope and connotation of the service discipline by providing the logic, business model, management philosophy and operational characteristics. Accounting disciplines should explore the intersection of information technology disciplines, explore the accounting rules, logic, models, paths, channels, etc. with new weapons and strong accounting disciplines, and expand the breadth of accounting learning and research to adapt to a new era. Accounting disciplines need to keep abreast of the times and explore the new era of accounting information rules, so that accounting information is better than other information systems to meet the information needs of national social governance, business management, and the healthy development of non-profit organizations.

(2) Subtract: Information technology is greatly reduced for accounting disciplines

General accounting vouchers acquisition, processing, transmission, recording knowledge teaching and research, general regular accounting practice will be reduced by new information technology, accounting profession may also be no longer standardized and repeated so tired.

(3) Multiply: Information technology provides a multiplier effect for the development of accounting disciplines

The realization of the problems in the accounting concept will be gradually resolved with the development of information technology, accounting rules or regular economic information will be optimized and improved with the development of information technology. Accounting information services National governance, business management, public welfare organizations are richer, more

comprehensive, deeper, more real-time, smarter information support.

(4) Divide: information technology will remove the individual value judgment and professional ethics in the accounting discipline

Information technology can make accounting and all-round, real-time, dynamic business operation system docking, accounting records rely on business information that can not be changed throughout the entire process. The internal control function, supervision function and evaluation function are completely informatized, which reduces the individual interpretation space of the accountant and relieves the burden of moral crisis.

#### **4. Composition of Information Technology Ability of Applied Talents in Accounting Major under the Background of “Internet + Accounting”**

##### **4.1 Requirements of “Internet + Accounting” on Information Technology Ability of Accounting Talents**

Accounting personnel who meet future needs should no longer be simple data accountants or passive information providers, but should create value for the organization as the ultimate professional mission. Future accountants should deeply understand the impact and reconstruction of modern information technologies such as big data, cloud accounting, artificial intelligence and block chain on accounting, and follow the trend. Break the restriction of “small accounting” and grow into “big accounting” talents with integrated industry, finance and technology.

##### **4.2 “Internet + Accounting” Accounting Talents Information Technology Capability**

According to Prof. Cheng Ping from Chongqing University of Technology, the information technology capabilities of accounting staff in the context of “Internet + Accounting” mainly include three major capabilities: data capability, process capability, and algorithm capability.

###### **4.2.1 Data capabilities**

Data capabilities refer to the collection, clarity, processing analysis, visualization, and utilization reporting techniques of big data.

###### **4.2.2 Process Capabilities**

Process capabilities include application scenarios, requirements analysis, process design and optimization, and system design.

###### **4.2.3 Algorithm Capabilities**

Algorithmic capabilities include machine learning and deep learning algorithms such as classification, clustering, and time series.

#### **5. Practice and Exploration of Training Information Technology Ability of Accounting Talents under the Background of “Internet + Accounting”**

Up to now, the representative school in the field of “Internet + Accounting” has been reformative and has achieved some achievements in Chongqing University of Technology.

##### **5.1 Basic Situation of Accounting College of Chongqing University of Technology**

The School of Accounting of Chongqing University of Science and Technology was established in 1993. Currently, there are experimental classes for comprehensive reform of accounting (including ACCA), financial management (including CIMA), auditing and other specialties and accounting informatization. The accounting major of Chongqing University of Technology is a national specialty and a national comprehensive reform pilot specialty. The school's accounting informatization teaching started in 1987 and has a history of more than 30 years. At present, an independent accounting informatization department is set up to recruit students and train them separately. In 2010, “Accounting Informatization” became a national excellent course. In 2015, the

MPAcc program of the school was included in the pilot reform of the “internet plus Accounting” training mode of the National Accounting Education and Reference Commission. In 2018, the university's “internet plus Accounting” undergraduate teaching reform won the second prize of the Accounting Information Undergraduate Teaching Achievement Award. Chongqing University of Technology is China's only “Internet + Accounting” MPAcc education comprehensive reform research and demonstration unit (started in 2015), set up iCFO, iCPA and big data and artificial intelligence financial training direction, and build a complete curriculum system of deep integration of big data, cloud accounting and AI technology and big accounting.

The research of accounting informatization in Chongqing University of Technology is in the leading position in the field of accounting computerization in Western China. The information projects with independent intellectual property rights are rare in domestic universities, such as the implementation plan of financial informatization of enterprise groups and the qualification management system of accounting practitioners in Chongqing, which have been applied to local economic construction and achieved good economic and social benefits. A series of research achievements represented by “Bosi” series of financial software were awarded three provincial prizes for scientific and technological progress, and some of them were included in three major searches.

## **5.2 Training Objectives and Curriculum Setting of Accounting Information Professionals**

The goal of personnel training for accounting information major is to train personnel who are in urgent need of national and regional economic and social development and who have all-round development in morality, intelligence, physique, arts and labor. To cultivate compound and high-quality application-oriented talents who have humanistic quality, scientific spirit and integrity, master accounting, management, economy, legal knowledge and strong information literacy, can adapt to the information, cloud computing and big data environment, and can be competent in industrial and commercial enterprises, financial enterprises, consulting industries, information and software enterprises, intermediary organizations, government agencies, institutions and other relevant departments for information work on financial audit. After five years of student work, they have the professional ability of intermediate accountants, become the backbone members of the financial review information posts, and reach the professional level and ability of consulting experts and financial review data analysts related to financial review information.

In order to support its personnel training objectives, the curriculum system has also been designed and reconstructed accordingly: it is divided into three modules: general knowledge, discipline and specialty.

### **5.2.1 Subject Courses**

Basic subject courses: lay a solid foundation for the cultivation of students' information technology ability, offering advanced mathematics, linear algebra, probability theory and mathematical statistics, as well as operations research and deep learning foundation and practice.

### **5.2.2 Professional Courses**

Professional basic courses: in addition to the regular required courses of accounting, two courses of accounting big data foundation and accounting informatization have been set up.

Professional core courses: in addition to the regular required courses in accounting, management accounting big data, accounting software development technology, and analysis and design of accounting information systems are offered.

Specialized courses: block chain and joint financial review, data visualization, pattern recognition and risk management, and information system audit are offered.

Professional practice courses: accounting software development technology training, accounting information system analysis and design training, management accounting big data training, financial sharing training.

## **5.3 Experience and Enlightenment**

### **5.3.1 Integration of Teaching and Scientific Research**

Actively promote scientific research to serve teaching, integrate research results into the talent training plan, and pave a new way for the integration of teaching and scientific research. Through the promotion of a series of distinctive educational and teaching reform achievements and the radiation effect of the symbolic achievements, the discipline and specialty construction have been effectively promoted, and the overall level of the specialty has been raised.

### **5.3.2 Introducing the scientific research reform achievements of “the integration of production, teaching and research in accounting” into social practice service**

Actively carry out production, teaching and research activities, has made positive contributions to the local economic construction and social development, has made remarkable achievements in running schools, and has formed a distinctive school-running feature.

The school has Chongqing Certified Public Accountant Training Center, Chongqing Accountant Examination and Training Center and Chongqing Senior Accountant Continuing Education Center to actively train high-quality accounting professionals for Chongqing's local economic development. The school applied the developed financial software with independent intellectual property rights to the local economic construction, and developed management software for enterprises and institutions such as China Jialing, Chiba Glasses Group and Chongqing Third People's Hospital, which was well received by users. Actively promote the “government, industry, enterprise” personnel training, horizontal research, enterprise management consulting and other services.

## **6. On the Cultivation of Information Technology Ability of Applied Talents in Accounting Major under the Background of “Internet +Accounting”**

### **6.1 Cultivating “Internet + Accounting” Compound Applied Talents Adapting to the Development of Information Age**

Compared with the traditional accounting education model, it integrates the “Internet +” and adapts to the trend of the times. Because of its infinite and expansive teaching time, the autonomy and individualization of teaching methods, and the mediation of examination, evaluation and continuing education, it is even more helpful for the realization of the training objectives of accounting talents.

Applied undergraduate colleges should continuously explore and reform, in order to promote students' all-round development and meet social needs as a guide, and give full play to individualized learning, independent learning, collaborative learning, open learning, and problem-oriented learning. And to cultivate students' innovation ability, software development ability, data processing ability, PPT production ability, communication and communication ability, speech ability, etc. as the talent goal.

In order to achieve this goal, the most important thing is to cultivate the “Internet +” integration of accounting education thinking and ideas, and then to think about how to apply technical means to promote the development and promotion of accounting education [4].

In terms of curriculum, it is necessary to integrate accounting education with informatization courses. Among them, accounting is the direction and content of education, and informationization is the technology and means of education. Setting up a scientific and comprehensive information-based course and really integrating it with accounting education need all colleges and universities to think seriously and explore actively. In order to improve the quality of undergraduate teaching, on the basis of traditional teaching mode, we fully integrate the diversity of modern teaching mode, embedding case teaching, flipping classroom, sand Table simulation, off-campus practice and other teaching methods.

### **6.2 Develop a plan for training and upgrading teachers'ability to keep pace with the times**

In order to achieve the goal and adapt to the development demand of “Internet + Accounting”

personnel training, we should develop the ability to keep pace with the times and develop and upgrade the teaching ability of the teaching team. Through front-end analysis, teaching content system design, diversified teaching activities design and diversified evaluation system design, the implementation of teaching objectives is consolidated. Front-end analysis mainly carries on the comprehensive analysis to the curriculum goal, the learning content and the learning environment. In the system design, we should improve the syllabus, innovate the curriculum system, and deeply integrate traditional accounting with big data technology and business. Through perfecting the form of classroom organization, realizing the role exchange between teachers and students from the stage to the stage, using multimedia and simulated sand Table, deepening the interactive talent training mode, and improving the transformation and upgrading of training objectives from traditional one-way learning mode to two-way learning mode.

### **6.3 Integrating teaching resources**

In the allocation of teaching resources echelon, both the internal and external practice platform and the innovative courses inside and outside the school must serve the positioning of the “Internet +” accounting talent training objectives. In the design of the diversified evaluation system, it is necessary to adapt to the goal of talent training, and in the process of teaching implementation, take into account the establishment of the teaching evaluation and supervision mechanism. At the same time, it is necessary to integrate social resources such as campuses, enterprises, and government agencies, strengthen strategic coordination and platform-based teaching, and focus on the training objectives and training directions of the main elements and organizational elements of “Internet + Accounting”. Through the interaction of different participants and different curriculum modes, resources can be effectively matched. On the basis of traditional accounting courses, the technology and business of “Internet +” are deeply studied, and the course of big data is emphasized, and the focus of teaching is strengthened.

## **7. Conclusion**

In the era of “Internet +”, emerging technologies represented by cloud computing, big data, artificial intelligence technology, etc. are bringing a new round of technological revolution and industrial transformation. The degree of informationization, digitization and intelligence of enterprises is getting higher and higher. The accounting work has been fully embedded in the enterprise's information environment, and its work mode and work content have undergone tremendous changes. These changes have brought new opportunities and severe challenges to the development of the accounting industry and the cultivation of accounting professionals. Cultivating high-quality compound accounting talents is the main task of applied undergraduate accounting profession. Applied undergraduate colleges should actively use Internet thinking and establish the educational concept of “pan-accounting” [5]. Applied undergraduate colleges should actively accelerate reforms in terms of educational concepts and curriculum systems to further adapt to the challenges of the new Internet situation.

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