

Research on the Implementation Path of the "1+X" Certificate for the Accounting Major in Vocational Education under Digital Transformation

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Abstract: Digital transformation has changed the structure of competencies and job boundaries in the accounting profession in many ways, and thus new demands have arisen for the construction of the "1+X" certificate system for the accounting major in vocational education. In light of changes in light of digitalisation, this paper will systematically study the implementation path of the "1+X" certificate for the accounting major in vocational education, analyze the reconstruction of value for the certificate system, determine the logic of its implementation path, and explore the key factors and operating mechanisms that promote effective implementation. Based on the above content, it is proposed that with the introduction of digital technology, the aim of vocational skills certificates in accounting will change from verifying basic skills to certifying all-round vocational abilities. At this time, links need to be established among the goals of talent development, the standards for certificates, and all other links in a comprehensive manner. With the development of the Information Age, the functions and values of the Certificate System have changed. In accordance with the requirements for the construction path of this paper and in light of the demands of digital jobs, a modular structure and a hierarchical system of certificates have been designed; an embedded integration model for the curriculum system and certificates has been established; finally, a collaborative configuration mechanism for digital teaching resources and the assessment requirements of certificates has been built. At the level of supporting elements and operating mechanisms, this paper puts forward an all-weather improvement path for the digital competence of the "double-qualified" teaching team, a digital assessment framework based on competency data, and an organizational structure for multi-stakeholder collaborative operation. This paper will provide all the necessary support and theoretical basis for building the "1+X" certificate system in vocational education for the accounting major under digital transformation.

Keywords: Digital Transformation, Vocational Education, Accounting Major, "1+X" Certificate, Implementation Path

Introduction

With the development of the digital economy in recent years, changes have taken place in the field of accounting; it is no longer limited to the collection of transactions but has gradually moved towards management and intelligent automation. With the new demand for the ability to analyse financial data, use intelligent tools and integrate business with finance, new structural adjustment requirements have gradually appeared in the training of accounting professionals at the vocational education level. As part of the reform of the talent cultivation model for vocational education, college education will be added to the list of vocational skill qualifications in the "1+X" certificate system to improve the flexibility of talent cultivation in light of changes in job requirements. With the progress of digitalisation, the traditional implementation model of the "1+X" certificate has begun to show practical deficiencies; for example, competency standards have failed to keep up with changes in technology, there is poor integration of the curriculum system and certification content, and a mismatch has arisen between teaching resources and assessment requirements. Therefore, the construction should be carried out in accordance with the level of value orientation, path construction and operating mode. Based on the actual situation of digital transformation in the accounting major, this paper studies the implementation path of the "1+X" certificate system to provide theoretical support and practical suggestions for the innovation of talent cultivation models in vocational education for the accounting major in the digital era.

1. Value Reconstruction of the "1+X" Certificate System for the Accounting Major under Digital Transformation

1.1 Changes in the Positioning of Vocational Skill Level Certificates in Accounting in the Era of Digital Transformation

With the spread of digital technology, the demands on accountants have changed in recent years. The first edition of the vocational ability only covered accounting knowledge, but gradually many other related areas have been added, such as data analysis, process automation, intelligent decision-making, and so on. For the reasons mentioned above, the place of vocational skill-level certificates in accounting is about to change significantly. Now they are no longer limited to verifying one's basic skills in a particular area but have expanded to cover all aspects of digital literacy. The increase in the amount of content for certificates can be attributed to the development of business records and data governance; the iteration of certificate standards has moved from job adaptation to technology integration; and the value of certificates is changing from employment qualifications to career development support. New field modules, such as intelligent finance, integration of business and finance, and digital auditing, are being added to the certificate system one by one; therefore, it has changed from a fixed list of skills to a dynamic map of competencies and needs, and it must be continuously updated in light of the new demands of the accounting profession in the era of technological change. The Relocation of certificates has also changed the certification logic; it is no longer based on skill assessment by experience but on data. Therefore, the certification results will be more in line with the students' actual abilities in new-generation accounting.

1.2 The Adaptation Mechanism for the Talent Cultivation Goals of the Accounting Major in Vocational Education and Certificate Standards

The goals of talent cultivation for the accounting major in vocational education will affect how well the "1+X" certificate system is implemented; therefore, an adaptation system needs to be built between the two to meet the certification requirements of the cultivation process. To promote the digital construction of cultivation goals, new elements such as financial data analysis, application of information systems and digital risk control should be added based on the original accounting and management capabilities, so that the positioning of talent cultivation aligns with the competency standards in the certificates. The three parts of building an adaptation mechanism are the goals of adaptation, the structure of adaptation, and the ways to achieve adaptation. At the target level, there should be a clear correspondence between the cultivation specifications and the certificate levels to ensure an orderly connection between one's position in academic education and the level of vocational skills. At the level of structure, a map of ability units has been created to link the professional curriculum system with the content of certificate assessments and avoid structural mismatches in curriculum design and certification requirements. At the level of operation, the process of teaching implementation includes the methods and standards for certificate assessment; therefore, it is possible to integrate daily teaching with certification training. All will be done to solve the problem of disconnected goals and disparate resources between higher education and vocational qualifications, and full support will be given to the construction of the "1+X" qualification system in accounting^[1].

1.3 Functional Reshaping and Value Extension of the "1+X" Certificate System in the Digital Age

New functions have been added to the "1+X" certificate system in the digital era that are not related to certification, and both functional restructuring and value addition have been achieved in the accounting major of vocational education. Over time, some functions have been added to the development of the certificate system; it is no longer just a single-skill assessment tool but has become a general talent-development platform for all departments of the accounting staff in the company, with many functions such as promoting teaching reform, optimising resource allocation, and meeting the diverse demands of different positions. With the development of digital technology, the link between the certificate system and teaching has gradually been strengthened and is now relatively strong. Certification Standards provide a general reference system for the development of curricula, organisation of teaching and learning activities, quality assessment, etc.; thus, a virtuous circle of "promoting teaching through certification and guiding learning through certification" is formed, and added value is added by redefining the social and economic value of the certificate system in the digital era. Certificates of vocational skill level are no longer just proof of ability; they have begun to contain information that can link the supply of education with the demand of the job market, and digital

platforms can be used to match competency data with all kinds of job requirements more precisely. At the same time, the functions of continuous education and lifelong learning for certificates will also be promoted. A modular, accumulable and convertible certificate system will give accounting professionals more choices in light of changes in the industry due to technology, and thus breathe new life into the "1+X" certificate system in the era of digital transformation.

2. Construction Logic of the Implementation Path for the "1+X" Certificate in the Accounting Major

2.1 Modular Arrangement and Hierarchical Structure of Certificates in Light of Digital Job Requirements

With the spread of digital technology in accounting, many new types of jobs have started to appear, such as financial data analysts, intelligent financial operations specialists and business-finance integration implementation consultants. There are many kinds of attributes needed for the above posts, and they are all different. According to the functional decomposition of job competencies, the modules in the certificates have been divided into independent and combinable sections; for example, "financial data processing", "application of intelligent fiscal and tax tools", "digital internal control management" and "financial shared services" are typical items. Each module is one of the required parts of the job requirements for skills. The first goal of modularisation is to move away from the old idea of all-or-nothing certification for certificates. All kinds of module combinations can be used to meet the different demands of various jobs, and by selecting suitable combinations of certifications according to one's career goals, it can be avoided that the content of the certifications does not meet the actual requirements of the job^[2].

A hierarchy has been established to organise all kinds of certifications according to the depth of ability and the complexity of work; the three levels are the basic operation level, the specialised application level, and the all-encompassing decision-making level. The first level of operation is the skill of using financial software and handling business documents; it is equivalent to the ability to perform at the beginning of a job. The aim is to help analyse data and improve the operating efficiency of business-finance integration; it falls under the category of business process and problem-solving skills for employees at a certain stage in their careers. Generally speaking, the purpose of decision-making is to provide strategic direction and risk control for the digital transformation of finance; thus, it falls under the functions of decision support and innovation leadership at the top level of the organisation. The hierarchy above is in line with the model of job-ability development, and the certificate system can meet all the different needs for ability improvement of learners at any time. At the same time, it is also in line with the goals of academic education in vocational training and forms a complete chain of ability development from entry to mastery.

2.2 The Embedded Integration Model of the Curriculum System for the Accounting Major and Vocational Skill Level Certificates

The integration of the curriculum system for the accounting major and vocational skill-level certificates should not be the result of simple addition; rather, a deep integration model needs to be established. The foundation of embedded integration is the construction of a map from curriculum modules to certificate units, the division of assessment standards for certificates into quantifiable ability elements, and then the integration of these ability elements into the teaching units of professional courses via curriculum content reconstruction. At the level of core professional courses, the knowledge points and skill points in the certificate modules, such as intelligent finance and business-finance integration, have been added to the original curriculum framework, and an isomorphic design has been achieved between the curriculum content and the certification content. In accordance with the principle of isomorphic design, the content of certificate assessment and skill training should be introduced at the same time during the knowledge transmission stage of teaching, and thus, preparation for certification should be integrated with teaching in a single module.

Embedded Integration is also in the curriculum and the certificate series, and a tiered integration framework has been established. The first professional course is Basic Accounting and Financial Accounting; it provides the foundation for all other courses and aims to cultivate students' basic accounting and financial literacy. It links the main professional courses of Financial Analysis and Management Accounting with the intermediate certificate module and achieves enhancement and

certification of special abilities at the level of professional deepening. It has added new courses to the area of advanced certificates, such as Financial Sharing and Digital Management, and at the stage of ability expansion, all-round abilities will be integrated and certified. The hierarchy above will help the students meet the certification requirements for that stage easily in the course process and create a single mode for both class instruction and qualification achievement. First, to improve the efficiency of talent cultivation, one should not divide or duplicate the implementation of academic education and vocational certification^[3].

2.3 The Collaborative Configuration Mechanism of Digital Teaching Resources and Certificate Assessment Requirements

Digital teaching resources will provide the basis for carrying out the "1+X" certificate, and their organisation should be in line with the requirements of the certificate assessment. The first kind of foundation for the cooperative arrangement mechanism is the uniformity of the content of resource development and assessment. According to the ability breakdown and assessment points in the certificate assessment standards, this paper will systematically organise the type structure and function position of digital teaching resources. Virtual simulation experiment resources can be used to train people in the process and operation of certificate assessment, improve their operating ability in a virtual work environment, etc. General cases are used to help people learn how to think and make decisions in different business situations. The intelligent training platform will be linked to the standard test papers, and according to the actual test results of the students, personalised exercise problems will be distributed. The three types of resources are in harmony and together form a resource matrix that can meet the demands of assessment very well and provide full support for learners at all times during the assessment.

Collaboration Configuration should also have a linked response mechanism to dynamically change the standard of certificates in response to changes in resources, and it must be ensured that the resources are available on time and suitable, etc. With the development of technology and changes in the demands of the workforce, the criteria for certifying these workers have changed; therefore, the digital teaching materials need to be updated by adding new modules from the resource library to ensure that the quality of education is not affected by outdated materials. The way the resource platform and the certification platform communicate to share data is also relatively good now. The learning paths, practice data and training results of learners on the resource platform can be mapped to the certification platform, and thus the learning process will be automatically linked with the certification results. The lower-level link of data can help teachers learn more about the current ability level of the students and plan teaching accordingly. At the same time, it will also provide data on the learning progress of students for all-round assessment by the certification institution.

3. Foundation and Operating Mechanism for the Effective Implementation of the "1+X" Certificate

3.1 The Improvement Path for the Digital Competency of the "Double-Qualified" Teaching Team in the Accounting Major

With the progress of digitalisation, the competency structure of the "double-qualified" teaching team in the accounting department needs to be reformed, and by enhancing the digital literacy of its members, we can provide a necessary human-resource foundation for the effective implementation of the "1+X" certificate system. The contents of digital literacy are varied, such as the use of financial data analysis tools, operation of intelligent financial platforms, digital teaching design and implementation, integration ability of information technology and the accounting major, etc.; together they form a complete system of digital literacy. The three stages of the progress plan are the updating of knowledge, transfer of skills and integration of abilities. Special training programs have been organised to inform the teaching staff about the general use cases of financial digitalisation and how to operate and use the new tools, such as financial robots, business intelligence analysis and financial shared-service systems; thus, their financial skills have been upgraded from traditional ones to digital financial literacy^[4].

At the level of ability integration, a two-way channel should be established for the application of technology and teaching reform, and this will link the teaching team's mastery of the content in the certificate assessment with their ability to develop digital teaching resources. Form a teaching innovation team with members who have good information-technology skills, staff from the technical

backbone of the enterprise, and professional teachers to build a cooperative model of technical support and instructional design; have members of the teaching team learn about the technical tools and apply them in teaching and training situations that meet the requirements for certificate assessment. All of the above will help us form a good "double-qualified" teaching team that meets the requirements for digital certification.

3.2 The Digital Assessment Framework for the Quality Assurance System of Vocational Skill Level Certificates

Digital technology should be employed to improve the form of quality assurance for the system of vocational skill-level certificates, and a multi-dimensional evaluation system will be established at all stages of certification. At the bottom of the Digital Assessment Framework is the competency data. Add this to the digital certification platform, automatically collect and analyse process data such as the learners' operation path, the quality of task completion and the efficiency of problem-solving; thus, the evaluation will be based on both the final results and the entire process and development ability of the learners. Adaptive test technology will be used in the construction of the assessment framework to adjust the content and difficulty of the tests according to the current abilities of the students, so the test results can better reflect their actual abilities and improve the discrimination and credibility of the evaluation.

A verification mechanism will be added to the Digital Assessment Framework for the fused multi-source data, and both the operational data collected by the digital platform and the professional judgment from manual evaluation will be combined to form an assessment conclusion based on subjective and objective evidence. The index of the development progress of ability will also be in the evaluation plan. Regularly collect the achievement data of the learners from the certifications at various times and in all areas to create a map of their ability development, and then provide individual diagnoses and improvement suggestions. Digital technology can change the idea of quality assurance from after-production inspection to real-time control, and many indicators can be combined into a single index to make the quality certificates more reliable and practical^[5].

3.3 Collaborative Operation Mechanism of Multiple Parties for Certificate Implementation from the Perspective of Industry-Education Integration

A multi-stakeholder collaborative operating model has been established to promote the good implementation of the "1+X" certificate system in the accounting major, and the construction of this model will be based on the three areas of stakeholder positioning, resource integration and process coordination. At the level of stakeholder positioning, it specifies the roles and division of rights and responsibilities for participants in the implementation of certificates, such as schools, evaluation institutions and enterprises in the industry. Schools should integrate the function of issuing certificates with talent cultivation, evaluation institutions will establish certification standards and conduct assessments in accordance with these standards, and industry enterprises will also participate in updating the standards and verifying abilities. At the level of resource integration, there will be a model for joint construction and sharing of resources. Based on the leading technology platform in the industry, build a teaching and training environment, desensitize the real-world business data provided by enterprises, and then create certification and assessment cases using this data for the effective transfer of resources and values among all parties^[6].

The system of process coordination has covered all links in the development of the standard, teaching and application of the standard, certification and assessment, as well as ability certification. A Digital Collaboration Platform will be employed to share information in real time and organise work at all times. Many parties have been participating in the discussion and revision of the standard recently to make it more modern and practical. At the time of teaching implementation, enterprise experts and school teachers will cooperate to conduct teaching according to the actual work conditions of the enterprise. At the stage of certification assessment, industry technical staff will be introduced to help design the assessment and analyse the results; thus, the industry's recognition of the certification will be enhanced. All the parties in this cooperation have different resources and roles, but together they can provide support for the continuous operation of the "1+X" certificate system.

Conclusion

Systematically study the development process of the "1+X" certificate for the accounting major in vocational education under digital transformation and build a complete research framework of three levels in this paper: value reconstruction, construction logic and supporting mechanisms. In terms of the reconstruction of values, this paper finds that with the addition of digital technology, certificates have changed from being indicators of skills to demonstrating abilities; a multi-dimensional adaptation mechanism has been established for the goals of talent cultivation and the standards for certificates, and both the functional reshaping and value extension of the certificate system in the digital era have been clarified. The construction path for the implementation of this study is to build a modular and hierarchical certificate system based on digital job requirements, develop an embedded integration model for the curriculum system and certificates, and establish a collaborative configuration mechanism for digital teaching resources and assessment needs to form the operating path framework. At the level of supporting elements and operating mechanisms, this paper puts forward an improvement path for the digital competence of the "double-qualified" teaching team, a digital assessment framework, and a multi-stakeholder collaborative operation model to provide organisational support and quality assurance for the effective implementation of the certificate system. In the future, all kinds of applications for various types of digital certificate modules will continue to be explored, personalised certification based on learning analytics will be further studied, comparisons in different professional fields will be added, and thus the theoretical system and practical model of the "1+X" certificate system in vocational education will be enriched.

Fund Projects

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