

# Research on the Optimization of the Curriculum System for Professional Bachelor's Degree Programs in Accounting from the Perspective of RPA Promotion

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**Abstract:** With the widespread application of Robotic Process Automation (RPA) technology in the field of accounting and finance, the curriculum system of vocational undergraduate accounting courses faces new challenges and opportunities. This study explores the application of RPA technology in the accounting field and its impact on the curriculum system, proposing strategies to optimize the vocational undergraduate accounting curriculum. These include optimizing course settings, innovating teaching methods, constructing a practical teaching system, and building a faculty team. By rationally introducing and applying RPA technology, students' professional abilities and employability can be effectively enhanced, promoting the quality of vocational undergraduate education and supplying high-quality talent for industry development.

**Keywords:** RPA; Accounting curriculum system; Vocational undergraduate; Teaching reform; Curriculum optimization

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## 1. Introduction

As an important base for training applied talents, the curriculum system of vocational undergraduate institutions must be closely integrated with industry development demands. Currently, the rapid popularization of RPA technology poses new requirements for the training of accounting professionals. Optimizing the accounting curriculum and incorporating RPA-related courses and content can enable students to master cutting-edge technologies and enhance their market competitiveness. Moreover, the reform of accounting courses can also drive innovation and development in the entire vocational education system. This study aims to explore how to enhance the quality and effectiveness of vocational undergraduate accounting education through curriculum optimization, providing support for industry development.

## **2. The application of RPA in accounting and its impact on the curriculum system**

### **2.1. Overview of RPA technology**

Robotic Process Automation (RPA) technology is a software-based automation tool that can mimic manual operations to perform highly repetitive, rule-based tasks. RPA software robots interact with existing applications to automatically perform data entry, processing, and transmission, significantly improving work efficiency and accuracy. RPA technology is highly scalable and can be applied across multiple business domains, especially in data-intensive industries such as accounting, banking, and insurance.

The core advantage of RPA lies in its seamless integration capability. RPA robots do not require changes to existing Information Technology (IT) infrastructures. They interact with systems by mimicking human operations, achieving automation. This non-intrusive feature allows RPA to be rapidly deployed and implemented, reducing the technical barriers and implementation costs for businesses. Additionally, RPA technology is highly flexible, allowing for quick adjustments and optimizations based on business needs, and adapting to ever-changing business processes.

Another significant feature is the efficiency and accuracy of RPA. RPA robots can operate continuously without time and energy constraints, significantly improving task processing efficiency. Simultaneously, RPA robots strictly follow preset rules in operations, greatly reducing human errors and ensuring the accuracy and consistency of data processing. For repetitive tasks such as data entry, report generation, and auditing in accounting work, the application of RPA technology can significantly enhance work quality and efficiency<sup>[1]</sup>.

With the continuous advancement of Artificial Intelligence (AI) and Machine Learning (ML) technologies, RPA technology is evolving towards Intelligent Automation (IA). IA not only performs rule-based tasks but also conducts data analysis and decision support through machine learning algorithms. For instance, intelligent RPA can automatically recognize and handle anomalous data, and provide predictive analysis and suggestions, further enhancing the intelligence level of accounting work.

### **2.2. The impact of RPA on accounting work**

The application of RPA technology in the accounting field is fundamentally changing the traditional financial management and accounting operation modes. Firstly, RPA can automate the handling of a large volume of routine financial transactions, such as invoice processing, expense reimbursement, and accounts receivable/payable management. With RPA technology, financial personnel can shift their focus from repetitive, mechanized operations to higher-value analysis and decision-support tasks, enhancing overall work efficiency and business value.

Secondly, RPA demonstrates significant advantages in data processing and report generation. Accounting work involves extensive data entry, organization, and verification tasks that are not only time-consuming and labor-intensive but also prone to human errors. RPA robots can quickly capture, enter, and verify data and generate accurate financial reports, significantly increasing the speed and accuracy of data processing, and reducing errors and discrepancies in financial reports.

Thirdly, RPA technology can enhance the efficiency of financial audits and compliance management. During financial audits, RPA robots can automatically screen and compare massive amounts of financial data according to predetermined rules and standards, swiftly identifying anomalies and discrepancies, and providing timely warnings and resolutions. This not only improves the efficiency and accuracy of financial audits but also strengthens corporate compliance and risk control capabilities, ensuring the transparency and standardization of financial management.

Lastly, the application of RPA promotes the development of financial shared service centers. Through RPA technology, businesses can centralize the financial operations of various branches, achieving standardized

and centralized management of financial processes, reducing operational costs, and enhancing management efficiency. The establishment of financial shared service centers allows companies to better utilize resources, optimize financial management processes, and improve the overall level and quality of financial work.

### **2.3. Requirements of RPA technology for the curriculum system**

The widespread application of RPA technology imposes new requirements on the vocational undergraduate accounting curriculum system. Course settings need to cover the basic knowledge and application skills of RPA technology. The vocational undergraduate accounting curriculum should introduce courses such as “RPA Fundamentals and Applications” and “Intelligent Finance and RPA Practice” to help students understand the basic principles, technical features, and application scenarios of RPA, and master the operation and programming skills of RPA software. These courses should emphasize the integration of theory and practice, using real cases and project practice to cultivate students’ practical operational skills.

Innovative teaching methods are needed. To keep pace with the rapid development of RPA technology, teaching methods should focus more on case teaching and project-driven instruction. By introducing real business cases and practical projects, students can learn the application of RPA technology in simulation and real-world scenarios, enhancing their ability to solve practical problems<sup>[2]</sup>. Teachers can use RPA software for classroom demonstrations and operational guidance, enhancing students’ intuitive understanding and hands-on abilities, and improving teaching effectiveness.

The practical teaching system needs strengthening. Learning RPA technology requires not only classroom instruction but also ample practical opportunities. Vocational undergraduate institutions should establish practice bases in cooperation with enterprises, designing internship projects that include RPA applications, allowing students to apply their knowledge in real work environments and accumulate practical experience. Through school-enterprise cooperation, students can understand the actual RPA application scenarios and technical needs in enterprise operations, enhancing their employability.

Faculty development needs enhancement. As an emerging technology, RPA requires teachers to possess relevant professional knowledge and skills. Vocational undergraduate institutions should strengthen teacher training to enhance their mastery and application capabilities in RPA technology. This can be achieved through cooperation with enterprises, participation in professional training, and academic exchanges, promoting continuous learning and improvement among teachers. Additionally, encouraging teachers to conduct RPA-related research can integrate teaching and research, improving the level of teaching and research, and providing higher-quality educational resources for students.

## **3. Strategies for optimizing vocational undergraduate accounting curriculum systems**

With the widespread application of RPA in the accounting field, the curriculum system for vocational undergraduate accounting courses needs comprehensive optimization to meet the new demands of industry development. This chapter will discuss specific optimization strategies from four aspects: curriculum setting optimization, innovative teaching methods, construction of a practical teaching system, and faculty development. By integrating RPA-related courses, employing diverse teaching methods, strengthening practical teaching components, and enhancing the professional skills of teachers, the aim is to comprehensively improve students’ professional abilities and employability, training high-quality applied talents for the accounting industry.

### 3.1. Curriculum setting optimization

Optimizing the curriculum is crucial for enhancing the quality of vocational undergraduate accounting education. Firstly, RPA-related courses should be introduced into the existing curriculum system. Specifically, courses such as “RPA Fundamentals and Applications” and “Intelligent Finance and RPA Practice” could be established to allow students to systematically learn the basic concepts, operational processes, and application scenarios of RPA technology. Through these courses, students will gain a comprehensive mastery of RPA technology, laying a solid foundation for their future career development.

Secondly, the curriculum should focus on the integration of interdisciplinary subjects. The application of RPA technology requires not only knowledge of accounting but also skills in programming and data analysis<sup>[3]</sup>. Therefore, courses such as “Python Programming Basics” and “Data Analysis and Visualization” could be added to the curriculum system, equipping students with basic programming abilities and data processing skills. Interdisciplinary studies will enable students to better understand and apply RPA technology, enhancing their overall quality and competitive edge in their careers.

Thirdly, curriculum settings should consider changes in industry demands and trends. The accounting industry is moving towards automation and digitization, and the curriculum system should be timely adjusted and updated to include the latest industry trends and technological applications. For example, cutting-edge courses like “Blockchain in Financial Management” and “Artificial Intelligence in Accounting” could be introduced, helping students to grasp the latest industry dynamics and technological applications and enhancing their ability to adapt to changes in the industry.

Lastly, the curriculum should emphasize practicality and applicability. In addition to theoretical courses, more practical and project-based courses should be included to cultivate students’ practical operation skills and problem-solving abilities. For instance, courses such as “Hands-On Development of Financial Robots” and “Case Analysis of Enterprise RPA Applications” could be set up, allowing students to apply their knowledge in real business scenarios through hands-on projects and analyses, thereby enhancing their professional conduct and capabilities.

### 3.2. Innovative teaching methods

Innovating teaching methods is essential for improving the effectiveness of course instruction. First, the case study method should be widely used. By introducing real business cases, students can learn and apply RPA technology in authentic contexts. Teachers could select typical RPA application cases and explain in detail their background, implementation processes, and outcomes, enabling students to master practical application techniques and operational skills of RPA through case analysis.

Second, project-driven teaching can effectively enhance students’ hands-on skills and innovative thinking. Teachers could design a series of RPA-related project tasks, requiring students to complete projects in teams, thereby consolidating theoretical knowledge through practice. For example, students could be tasked with developing a simple financial robot to automate specific financial tasks, learning and applying RPA technology throughout the project, enhancing their practical operation skills and teamwork.

Moreover, blended learning, which combines online and offline teaching, can increase the flexibility and interactivity of teaching. Teachers could use online platforms to provide RPA technology resources, such as video tutorials, online quizzes, and interactive discussions, allowing students to learn and review anytime and anywhere. Offline classes would focus on hands-on operations and interactive exchanges, improving students’ learning outcomes and engagement through class discussions, laboratory activities, and practical demonstrations.

Finally, the flipped classroom method can stimulate students' proactive learning and thinking skills. In a flipped classroom, teachers arrange for the transfer of foundational knowledge before class, with students acquiring basic concepts and operational methods through pre-class videos and reading materials. Classroom time is then devoted to discussions, practice, and problem-solving, where teachers address students' questions and provide guidance, deepening students' understanding and mastery of the knowledge in practice, and enhancing their self-learning abilities and innovative thinking<sup>[4]</sup>.

### **3.3. Construction of a practical teaching system**

Establishing a comprehensive practical teaching system is crucial for enhancing students' practical skills. To begin with, practice bases in cooperation with enterprises should be established. Vocational undergraduate institutions could collaborate with accounting firms to create practical training bases for RPA technology applications, providing students with real work environments and practical opportunities. Through corporate practices, students can understand the application of RPA technology in actual business operations, accumulate valuable experience, and improve their professional conduct and capabilities.

Next, systematic practical courses and projects should be designed. Practical courses should cover all aspects of RPA technology, from basic operations to advanced applications, enabling students to fully master the practical application methods of RPA technology. For example, courses like "Hands-On Development of Financial Robots" and "RPA Project Management and Implementation" could be set up, allowing students to learn and apply RPA technology in practice through actual project management and operations, enhancing their comprehensive abilities and practical experience.

Additionally, students should be encouraged to participate in research and innovation projects. Vocational undergraduate institutions should support students in engaging in RPA-related research projects and innovation competitions, providing the necessary resources and guidance. Through research and innovation projects, students can explore the applications of RPA technology in depth, fostering their innovative thinking and research skills. For example, students could be organized to participate in "Intelligent Finance Innovation Competitions," showcasing their innovative achievements in RPA technology applications, enhancing their research abilities and innovative qualities.

Lastly, a sound practical teaching evaluation system should be established. Practical teaching evaluations should include both process and outcome assessments, comprehensively examining students' practical abilities and learning effects. Teachers should conduct comprehensive evaluations based on students' performance in practical activities, the quality of completed projects, and their engagement, providing specific feedback and guidance<sup>[5]</sup>. Through a scientifically reasonable evaluation system, students are encouraged to continuously improve and enhance their practical skills, improving the effectiveness and quality of practical teaching.

### **3.4. Faculty development**

Faculty development is a fundamental basis for enhancing the quality of course instruction. Firstly, professional training for teachers should be strengthened. Vocational undergraduate institutions should regularly organize RPA technology training and exchange activities, enhancing teachers' mastery and application capabilities in RPA technology. For example, experts in the RPA field could be invited to conduct special lectures and training sessions, enabling teachers to stay updated on the latest developments and applications of RPA technology and improve their teaching levels and professional skills.

Secondly, teachers should be encouraged to engage in industry practices. By arranging for teachers to work temporarily in enterprises and participate in practical exchanges, teachers can gain an in-depth understanding

of the application of RPA technology in actual business operations, accumulating practical experience and enhancing the practicality and applicability of their teaching. For example, teachers could be arranged to work in the RPA project teams of accounting firms, participating in the implementation and management of projects, and understanding the technical needs and application challenges in actual business operations.

Thirdly, support should be provided for teachers to conduct research and undertake research projects. Vocational undergraduate institutions should encourage teachers to apply for and undertake RPA-related research projects, conducting in-depth theoretical research and application exploration. Through research and project studies, teachers can continuously update and enrich their teaching content, enhancing the academic level and cutting-edge nature of their teaching. For example, teachers could be supported to apply for research projects such as “Application Research of RPA Technology in the Accounting Field,” exploring the application methods and effects of RPA technology in various financial business areas, enhancing the level of teaching and research.

Lastly, an incentive mechanism for outstanding faculty should be established. Vocational undergraduate institutions should develop incentive policies to encourage and support teachers in achieving excellent results in teaching, research, and practice. For example, awards such as the “RPA Teaching Excellence Award” and “Research Achievement Award” could be established to recognize teachers who excel in RPA teaching and research, enhancing their work enthusiasm and teaching passion. Through the establishment of incentive mechanisms, teachers are motivated to continuously improve their qualifications and teaching levels, providing students with higher-quality educational resources.

#### **4. Effects of optimizing the curriculum system for professional bachelor’s degree programs in accounting**

By optimizing the curriculum system for professional bachelor’s degree programs in accounting, introducing RPA-related courses, adopting innovative teaching methods, and enhancing both practical teaching and the quality of faculty, significant improvements have been noted in students’ professional abilities and employability. Firstly, the optimized curriculum enables students to systematically learn RPA technology, mastering its basic principles and application methods, thus enhancing their professional expertise in the accounting field. Through practical projects and case studies, students accumulate substantial practical experience and develop the capability to apply RPA technology in real accounting tasks. Moreover, interdisciplinary course settings enhance students’ programming and data analysis skills, equipping them with comprehensive qualities to tackle complex accounting issues. Such curriculum optimization not only meets the industry’s demand for high-quality accounting talent but also enhances students’ competitiveness and professional development potential in the job market.

Secondly, the innovation in teaching methods and practical teaching systems further enhances students’ learning outcomes and practical skills. Through case-based and project-driven teaching, students learn and apply RPA technology in real-world scenarios, fostering their problem-solving abilities and innovative thinking. Blended learning and flipped classrooms enhance student initiative and interactivity, enabling effective learning both inside and outside the classroom <sup>[6]</sup>. Additionally, collaboration with enterprises on a practical basis and support for scientific research and innovation projects allow students to gain valuable experience in real business settings, thus improving their professional demeanor and skills. The enhancement of faculty and the establishment of incentive mechanisms ensure the continuous improvement of teaching quality, providing students with high-quality educational resources.

## 5. Conclusion

This study analyzes the application of RPA technology in the field of accounting and its impact on the curriculum system of professional bachelor's degree programs in accounting, proposing strategies for curriculum optimization, innovation in teaching methods, construction of practical teaching systems, and faculty development. The research demonstrates that these measures effectively enhance students' professional skills and practical abilities, boosting their employability and thus improving the quality of professional bachelor's education. Future research should further explore the potential application of RPA technology in other professional courses, focus on the integration of RPA with emerging technologies like artificial intelligence and big data analytics, and examine its actual application effects within the educational system to continuously promote innovation and progress in vocational education and train high-quality professional talents.

## Disclosure statement

The author declares no conflict of interest.

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