

Dilemmas and Governance Strategies in the Implementation of the Modern Apprenticeship System in Chinese Vocational Colleges: A Perspective from Principal-Agent Theory

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Abstract: *As China's industrial economy transitions towards high-quality development, the demand for highly skilled technical personnel has surged. The modern apprenticeship system, an important mechanism for deepening collaboration between educational institutions and enterprises, has been widely promoted within vocational colleges. However, nearly a decade into its implementation, this system faces challenges such as insufficient engagement from enterprises, loose relationships between schools and businesses, and a lack of assessment and feedback mechanisms. These issues have led to suboptimal outcomes in talent development. This paper innovatively applies principal-agent theory to expose conflicts in value demands, adverse selection, and moral hazards within the multifaceted principal-agent relationships among vocational colleges, enterprises, and the government. It proposes governance strategies that involve multi-stakeholder participation in policy-making, the establishment of qualification entry systems for cooperative enterprises, and the improvement of supervision and incentive mechanisms. These strategies aim to resolve conflicts and enhance cooperation efficiency, thereby providing robust support for the effective implementation of the modern apprenticeship system in vocational colleges.*

Keywords: Modern apprenticeship, Vocational colleges, Principal-agent theory, Value demand conflicts, Adverse selection, Moral hazard.

1. Introduction

As China's industrial economy shifts from rapid growth to high-quality development, the demand for highly skilled technical talent has become increasingly urgent. The modern apprenticeship system is a crucial institution for strengthening the collaboration between the educational sector and industry in training talent. It also serves as a vital pathway for vocational colleges to cultivate advanced technical skills that meet contemporary societal needs. Since the initiation of pilot projects in selected vocational colleges in 2014, the modern apprenticeship system has been implemented for nearly a decade and is now in a phase of comprehensive promotion. With the growing number of participating institutions, several significant challenges have emerged. These primarily include the variable quality of enterprises involved in the apprenticeship programs, notably those that prioritize profitability over educational outcomes, exhibit weak cooperation motivation, and suffer from inefficiency. Concurrently, the relationships between vocational colleges and cooperating enterprises are often loose, with enterprises typically participating passively. Furthermore, the lack of effective evaluation and feedback mechanisms in schools to monitor and regulate these enterprises often leads to suboptimal training quality and insufficient societal recognition of the modern apprenticeship system.

Principal-agent theory, a key component of economic contract theory, is commonly used to analyze the relationship between policymakers and implementers, and between the government and external contractors in public service outsourcing. However, this theory has seldom been applied to educational organizations and school-enterprise cooperation policies. In this paper, I will innovatively use principal-agent theory to

analyze and explain the main problems faced by vocational colleges in implementing the modern apprenticeship system and their underlying causes. I will also propose corresponding governance strategies and policy recommendations to help improve the current state of the modern apprenticeship implementation in Chinese vocational colleges.

2. Theoretical Review

2.1 Modern Apprenticeship System

Apprenticeship has been the initial form of vocational education, from which the modern apprenticeship system was developed, building on the traditional apprenticeship and school education. It is a crucial method by which developed countries support industrial development through vocational education [1]. The core concept of the modern apprenticeship system focuses on the collaboration between schools and enterprises in educating individuals, emphasizing the dual identity of trainees as both "students" and "apprentices." In this educational model, trainees are immersed in real work environments and receive scientifically rigorous vocational training, ultimately achieving simultaneous enhancement of knowledge, skills, and qualifications.

In 2014, the State Council of China officially issued the "Decision on Accelerating the Development of Modern Vocational Education," which clarified the policy direction for vocational colleges to significantly deepen cooperation with enterprises. In the same year, the Ministry of Education issued the "Opinions on Carrying Out Pilot Work of the Modern Apprenticeship System," which set forth the requirements for vocational colleges to conduct pilot projects of the modern apprenticeship system and laid the groundwork

for its subsequent nationwide promotion. In May 2019, the Ministry of Education released the "Notice on Fully Advancing the Work of the Modern Apprenticeship System" from its Office, summarizing the successful cases and experiences from pilot institutions. Since the release of this notice, the modern apprenticeship system has gradually transitioned from the pilot phase to a broader national rollout, marking its true entry onto the stage of vocational education in China. To date, nearly 600 vocational colleges in China have become key implementers of the modern apprenticeship system. They have made valuable attempts in engaging enterprises actively, exploring the boundaries of responsibilities and rights between schools and enterprises, and developing high-quality joint courses, providing precious experience for the comprehensive promotion and effective implementation of the modern apprenticeship system in China's vocational colleges.

2.2 Principal-Agent Theory

Principal-agent theory was first introduced in the 1970s by economists such as Ross during their exploration of the "state-space modeling approach." It was developed based on the theory of asymmetric information games and has become an integral part of economic theory. The theory is founded on two primary assumptions. The first is that both the principal and the agent are "economic agents" with potentially conflicting value claims; the second is that there exists an information asymmetry between the principal and the agent. In the absence of effective monitoring mechanisms, the agent might exploit this information advantage to act against the principal's interests, leading to issues of adverse selection and moral hazard [2].

Originally, principal-agent theory was primarily applied within the field of economics. However, as society has progressed and productivity has increased, the division of labor has become more refined, and the principal-agent relationship has gradually extended from economic contexts to other societal domains. Examples include the relationship between policy-makers and implementers during the policy process, and between governments and external contractors in public service outsourcing. Yet, there has been limited application of this theory within the realms of educational organizations and school-enterprise cooperation. The author believes that the government/educational authorities, vocational colleges, and enterprises inherently form a principal-agent contractual relationship when collaboratively implementing the modern apprenticeship system. Thus, it might be insightful to analyze and interpret the current implementation status and challenges faced from the perspective of principal-agent theory.

3. Principal-Agent Relationships in the Implementation of the Modern Apprenticeship System by Vocational Colleges

Through an analysis of a series of policy documents related to the modern apprenticeship system issued in China since the first pilot implementation in 2014, it is evident that the government/educational administrative departments,

vocational colleges, and cooperating enterprises jointly participate in the implementation of China's modern apprenticeship system. This process involves multiple layers of principal-agent relationships (as shown in Figure 1), specifically manifested on two levels.

3.1 First Level of Principal-Agent Relationship

The government and educational authorities delegate the function of talent training to various levels of vocational colleges. To cultivate high-quality laborers and advanced skilled personnel that meet contemporary demands, central authorities periodically introduce vocational education policies related to the modern apprenticeship system. Local educational departments are tasked with developing implementation plans that are tailored to regional characteristics. These plans are then delegated to local vocational colleges for execution, with the colleges being accountable for the outcomes. Thus, in the process of implementing the modern apprenticeship system, a potential contractual relationship is formed between the government/educational administrative departments and vocational colleges. The local vocational colleges are expected to adhere to this contract and concretely implement the modern apprenticeship system.

3.2 Second Level of Principal-Agent Relationship

The core concept of implementing the modern apprenticeship system is the collaborative education of students by schools and enterprises, emphasizing the dual identity of "student-apprentice" and adopting a model that merges recruitment and hiring. This approach enables students to enhance their technical skills in real job positions within enterprises. In this training model, vocational colleges are responsible for developing talent training plans. Specific teaching implementation plans, such as teaching schedules, curriculum design, and the preparation of teaching resources, are often delegated to the cooperating enterprises to lead and complete. Educational authorities and vocational colleges establish a series of assessment and monitoring mechanisms to strengthen incentives, ensuring the quality of high-tech skill talent training.

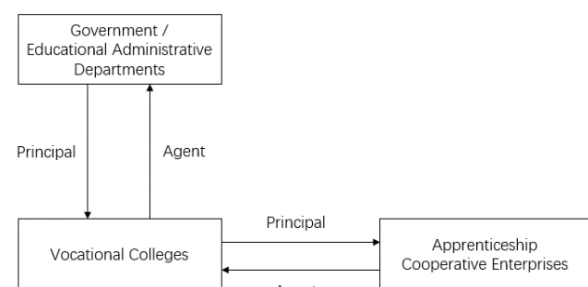


Figure 1: Simplified Diagram of the Principal-Agent Relationship in the Implementation of the Modern Apprenticeship System by Vocational Colleges

Analyzing Principal-Agent Issues and Their Origins in the Implementation of the Modern Apprenticeship System

In the implementation of the Modern Apprenticeship System, vocational colleges face several principal-agent challenges, which primarily manifest in three areas: conflicts between the

value demands of principals and agents, adverse selection, and moral hazard.

3.3 Conflicts Between the Value Demands of Principals and Agents

Due to the multiplicity of principal-agent relationships in the implementation process of the Modern Apprenticeship System, the chain of these relationships tends to elongate, which can easily lead to internal role conflicts between the principal and the agent. Reviewing existing policy documents related to the Modern Apprenticeship System, it is evident that although the documents clearly define the rights and obligations of all involved parties, there are significant differences in the value demands among different stakeholders. Specifically, government and educational administrative departments seek to fulfill their managerial functions, promote regional economic development, and achieve better governmental performance, primarily focusing on maintaining a good educational environment and enhancing social benefits. Vocational colleges often orient themselves around the "school-centric" approach, aiming to nurture high-quality technical talent and achieve full employment as their fundamental value objectives. On the other hand, enterprises prioritize their economic benefits and aim to maximize profit, showing clear "economic man" characteristics in their role as talent cultivators. Moreover, since the policy formulation of the Modern Apprenticeship System is often led by the principal without actual participation or prior communication from enterprises, the cooperating enterprises, acting as agents, are prone to opportunistic behaviors that contradict the contract in pursuit of maximizing their own interests.

3.4 Adverse Selection Issues

Adverse selection refers to a situation in an environment of asymmetric information where the agent holds more "private information" and uses the principal's lack of information to their disadvantage. This imbalance causes the process of negotiation or transaction to deviate from the intentions of the less informed party, ultimately leading to the phenomenon where "inferior products drive out superior ones" [3]. The described "asymmetric information" typically refers to "pre-existing information asymmetry," where the policy-making entity, acting as the principal, is unable to know the execution intentions, capabilities, and motivations—considered "private information"—of the policy-implementing entity before policy implementation. Consequently, as the agent, the policy-implementing body can exploit its informational advantage and the principal's informational deficiency, causing the policy execution to deviate from the intended objectives. In other words, when one party in a transaction holds more information, particularly about the potential risks involved, adverse selection issues arise.

In the implementation of the Modern Apprenticeship System by vocational colleges, due to multiple principal-agent relationships and lengthy information transmission chains, there is a high susceptibility to ineffective information transfer and asymmetric information, thereby increasing the risk of adverse selection. Historically, some vocational

colleges, acting akin to isolated ivory towers, have lacked effective communication and deep engagement with industries and enterprises. In seeking cooperative enterprises, these colleges often face obstacles due to external information blockages and lack of experience, leading to partnerships with enterprises that may have insufficient qualifications or poor quality of talent development and may even withdraw prematurely, significantly hindering the effective rollout of the Modern Apprenticeship System.

3.5 Moral Hazard Issues

Post-event information asymmetry between the principal and the agent can lead to moral hazard issues, defined as situations in market transactions with asymmetric information where one party cannot observe the other's behavior, or where the cost of monitoring is too high, leading to changes in one party's behavior that adversely affect the other's interests [4]. In the implementation of the Modern Apprenticeship System by vocational colleges, the colleges, acting as principals, typically lead the initial talent development program design but generally do not intervene in the specific teaching arrangements made by the cooperative enterprises later on. In the absence of effective supervision and enforcement mechanisms, enterprises, acting as agents, may engage in behaviors that prioritize their interests over those of the principals, constituting "moral hazard."

From a socio-economic perspective, businesses should not only fulfill their legal, economic, and ethical responsibilities but also go beyond a profit-centric value system to fully leverage their capital advantages and undertake responsibilities for societal development. However, most companies still adhere to a value system that prioritizes maximizing economic benefits, focusing excessively on financial gains with a diminished awareness of their social responsibilities and their role in education. This mindset results in low enthusiasm among businesses for participating in the implementation of the modern apprenticeship system in vocational colleges [5]. Furthermore, since vocational colleges do not mandate that apprenticeship program graduates must be employed by the partnering companies, these companies lack sufficient motivation to take on the responsibility and mission of developing high-quality technical skills. As a result, during the implementation of the modern apprenticeship system, companies often play a "passive" role. Vocational colleges, acting as principals, find it challenging to effectively monitor and restrain these companies through objective assessment and supervision mechanisms. This leads to frequent instances of moral hazard, where companies, driven by profit maximization, unilaterally reduce educational resources and exploit apprentices as cheap labor.

4. Governance Strategies and Policy Recommendations

To address the principal-agent problems faced by vocational colleges in implementing the modern apprenticeship system, I propose targeted optimizations in policy and governance improvements in three key areas:

4.1 Joint Policy Development by Vocational Colleges and

Partnering Companies to Resolve Value Conflicts

By involving agents in policy development and clarifying who the principals and agents are, and who is accountable to whom, we can define the principal-agent relationship as "specifying a series of actors, the possible actions they can take, and how they evaluate the consequences of these actions" [6]. This approach allows agents to gain intrinsic motivation based on the conditions granted by the principals, thereby ensuring better fulfillment of the tasks entrusted to them. Based on this, government and educational authorities can guide vocational colleges and partnering companies to jointly develop policies tailored to their characteristics, establish a management and quality assurance system for education, clarify the rights and obligations of both parties, and reach a consensus in advance. This ensures alignment in the value propositions of all parties involved in the principal-agent dynamic, thereby better balancing interests and continually enhancing satisfaction with the implementation of the modern apprenticeship system.

4.2 Establishing a Qualification System for Partner Companies to Overcome Adverse Selection

To address the problem of adverse selection caused by "pre-existing information asymmetry," governments and educational regulatory bodies can guide vocational colleges in establishing a qualification system for cooperating companies and improving signal transmission. Before formal cooperation with a company, vocational colleges should require that the company provide comprehensive and objective information relevant to the delegated tasks to ensure they meet the basic conditions necessary for implementing the modern apprenticeship system. This approach helps to exclude inferior companies and reduces the phenomenon where "bad products drive out good ones" caused by adverse selection. During the selection phase of partner companies, vocational colleges should prioritize well-recognized, strong medium to large enterprises with established training mechanisms to leverage their strengths in enhancing the quality of talent development and to mitigate the risks of adverse selection due to information asymmetry at the implementation stage. For instance, schools could establish connections with industry associations to leverage their resources and authoritative status effectively in selecting and vetting companies for the modern apprenticeship system.

4.3 Improving Supervision and Incentive Mechanisms to Avoid Moral Hazard

To overcome the series of moral hazard issues caused by the lack of effective supervision and constraints on cooperating companies during the implementation of the modern apprenticeship system in Chinese vocational colleges, it is advisable for the government and educational authorities, acting as principals, to consider involving third-party professional organizations. These organizations would use the quality of high-skill talent development as a benchmark to assess and monitor the entire implementation process of the modern apprenticeship system, providing timely feedback. The results would be linked to subsequent potential funding and resources, acquisition of relevant certifications, and the establishment of social influence, with rewards and penalties

to provide timely incentives both positively and negatively. This approach aims to minimize moral hazards arising from "post-event information asymmetry" during the system's implementation. Additionally, leveraging various levels of media and public opinion can broaden the promotion and public oversight of the modern apprenticeship system, ensuring the quality of high-skill talent training and employment, and gaining public trust and support.

References

- [1] Gong Xiaotao, Zhao Pengfei, Shi Fanfeng. Research on the Path of Fully Implementing the Modern Apprenticeship System under the Background of "Double High Plan" [J]. *China Vocational and Technical Education*, 2019, (33): 40.
- [2] Liu Yougui, Jiang Nianyun. Commentary on the Principal-agent Theory [J]. *Academic Community*, 2006, (1): 69-78.
- [3] Ding Huang, Li Xiaofei. Adverse Selection, Interest Bargaining, and Policy Implementation Obstruction [J]. *Journal of Beihang University (Social Sciences Edition)*, 2010, (1): 16.
- [4] Tan Chao, Wang Jining, Sun Benzhi. Research on Adverse Selection and Moral Hazard in P2P Lending Platforms [J]. *Financial Economics Research*, 2014, (5): 104.
- [5] Zheng Wen, Zhao Pengfei. Exploration of the Modern Apprenticeship System Pilot in Vocational Education with the Guangdong Characteristic [J]. *China Vocational and Technical Education*, 2016, (11): 12-14.
- [6] Sean Gailmard. Accountability and Principal-Agent Theory [J]. *The Oxford Handbook of Public Accountability*, 2014(5): 2-3.