Research on the Innovative Talents in "Double First-Class" Universities under Artificial Intelligence Technology

Wanying Song* and Jian Min*
School of Management, Wuhan University of Technology, Wuhan, China

*Corresponding author e-mail: songwanyingwut@126.com, 20431622@qq.com

Abstract. With the continuous integration of artificial intelligence technology and management disciplines, the emergence of new technologies and new concepts put forward new requirements for the cultivation of cross-disciplinary talents in management disciplines. At the same time, strengthening the development of cross-disciplinary integration is also a vital part of the “Double First-Class” universities construction. This article points out that the application direction of artificial intelligence technology in innovative talents of management discipline can be divided into three levels: computational intelligence, perceptual intelligence, and cognitive intelligence. Based on the three levels, formulated innovative talents in the management discipline cross-cultivation model that integrates innovation quality orientation, innovation performance orientation and innovation contribution orientation, designed a talent training operation mechanism based on multi-subject collaboration, facing the new education ecology in the era of artificial intelligence.

1. Goal Orientation

1.1. Deep Integration of Artificial Intelligence Technology and Management Disciplines
Herbert Simon, the representative of Decision Theory School, took the lead in introducing artificial intelligence into the field of management decision-making and ushered a new era of applying artificial intelligence to the management field. In recent years, with the gradual popularization of artificial intelligence technologies such as big data, supercomputing, voice perception, and intelligent recognition, its applications have entered a stage of rapid development. With the continuous integration of management disciplines and artificial intelligence technology, the methods of information collection, integration, processing, transmission, and reporting of management disciplines have undergone profound changes.

Artificial intelligence can be divided into three levels: computational intelligence, perceptual intelligence, and cognitive intelligence [1]. Computational intelligence enables machines to process massive data more efficiently and quickly, acquire and integrate massive and complex data from various departments in the actual environment, and implement data classification and data analysis; Perceptual intelligence enables machines to understand human language, automate the interaction of information between the system and managers. Managers use artificial intelligence technology to deal with practical problems. Cognitive intelligence allows machines to understand and think, and can solve problems in a management environment where specific conditions are constantly changing.

[1]
Based on a large amount of data calculation, feedback to managers and ideas for solving problems are transmitted. Artificial intelligence mainly relies on the functions of an expert system, machine learning, pattern recognition and artificial neural network to participate in or even replace managers' management decisions.

Therefore, the in-depth integration of artificial intelligence and management disciplines has raised the requirements for the compound knowledge background and technical capabilities of talents. Managers must not only have management expertise but also have pioneering thinking and strong comprehensive capabilities, using artificial intelligence as the decision analysis tool for enterprise management, planning and decision-making.

The emerging Cross-disciplinary Fields of artificial intelligence technology and management disciplines are subverting the traditional talent training mode. Universities should formulate interdisciplinary training goals and training programs, adjust education and teaching organizations, and improve management mechanisms by major national development strategies and social development needs [2].

1.2. "Double First-Class" Universities Construction Requirement

Strengthening the development of cross-disciplinary integration is also an important part of the country’s promotion of the "double first-class" university construction. The “Guiding Opinions on Higher Schools to Accelerate the Construction of “Double First-Class”, points out that take advantage of characteristic discipline as the main body, supported by related discipline resources, promote the interdisciplinary integration of basic disciplines and applied disciplines, and cultivate new disciplinary growth points in frontier and interdisciplinary areas [3].

Promoting interdisciplinary collaborative innovation cooperation and continuously promoting the establishment of interdisciplinary comprehensive innovation platforms and corresponding institutional mechanisms can effectively promote interdisciplinary collaborative innovation, establish management systems and policy measures related to the integration [4].

The formation of an interdisciplinary integration and development innovation system in colleges and universities is an important foundation for enhancing scientific frontier basic research and innovation capabilities.

2. Connotation Clarification

2.1. Innovation Quality Orientation

Innovation quality orientation is the combination of science and open knowledge structure and innovation consciousness. Collaborate with the computational intelligence of AI.

The "Artificial Intelligence + Management" talent cross-cultivation model requires students to have a broad vision, not only to understand management knowledge but also to master artificial intelligence knowledge and program algorithms. In the future management practice, they can work aside with artificial intelligence technology tools to implement creatively analyze, predict and evaluate business information. With the aid of data support in artificial intelligence technology, realize efficient management.

2.2. Innovation Performance Orientation

Innovation performance orientation means that students cultivate management ability and innovation ability through training of practical ability, the exercise of cooperation ability and improvement of adaptability. Collaborate with the perceptual intelligence of AI.

The "artificial intelligence + management" talent cross-training model advocates process management, the practical ability and innovation ability under the background of the cross-knowledge need to be established in practical application.
Participating in scientific research projects and innovation competitions, team communication can promote the collision and integration of vision and concepts under different knowledge backgrounds, improve students' comprehensive quality, and strengthen students' professional skills and innovation capabilities.

2.3. Innovation Contribution Orientation

Innovation contribution orientation is to train students to form innovation results, including scientific research achievements, innovation experience and innovation quality. Collaborate with the cognitive intelligence of AI.

Students’ innovation of academic significance, on the one hand, can enrich theory in the field of “artificial intelligence + management”. On the other hand, they also have practical value, internalizing students' ability. Using innovative knowledge and ability, realize the theory and practice achievements conversion, solve practical problems.

The cross-cultivation model of innovative talents in management disciplines under artificial intelligence technology should enable students to enrich their achievements in scientific research, experience with full innovation experience, and improve innovation literacy to form beneficial innovation contributions.

![Diagram: Association between AI technology application directions in education and innovation orientations.]

Figure 1. Association between AI technology application directions in education and innovation orientations.

3. Mode Construction

3.1. Scientific Research Organization Mode Reform

At present, the research management of universities mostly based on colleges and disciplines to promotes scientific research and its management. This management model makes scientific researchers attribute research directions to their disciplines from the beginning and diminishes the focus on innovation in other disciplines, which is not conducive to the development of interdisciplinary fields.

Therefore, this research first explores the establishment of a scientific research organization management mode that is compatible with the interdisciplinary of “double first-class” universities. Break the system restrictions in scientific research management, encourage teachers to carry out interdisciplinary research to enrich the theoretical results of the “artificial intelligence + management” interdisciplinary field, the frontier development of the discipline should be dynamically introduced.
into daily teaching so that innovative resources can barrier-free flow in the interdisciplinary training mode.

3.2. Teacher Personnel Management System Reform
Interdisciplinary talents need compound knowledge background within the establishment of a compound teacher team.

“Double first-class” universities should establish a “Shared” personnel management system that is more flexible and suitable for interdisciplinary research through top level design. Management knowledge is taught by management subject teachers, and artificial intelligence technology knowledge is taught by computer and mathematics subject teachers.

Teachers are no longer limited to vest in a certain college but belong to a platform of sharing the discipline overlapping. Within the platform, teachers can conduct daily teaching exchanges from a cross-disciplinary perspective, disabuse for students, and arrange cross-disciplinary integration development according to students’ actual needs, making the teaching arrangement more scientific and flexible.

3.3. Student Learning Mode Reform
After students have the interdisciplinary knowledge background of management and artificial intelligence, they can be guided to participate in scientific research activities. Rely on the school's scientific research team, attract students to participate in scientific research projects, complete independent innovation projects and entrepreneurship plans, cultivate students to master the ability to combine disciplinary thinking with innovative behavioral activities. Different from the tradition, students master knowledge in the specific application of cross knowledge.

3.4. Talent Cultivation Subject Reform
Industry-university-research collaboration is an inevitable trend for the future development of “double first-class” universities, and it is an important way to cultivate interdisciplinary talents in management disciplines.

School-enterprise cooperation, based on students' development laws and the current situation of intersection between artificial intelligence and management, can integrate the technical requirements of the industry and job requirements of professional positions into the training objectives.

Enterprises are the most intensive place for the application of artificial intelligence technology. Universities and enterprises need to form a community of resource coordination and interests. Enterprises provide students with a practical platform, allowing them to directly contact artificial intelligence technology on how to solve practical management problems.

4. Mechanism Design

4.1. Integrate Resources and Build an “Artificial Intelligence + Management” Discipline Group
“Double first-class” universities should conform to the policy orientation and the demand for economic development, integrate the resources of management, artificial intelligence, mathematics and other related disciplines, establish interdisciplinary research groups across departments.

Break the original single-subject management and research model and the discipline boundary, broaden the discipline boundary, guide teachers to actively study the interdisciplinary integration field based on the original discipline research, and collaborate with other disciplines for innovation.

The development of interdisciplinary fields requires universities to reform the traditional scientific research management mode divided by department to create conditions for the development of interdisciplinary disciplines, making the application of interdisciplinary research projects, achievement recognition and peer evaluation into a systematic system for research support and achievement incentive.
4.2. Faculty Teaching Cooperation and Highlights Cross Background

“Double first-class” college management disciplines can draw on the development of college’s science and engineering disciplines, inviting teachers from the School of Computer Science, the School of Information Engineering or the School of Math who are studying the direction of artificial intelligence to teach computer and machine learning courses, mathematical statistics courses in the talent cultivation plan; teachers of the management school are responsible for teaching management professional courses. In order to achieve the sharing and exchange of teaching resources, build a knowledge system and multidisciplinary background for students to cross the disciplines of artificial intelligence and management. Transform the traditional single training mode of business or management to a cross-cultivation model relies on artificial intelligence to train management disciplines.

The following attempts can be made in the course setting: the general course of freshman increases the proportion of computer and machine learning courses. Such as Data Mining and Python Applications, Unstructured Data Analysis (Text Analysis), Data Analysis and Visualization, Big Data and Business Intelligence Courses. In the sophomore year, mathematical statistics courses were added: such as Quantitative Investment, Financial Engineering, synchronized learning with professional courses. In the junior and senior year, based on the students’ previous two years’ academic foundation, they can choose strategies and business elective courses according to their interests and development preferences: Strategic Management and Corporate Governance, Production and Operation Management, Supply Chain Management, Business Negotiation and Business Analysis.

4.3. Comprehensive and Innovative Training for Scientific Research Projects and Subject Competitions

“Double first-class” colleges not only should introduce artificial intelligence education in the classroom, but also promote management students to use cross-disciplinary knowledge in practice, guided by social needs and academic contributions, more involved in mathematics, computer, information engineering and other departments’ practical projects, allowing management knowledge to make meaningful applications in the field of artificial intelligence.

Establish a team structure with the mentor as the core, and use the research group as the communication platform, to expose students to academic frontiers in cross-cutting fields.

Encourage students to actively participate in various competition activities, such as the “Internet +” Innovation and Entrepreneurship Competition for College Students, which aims to promote cross-border integration and structural restructuring. This kind of competition encourages students to participate in scientific research, accumulate scientific knowledge, form scientific research achievements and experience innovation-driven discipline ecology in the competition.

4.4. In-depth Industry Participation

The subject of talent cultivation should not be limited to schools. It is necessary to strengthen the collaborative education mechanism and form a synergy in the construction of “double first-class”. School-enterprise collaborative training aims to solve the problem of the simplification of talent cultivation subject. The industry is deeply involved in the talent training process of cross-disciplinary between management and artificial intelligence technology. According to the industry demand and training standards, a training model and a talent quality evaluation system that meet the needs of the society are established. Enterprise teachers enter the campus, and professional teachers enter the enterprise. Both sides learn from each other and complement each other, forming a cross-talent training program that meets the law of talent growth and the needs of economic development. Maintain the balance between educational instrumental rationality and value rationality.
Figure 2. The level coupling logic of “artificial intelligence + management” cross-cultivation model of innovative talents.

Acknowledgments
This work was financially supported by the Hubei Provincial Higher Education Teaching Research Project: “Research on the Collaborative Training Model of Innovative Talents in Management Discipline Based on the Integration of Science and Education” (NO. 2018122) fund.

References
[1] Xu Yinzhou, Li Danqi, Gong Siying. Preliminary Thoughts on Accelerating the Innovation of Enterprise Management Mode with the Aid of Artificial Intelligence [J]. Journal of Commercial Economics, 2020 (10): 113-116.
[2] WANG Xue, HE Haiyan, LI Ping, ZHANG Lei. Research on the Interdisciplinary Education of "Double First-Class" Construction Universities in Emerging Cross-disciplinary Fields: A Stratified Study Based on QCA Approach [J]. China Higher Education Research, 2019 (12): 21-28.
[3] Ministry of Education. Guiding Opinions on Higher Schools Accelerating the Construction of "Double First Class" [Z]. 2018-08-08.
[4] DONG Fan-li, ZHANG Bing, NIE Wen-jie, Research on the Construction of Innovation System of Interdisciplinary Integration in Universities [J]. Scientific Management Research, 2019, 37 (06): 18-23.