

# Exploring the Path of Building A New Liberal Arts in Engineering Colleges: The Example of Management Discipline in Guilin University of Electronic and Technology

Qian Liu<sup>1, a</sup>, Bing Cao<sup>1</sup>

<sup>1</sup>School of Business, Guilin University of Electronic Technology Guilin, China

<sup>a</sup>229292710@qq.com

---

**Abstract:** In recent years, the Chinese economic management community has gradually completed international convergence, and a large number of Chinese scholars have rapidly learned and mastered Western standardized research methods. Capturing new problems and opportunities emerging from management changes through problem orientation, profoundly reflecting on the significance and value of local contexts for academic research, revealing the theoretical logic and practical laws of China's rapid economic development, and then incorporating and incorporating them to build an original It should be a major mission of the new liberal arts to create new theories and ideas in economic management, and to create new methods and paradigms with Chinese characteristics and world significance. Management, as an important part of the new liberal arts education system, bears a glorious mission and a great responsibility. The construction of management in the context of the new liberal arts seeks a new development orientation based on the attributes of the discipline, anchored in the vision of the discipline's goals and upholding the concept of integration, and its goal is to realize the autonomy of the discipline's knowledge system, the scientific operation of practice and the internationalization of the discipline's influence. In the new era and new journey, management science needs to cultivate cohesion and consolidate the foundation of the discipline, forge pioneering power and carry out the mission of the discipline, and stimulate innovation to realize the value of the discipline. However, the current process of building new liberal arts ignores the influential factors of the external environment, such as the influence of the type of school. Starting from the characteristics of engineering institutions, this topic explores the path of building new liberal arts in engineering institutions, providing new ideas for comprehensively promoting interdisciplinary crossover, integration and development.

**Keywords:** Engineering colleges and universities, New liberal arts, Management, Path exploration.

---

## 1. Background of the Study

Faced with the critical stage of deepening the construction of "Digital China", the Working Group on the Construction of New Liberal Arts of the Ministry of Education of China issued a "Declaration on the Construction of New Liberal Arts" in November 2020, requiring that the construction of new liberal arts should follow the directions of keeping the righteousness and innovation, leading by values, promoting by classification, and cultivating applied and composite liberal arts talents to meet the requirements of the new era. The new liberal arts construction direction is to cultivate applied and composite liberal arts talents who can adapt to the requirements of the new era.

As an important area of China's openness and cooperation towards ASEAN, Guangxi is strategically located. Under the background of rapid development of cross-border e-commerce, various kinds of comprehensive trade test zones are rapidly emerging, and many investment enterprises have settled in Guangxi, along with the increase of cross-border e-commerce enterprises, the market demand for management talents is increasing. Guangxi universities have also carried out the construction of new liberal arts respectively, however, in the process of construction, they mostly ignore the influence of external factors on the construction of disciplines, for example, Guangxi Normal University is a liberal arts-based university, and its advantageous disciplines are management, teaching science and other liberal arts

disciplines. Guilin University of Technology and Guilin University of Electronic Science and Technology are traditional engineering disciplines, whose strengths are computer science, communication, chemistry and other science and technology disciplines. Are there differences in the paths of building new liberal arts in different types of universities? At present, the academic community has yet to conduct in-depth research on this issue.

Taking the University of Electronic Science and Technology of Guilin as an example, this paper explores the intersection and integration of disciplines in the process of building new liberal arts in typical engineering institutions, providing new ideas and insights into the development of new liberal arts construction in different environments.

The University of Electronic Science and Technology of Guilin is located in Guilin, a world-renowned scenic city and a famous historical and cultural city in China, and is a university jointly built by the Ministry of Industry and Information Technology and the People's Government of Guangxi Zhuang Autonomous Region, the State Administration of Science and Technology for National Defence and the People's Government of Guangxi Zhuang Autonomous Region, and a university selected for the "Basic Capacity Building Project for Universities in Central and Western China". The university is a selected university. There are 71 undergraduate majors in the university, including 23 national first-class majors, 16 engineering education certified majors (including 1 industry certification by the Ministry of Housing and Construction), 1 national comprehensive reform

pilot majors and 5 national specialties, There are 7 national-level high-quality resource sharing courses and national-level high-quality online open courses. The university has been awarded nine national planning textbooks for the Eleventh Five-Year Plan and the Twelfth Five-Year Plan. The university has won 6 national teaching achievement awards in higher education. The university has 5 first-level academic disciplines authorized for doctoral degree, 3 post-doctoral research stations, 20 first-level academic disciplines authorized for master's degree, and 12 professional degrees authorized for master's degree. Four disciplines, namely engineering, materials science, computer science and chemistry, have been ranked in the top 1% of the global ESI.

## **2. Connotations of the New Liberal Arts in Engineering Colleges**

### **2.1. The "New" of New Liberal Arts**

The "new" of the new liberal arts is not only the "new" of the old and the new, but also the "new" of innovation. In other words, it is not only the "new" adjective, but also the "new" verb (innovation). This is the only way to grasp the essence and core meaning of the "new arts". In the following, the "newness" of the new liberal arts is elaborated in five dimensions: expansion of the theoretical field, reshaping of values, domination of discourse, cross-fertilization, and research paradigms.

### **2.2. Newness in "Expanding the Discourse"**

The new liberal arts' domain contains both connotations and extensions. In addition to the 13 familiar disciplines of literature, history and philosophy, economics, management and law, science, engineering, agriculture and medicine, as well as education, art and military science, there is now a new category of "interdisciplinary" disciplines. The New Engineering, New Medicine and New Agriculture belong to a single discipline in Engineering, Medicine and Agriculture respectively, but not the New Arts, which consists of eight disciplines: Literature, History and Philosophy, Economics, Management, Law, and Education and the Arts. Thus, the outreach and scope of the new liberal arts have been greatly expanded.

Generally speaking, all disciplines can be divided into three main categories: natural sciences, social sciences and humanities, each of which takes "things", "matters" and "people" as its object of study, pursuing physics to The pursuit of the physical is to be "right", the physical is to be "clear", and the human is to be "through". As can be seen from the above statement, the New Liberal Arts covers both the humanities and the social sciences, and can be described as two out of three, again illustrating the breadth of the New Liberal Arts. The reason for the emphasis on the three types of objects, namely "things", "matters" and "people", is to reveal the fundamental element in the connotation of the new liberal arts - people. -People. The humanities are the direct study of 'people', while the social sciences are the study of 'things', but things are caused by people, and there is no such thing as a human being.

However, in addition to 'carbon-based' life, intelligent robots, one of the representatives of 'silicon-based' life, are now having a new impact on the concept of 'human', and artificial intelligence is also on the rise. In 2011, in his book *The Singularity is Near: When Humans Transcend Biology*, Ray Kurzweil divided the evolution of AI into "weak" AI,

"strong" AI, and "strong" AI, "On 29 November 2017, a robotic "citizen" named "Sophia" was launched. On 29 November 2017, a robot "citizen" named "Sophia" was born in Saudi Arabia. Sofia is the first robot in human history to become a citizen of a country, and Saudi Arabia has issued her with a resident identity card. The new liberal arts, which are concerned with the study of the human being (and the things associated with it), will be expanded and greatly enriched by the new forms of the human being.

### **2.3. New in "value reinvention"**

The liberal arts and the natural sciences both focus on knowledge, rationality and scholarship, but the liberal arts must also be concerned with and reflect value and ideology, and the unification of value and ideology with knowledge and rationality is the lifeblood of philosophy and social science. Generally speaking, while the natural sciences focus on instrumental rationality, the liberal arts focus on value rationality. As we all know, instrumental rationality is objective, universal and universally applicable; value rationality is subjective, national, ephemeral, conceptual and ideological. The focus of the new liberal arts should shift from exploring the regularity of the objects involved in humanities and social sciences to reshaping social values; it should focus on revealing the legitimacy and justice behind rationality, promoting intellectual virtue and goodwill, and providing intellectual guidance and value choices for science and technology and even for the country and society.

The reshaping of values requires the reshaping of the relationship between human beings and nature. For a long time, human beings have unconsciously practised "anthropocentrism", and have been bent on taking from nature, with little awareness of caring for the earth and living in harmony with nature. We do not realise that it is humans themselves who are harming us. Nature's gifts to mankind may be abundant, but they will be exhausted and used up. Therefore, the interdependent relationship between humans and nature must be reshaped in order to achieve inclusive, green and sustainable development.

Value reshaping also requires a "reconciliation" between humans and technology, and the recovery of the human "world of meaning" and "value space". For example, the rapid development of technologies such as the Internet of Things, artificial intelligence and blockchain has ushered in the dawn of the fourth industrial revolution, but has also led some people to fall back into (rational) conceit. Reason in real life has degenerated into algorithms and calculations, and calculations have even metamorphosed into calculations. Individual lives and actions are likely to be dominated or even "kidnapped" by increasingly powerful and precise algorithms. As a corollary, while the new technological and industrial revolutions are pushing social development forward, they are also bringing with them environmental, ecological and ethical risks, as well as problems such as the loss of individual spirit, the lack of faith and the crisis of meaning, all of which need to be reshaped through the new arts.

### **2.4. The new is "discourse-led"**

The new liberal arts should help the liberal arts to shift to the dominance of the Chinese discourse system. China has created a world-renowned economic miracle in the past forty years of reform and opening up, and has also produced major economic theories and a group of heavyweight scholars with world influence. The new liberal arts should speak well about

the principles, rationales, theories, philosophies, laws and events behind the country's economic and social development miracle, contribute new academic knowledge to the world's intellectual, thought and academic communities, and contribute Chinese wisdom, Chinese solutions and Chinese power to promote the building of a community of human destiny.

### **3. Pathways to a New Liberal Arts in Engineering Institutions**

#### **3.1. New in "cross-fertilization"**

Interdisciplinarity and interdisciplinary integration have become an important means to promote discipline construction. The cross-fertilisation of liberal arts and medicine, such as bioethics, medical informatics and health management; the cross-fertilisation of liberal arts and agriculture, such as sustainable development and rural construction, ecological civilisation construction and management, agricultural economics; the cross-fertilisation of liberal arts and science, such as computational jurisprudence, big data management and application, financial technology and business intelligence, and so on. The "new liberal arts" should break through the thinking of "small liberal arts" and build a "big liberal arts" vision.

In addition to mathematics, systems science, operations research, mathematical statistics, computer science and data science, financial studies are increasingly using economics, management, law, philosophy, ethics, sociology, behavioural science, brain science, neuroscience, cognitive science, psychology, cognitive psychology and other disciplines. In fact, Business Analytics (BA) and Business Intelligence (BI) are the product of a close intersection and integration of business management, statistics, and computer science.

The Social Behavioural Economics (SBE) Division of the National Science Foundation (NSF), in its 2010-2020 disciplinary strategy report Building the Mosaic, points out that academic research in the next decade will be characterised by data-intensive, interdisciplinary, collaborative and problem-driven research. Collaborative, and Problem-driven. These four characteristics all point to the cross-fertilisation of SBE: data-intensive (ubiquitous) is self-explanatory, interdisciplinary and collaborative are almost synonymous with cross-fertilisation, and problem-driven forces cross-fertilisation, because no problem is a single disciplinary problem, but must be solved by breaking down disciplinary barriers and by integrated and collaborative approaches.

The most important feature of the new liberal arts is the intersection of arts and science. In terms of methodology, the traditional humanities and social sciences approach should be shifted to the use of modern technology, information technology and artificial intelligence, especially the use of algorithms to unify the qualitative and quantitative methods of the liberal arts, highlighting the scientific nature of the new liberal arts. Computational Social Science (CSS) is an interdisciplinary discipline that uses computational means to study social science, aiming to create a "digital humanities". With the deep integration of social science knowledge production, knowledge creation and information technology in the era of information civilisation, the development trend of cross-fertilisation between computer science, data science, information science and social science has become more and more distinct, and there will be an explosion of computational

communication, computational journalism, computational sociology, computational economics, computational finance, computational management, computational political science, computational behaviour, computational psychology, computational linguistics, digital intelligence, digital anthropology, artificial intelligence jurisprudence, and other emerging disciplines.

#### **3.2. The new "research paradigm"**

The new liberal arts research paradigm will continue to be enriched. In management studies, for example, one is normative research based on philosophy, psychology, economics and ethics, with conceptual abstraction, academic discourse and logical deduction as the main features; the other is empirical research based on sociology and behavioural sciences, with experimental research, predictive research, case studies, empirical analysis, field surveys and random field experiment as the main features; the third is empirical research based on sociology and behavioural sciences. The third is empirical research based on systems science, operations research, mathematical statistics, data science and big data technology, cluster analysis, artificial intelligence (AI) and other disciplines, with mathematical modelling, simulation and data mining as the main features. In fact, according to Turing Award winner Jim Gray, scientific research has undergone three paradigms, from "experimental induction", to "model inference", to "simulation". The Data-Intensive Scientific Discovery (DID) is now the fourth paradigm revolution in its evolution.

Thanks to rapid advances in brain science, cognitive science, neuroscience, cognitive psychology, cognitive neurology and other disciplines, we now know that 'prefrontal' maturation requires a great deal of complex learning and comprehensive training, and that the extent, manner and intensity of this learning and training have a significant impact on the degree of prefrontal maturation. Furthermore, indicators of prefrontal maturation (rationality) involve the degree of concentration, organising thoughts to solve problems, thinking and anticipating the future, strategising and planning, balancing long and short-term goals to delay short-term enjoyment for long-term goals, adapting behaviour to situations, as well as managing emotions to control impulses, processing complex information to perform multiple tasks simultaneously, learning appropriate social behaviour and resisting inappropriate social behaviour. These cognitions can be of great benefit to business management, strategic management and human resource development. In general, the combined application of the above multidisciplinary knowledge can certainly open up new horizons for the new arts.

### **4. Methods of Implementing the New Liberal Arts in Engineering Institutions**

The construction of the new liberal arts requires the construction of four major systems: theoretical system, disciplinary system, teaching system and evaluation system, and continuous efforts in three dimensions: strengthening value leadership, building digital intelligence and humanities, and manifesting the "quality" of liberal arts.

#### **4.1. Constructing the Four Systems**

In my opinion, the new liberal arts requires a new

orientation, a new concept, a new theory, a new discipline, a new direction, a new major, a new curriculum, a new model and a new standard, and the construction of a theoretical system, a discipline system, a teaching system and an evaluation system for liberal arts education that reflect Chinese characteristics, Chinese style and Chinese style.

In constructing a new theoretical system of liberal arts, we should not forget the original and absorb the foreign; we should grasp the past and face the future. It should be rooted in Chinese soil, cultivate Chinese civilization, assert cultural self-confidence, focus on the interpretation of Chinese spirit, Chinese values and Chinese power, and enhance Chinese academic discourse; at the same time, it should draw on all the valuable and meaningful outstanding theoretical achievements and best practices of all nationalities in the world, adhere to the righteousness of innovation, contribute new academic knowledge and theoretical insights, and constantly expand the intellectual and theoretical boundaries of human beings. We should look at real life, respond to social concerns, reflect the great changes of the times, draw the spiritual map of the times, discover creative themes from contemporary creations, capture inspiration for innovation, profoundly interpret the inner logic embedded in historic changes, better interpret Chinese practice and solve current problems with Chinese theories; at the same time, we should plan ahead, be far-sighted, open up the way for theoretical creation and academic research in the new era, and provide strong spiritual impetus and theoretical support for the new round of reform and opening up. We must also be forward-looking, open the way for theoretical creation and academic research in the new era, and provide strong spiritual impetus and theoretical support for the new round of reform and opening up.

To construct a new liberal arts discipline system, we should, on the one hand, follow the rules of development of different disciplines and adhere to the classification and promotion. On the other hand, we should break down disciplinary barriers, actively and prudently promote cross-fertilization within the liberal arts and with other disciplines such as science and technology, and build disciplinary clusters. On the other hand, we should actively and prudently promote cross-fertilization within the arts and sciences and other disciplines, build disciplinary clusters, and create a platform for the collaborative development of disciplinary clusters. On this basis, we should cultivate new disciplines, and inherit and develop the knowledge systems of traditional disciplines. The essence of a discipline is an institutional arrangement for human learning knowledge. A new discipline should have a clear research object, a unique conceptual system, a clear knowledge discipline, and follow a strict research method and a rigorous research paradigm to carry out knowledge production and academic creation activities.

The key work in constructing a new liberal arts teaching system is, firstly, to continuously update, optimise, transform, upgrade and empower existing majors, directions and courses, and at the same time accelerate the exploration and addition of new majors or new directions and new courses. Cross-faculty joint construction of new majors is encouraged, and teachers are encouraged to develop new courses. The old and new courses should form an interlocking curriculum and teaching materials system that covers and reflects the established and cutting-edge development practices of the major (discipline). Secondly, to promote innovation in the mode of training. Effectively carry out undergraduate and

master's degree long academic system through cultivation, actively promote dual-degree, major and minor, micro-discipline and other composite talent cultivation models, and build a cross-institutional, cross-discipline, cross-industry and cross-border collaborative cultivation mechanism. Thirdly, we will carry out regular and institutionalised classical "reading" activities, so that students can encounter the noble soul, feel the extraordinary wisdom and gain insight into profound thoughts in the classics, and then taste the truth of science, the goodness of humanity and the beauty of art, so as to give full play to the unique infiltration, inculcation, infection, empathy, awakening and inspiring educational effects of the classics in the liberal arts.

To construct a new liberal arts evaluation system, education administrations and schools need to effectively implement the General Plan for Deepening Education Evaluation Reform in a New Era issued by the Central Committee of the Communist Party of China and the State Council, improve the supply of systems, eliminate the persistent and chronic problems of project, funding, and awards, improve comprehensive evaluation, categorical evaluation, diversified evaluation, and peer evaluation, and highlight the quality and original value of evaluation results, as well as the contribution of advice to politics and talent training. We will explore the possibility of including high-quality results from academic conferences, forum reports, research and interviews, trend studies, decision-making and consultation, teaching and research, curricular thinking and government, and creative works as representative results of the new liberal arts, just like high-level books and theses. For the "cross-cutting (new) disciplines" produced through cross-fertilisation, we should break through the traditional framework of disciplinary evaluation and manage the whole process according to the independent cross-cutting disciplines as a unit, so as to avoid peer experts still using traditional disciplinary thinking to influence the evaluation results.

## 4.2. Reinforce value leadership

A scholar is a man of virtue, and a writer is a man of virtue. As mentioned earlier, the unification of scholarship and knowledge with value and ideology is the lifeblood of philosophy and social science, and strengthening value leadership is an inherent requirement for the construction of the new liberal arts.

First of all, from the perspective of social trends, the new liberal arts need to effectively shoulder the important responsibilities of "spiritual calcium" and correcting people's hearts, to be the propagator of society, and to undertake the historical mission of leading the social trend with clear virtue. From the perspective of the international order, the competition between countries and regions in the world is not only economic, military and technological competition, but also cultural and institutional competition. The competition between national forces and the parties concerned will increasingly revolve around different understandings of truth and morality and the standards of right and wrong, and there is a long way to go in building a community of human destiny. And the new liberal arts have great potential to promote the building of a more equitable, just, open, inclusive, inclusive, balanced, multi-win and co-prosperous international order.

From the perspective of the ethics of science and technology, the issue of scientific morality and ethics of science and technology has always followed the progress of science and technology in modern times. In the history of

science and technology, explosives, atomic energy, chemical technology, paper technology, textile technology, genetic engineering, artificial intelligence, etc. have created wealth and material civilisation for mankind, while at the same time bringing about tools of war, environmental pollution, ecological imbalance, or even loss of dignity and meaning of life. The industrial revolutions have shown that each technological revolution and technological change has brought about a revolution in productivity, which inevitably leads to major changes in the relations of production, which in turn leads to major changes in society as a whole, and brings about a series of profound changes in law, culture, concepts, ideas, order and other spiritual and value dimensions. In this way, we can better benefit humanity and promote sustainable social development.

### 4.3. Building a Digital Humanities

At present, Digital-Intelligent Humanities (DIH) is one of the most powerful, rapidly developing, remarkable and promising of the new liberal arts. From "digital" to "digital-intelligent", from simple data warehousing and editing, to statistical processing (computer linguistics), linking (hypertext), modelling (including structural construction and visual presentation), creating structured data (extensible Markup Language), to new integrative practices, the process has been flourishing, providing a platform for interdisciplinary exchange and new research tools for the new liberal arts, stimulating new research methods, research paradigms and research dynamics, and promoting the reorganisation (restructuring) and reengineering of academic mechanisms.

As a new academic orientation, the emergence and promotion of mathematical humanities stem from the two-way demand and impetus of "mathematical intelligence" and "humanities". On the one hand, the core belief that inspires the development of contemporary digital humanities is the firm conviction that digitally intelligent tools have the enormous potential to transform the content, boundaries, research methods and audiences of humanistic inquiry. Historically, the advent of the pen, paper and the printing press had all created new conditions for the generation and dissemination of knowledge and scholarly ideas. Nowadays, the advent of digital and intelligent information technologies has also enabled new ways of recording, reading and researching, and it is timely to initiate the shift from the age of print to the age of data. For example, in response to the current problems of reliance on qualitative analysis and insufficient attention to data in international relations research, quantitative deep mining such as cluster analysis, knowledge mapping and sentiment analysis using negotiation texts or policy texts can significantly enhance research.

On the other hand, since the 20th century, liberal arts academics have been under pressure to innovate academically, and as a humanities discipline that particularly requires accumulation and heritage, there is an urgent need to broaden academic space and activate academic potential, and Digital Intelligence Humanities has become an important path to try. This not only extends the platform for observing history and deepens the connotation of scholarship, but also presents a "visual" view of historical space and time and the interconnectedness of activities within it. This not only extends the platform for looking at history and deepens the connotation of scholarship, but also presents a 'visual' representation of historical time and space and the

interconnected people and events that move through it, making it possible to fundamentally improve the academic landscape, which in turn will lead to new research topics and new research opportunities.

The future of the Digital Intelligence Humanities could be studied in depth in the following areas. Such as: the fundamental theories of the digital humanities, the epistemological challenges posed by the convergence of different knowledge structures and ways of knowing between information technology and the digital humanities; semantic technologies (including but not limited to linked data) and related technological applications in the field of the digital humanities; research methods and methodological innovations in the digital humanities, how digital intelligence tools and platforms shape (and have the potential to influence) the work of humanities scholars, the conduct of research and the dissemination of their work and its associated implications, how humanities scholarship, traditions and practices shape or have the potential to shape digital intelligence tools, platforms and their innovations; research on models, curricula, orientations, careers and competencies in digital intelligence humanities education, and approaches to diverse collaborations.

### 4.4. Demonstrating the "qualitative" nature of the arts

As we all know, qualitative research is a method that, as opposed to quantitative research, aims to gain an interpretive understanding of the behaviour and construction of meaning through a penetrating analysis and holistic inquiry into the development process and characteristics of the phenomenon under study, in order to gain insight into the nature and evolution of the object of study. I borrow the term "qualitative" here not only to re-emphasize the inherent ideology and value of the arts, but also to suggest and warn against the pursuit of "newness" in the construction of the new arts at the expense of the "arts" themselves. It is also intended to remind and warn against the pursuit of the "new" in the construction of the new arts at the expense of the "arts" itself.

After all, the foundation of the new liberal arts is the liberal arts, and the "liberal arts" is the "way", "body" and "quality". The "new" is the "art", "use" and "text" (tattoo). To highlight the "quality" of the arts is to highlight the centrality of the arts themselves in the construction of the new arts. Recently, a new category of "interdisciplinary disciplines" has been established in China, with integrated circuit science and engineering and national security as the two first-level disciplines under it. In my opinion, if "integrated circuit science and engineering" is an authentic science and engineering discipline, "national security" is a new liberal arts discipline. National security certainly relies on hard and sharp strengths such as high technology and "handful of weapons", but it also requires soft and smart strengths that integrate global vision, global perspective, strategic thinking, political awareness, countermeasures and planning, and the ability to "yield without fighting". As noted earlier, the new liberal arts curriculum is a combination of global perspective, strategic thinking, political awareness, counter-measures, and planning.

As pointed out earlier, the most important feature of the new liberal arts is the intersection of arts and science. However, the emphasis on science over literature and quantitative over qualitative (qualitative) has not been fundamentally changed over the years. In this context, if we do not focus on the qualitative nature of the arts, the

intersection of arts and science in the new arts may "overshadow" the arts and lead to their decline. Therefore, the arts themselves need to be active, proactive, and dynamic.

## 5. Summary

Faced with the critical stage of deepening the construction of "Digital China", the Working Group on the Construction of New Liberal Arts of the Ministry of Education issued a "Declaration on the Construction of New Liberal Arts" in November 2020, which requires that the construction of new liberal arts should follow the principles of keeping the righteousness and innovation, leading by values and promoting by categories. The new liberal arts construction direction is to cultivate applied and composite liberal arts talents who can adapt to the requirements of the new era. As a management discipline in higher education institutions, it has the great social responsibility to cultivate management talents for the construction of "Digital China", serve the digital transformation of small and medium-sized enterprises, and occupy the ecological position of talent export in the digital ecosystem. In order to serve the digital transformation of enterprises and to support the high-quality development of social economy, the teaching structure of management disciplines in engineering colleges should be adjusted and reconstructed in order to effectively fulfil its historical mission.

## Acknowledgment

This work is supported the following funds:

Teaching Reform Project of Guilin University of Electronic and Technology: Teaching Design and Practice of Management Based on the Perspective of Effectiveness Theory, (JGB202010);

"Research on Multidimensional Identification and Long-term Governance Mechanism of Relative Poverty of Farming Households in Border Areas" (Grant No. 20BGL247), General Project of the National Social Science Foundation of China;

Research on Branding Strategies for High-Quality Agricultural Development in Ethnic Areas of Southwest China under the "Two Mountains" Theory, General Project of the National Social Science Foundation of China (Grant No. 21BGL129);

The 20th Five-Year Plan of Guangxi Education Science Project: Research on the Balanced Development of Guangxi Rural Education in the Context of Rural Revitalization Strategy" (2023B331);

Teaching Reform Project of Guilin University of Electronic and Technology: Reform and Practice of Digital Transformation and Enhancement of Marketing Majors in the Context of the Construction of a New Business Discipline" (JGA202102).

## References

- [1] Tsai W, Ghoshal S. Social Capital and Value Creation: An Empirical Study of Intrafirm Networks[J]. *Academy of Management Journal*, 1998, 41 (4): 464 -476.
- [2] Larson A. Network Syads in Entrepreneurial Settings: A Study of the Governance of Exchange Relationships [J]. *Administrative Science Quarterly*, 1992, 37(1):76 -104.
- [3] Shiyong Zheng , Muhammad Irfan, Fengyi Ai, Mamdouh Abdulaziz Saleh Al-Faryan, Do renewable energy, urbanisation, and natural resources enhance environmental quality in China? Evidence from novel bootstrap Fourier Granger causality in quantiles [J].*Resources Policy* 2023, 81: 1-11,
- [4] ShiYong Zheng, Danish Ahmed, Yuantao Xie,Muhammad Tariq Majeed, Muhammad Hafeez, Green growth and carbon neutrality targets in China: Do financial integration and ICT matter?[J].*Journal of Cleaner Production*, 2023, 405:1-10,
- [5] Shiyong Zheng, Muhammad Shahzad, Hafiz Muhammad Asif, Jing Gao, Hafiz Abdul Muqet,Advanced optimizer for maximum power point tracking of photovoltaic systems in smart grid: A roadmap towards clean energy technologies[J].*Renewable Energy*, 2023,1:1-25
- [6] Chiu C M, Hsu M H, Wang E T G. Understanding Knowledge Sharing in Virtual Communities: An Integration of Social Capital and Social Cognitive Theories [J]. *Decision Support Systems*, 2006, 42 (3):1872 -1888.
- [7] Dobrzykowski D D, Tarafdar M. Understanding Information Exchange in Healthcare Operations: Evidence from Hospitals and Patients[J]. *Journal of Operations Management*, 2015, 36:201 -214.
- [8] Chang H H, Hsieh P H, Fu C S. The Mediating Role of Sense of Virtual Community [J]. *Online Information Review*, 2016, 40 (7):882 -899.
- [9] Zárraga C,Bonache J. Assessing the Team Environment for Knowledge Sharing: An Empirical Analysis [J]. *International Journal of Human Resource Management*, 2003, 14 (7) : 1227—1245.
- [10] Nonaka I,Takeuchi H. The Knowledge-creating Company: How Japanese Companies Create and the Dynamics of Innovation [M]. New York: Oxford University Press,1995
- [11] Bostrom R P. Successful application of communication techniques to improve the systems
- [12] Shiyong Zheng, Jiada Chen,Junyun Liao \*,Hsin-Li Hu,What motivates users' viewing and purchasing behavior motivations in live streaming: A stream-streamer-viewer perspective[J]. *Journal of Retailing and Consumer Services*, 2023,72:1-10
- [13] Shiyong Zheng, Mingyue Wu , Junyun Liao \*, The Impact of Destination Live Streaming on Viewers' Travel Intention[J]. *Current Issues in Tourism*,2022,8:1-16
- [14] ShiYong Zheng, JiaYing Li, HaiJian Wang\*, Dukhaykh Suad, Lei Wang, BiQing Li, Jie Peng.Do Product Characteristics Affect Customers' Participation in Virtual Brand Communities? An Empirical Study[J].*Frontiers in Psychology*,2022,1(12)1-11
- [15] ShiYong Zheng,Jiarong Cui ,Chaojing Sun ,JiaYing Li ,BiQing Li , WeiLi Guan.The Effects of the Type of Information Played in Environmentally Themed Short Videos on Social Media on People's Willingness to Protect the Environment[J]. *International Journal of Environmental Research and Public Health*,2022,19(15),1-18
- [16] Shiyong Zheng, Xinsen Ye, Weili Guan \*, Yuping Yang, Jiaying Li, Biqing Li, Assessing the Influence of Green Innovation on the Market Performance of Small- and Medium-Sized Enterprises[J].*SUSTAINABILITY* ,2022,14(12977): 1-17.
- [17] ShiYong Zheng, JiaYing Li, Wei Wang,HaiJian Wang\*, Umair Akram, Lei Wang, BiQing Li.Effect of Seeding Strategy on the Efficiency of Brand Spreading in Complex Social Networks[J].*Frontiers in Psychology*,2022,6(18)1-11.
- [18] Shiyong Zheng, Hua Liu , Weili Guan \*, Yuping Yang, Jiaying Li , Shah Fahad, Biqing Li, Identifying Intention-Based Factors Influencing Consumers' Willingness to Pay for Electric Vehicles: A Sustainable Consumption Paradigm [J]. *SUSTAINABILITY* ,2022,14(16831): 1-15.

- [19] Huber G P. Organizational Learning: The Contributing processes and the literatures [J]. Organization science, 2000, 11 (5): 538-550.
- [20] Gunnar H. A model of knowledge management and the N-form corporation [J]. Strategy Management Journal, 1994, 15 (5): 73-90.
- [21] Hou Changhai. Analysis of China's online education market in 2015. Internet World, 2016(2): 85-88
- [22] Huang Wenzhi, Zhao Jing. Discussion on the development prospect of online education in the era of "Internet +"[J]. China Adult Education, 2016(6): 138-140.
- [23] Dinah G. & Daniel K. & Isabel W. & Jayne C. Training Needs Analysis: A Literature Review and Reappraisal. International Journal of Nursing Studies, 2014, 42(5): 1-10.
- [24] Wu Xiaoqiong, Xing Yanfang. Analysis of the Development Path of Online Education[J].Journal of Zhangzhou Teachers College,2015(1):87-90.
- [25] Chen Qilin, Bao Haobo. The history and current situation of online education development in China. Xueyuan, 2014(26): 184-185
- [26] Yang Wei, Yan Jin. Analysis of the Teaching Reform of Open Online Course——Taking L College as an Example[J]. Value Engineering, 2016, 35(19): 207-209.
- [27] Xiao Yuewen, Wang Mingyu. Talking about the status quo and development trend of online education. China Business Theory, 2017(18): 176-177
- [28] Earl L., Katz S. Leading Schools in a Data Rich World. Corwin Press, 2006, 23(2): 9-16
- [29] Zhang Junchao. Institutional Research and University Management in the Age of Big Data[J]. Higher Education Research, 2014(1) : 128.
- [30] Chen Lei. Application of Big Data in Teachers' Online Education Environment——Taking Courses in Zhejiang Province as an Example[J]. Continuing Education, 2017, 31(9): 7-11.
- [31] Yang Xianmin, et al. Development Strategy and Path Choice of Wisdom Education in China [J]. Modern Educational Technology, 2014(1) : 14.