

The Exploration and Practice of Empowering Higher Education Student Affairs with Artificial Intelligence

Chunwen Ren¹ Hao Wang²

^{1,2} Guangzhou City University of Technology, Guangzhou, Guangdong, China

ABSTRACT

In the context of rapid societal development, the evolving thoughts and behaviors of students have placed higher demands on higher education student affairs, increasing its complexity and difficulty. Higher education student affairs are an essential part of university management, encompassing the entire process from student enrollment to graduation. Despite significant investments in human, material, and financial resources under the traditional model, issues such as poor communication, inaccurate data processing, and low management efficiency still frequently arise. In the digital age, leveraging digital technology to achieve precise and efficient student development has become a new challenge for higher education student affairs.

Keywords: Higher education student affairs, Artificial intelligence, Exploration.

1. INTRODUCTION

In April 2018, the Ministry of Education issued the "Higher Education AI Innovation Action Plan," accelerating the innovative application of AI in education, supporting innovation in talent cultivation models, teaching methods reform, and improving education governance capabilities through intelligent technology. In this context, how universities integrate school management with big data and AI, and how internal stakeholders effectively create and use smart cloud platforms to promote the modernization of university management is a key focus. In February 2019, the Central Committee of the Communist Party of China and the State Council issued the "China Education Modernization 2035," emphasizing the need to accelerate educational transformation in the information age, build smart campuses, and integrate smart teaching, management, and service platforms. Modern technology should be used to promote reform in talent cultivation models, achieving a balance between large-scale education and personalized training. In March 2021, the Ministry of Education issued the "Notice on Strengthening Educational Management Informatization in the New Era," which emphasized

that educational management informatization is an essential part of educational informatization, leveraging information systems, data resources, and infrastructure to transform management concepts, innovate management methods, improve efficiency, and support decision-making, governance, and services, advancing the modernization of education governance. In March 2021, the Ministry of Education issued the "Higher Education Digital Campus Construction Standards (Trial)," stating that in the development of Education Informatization 2.0, schools should address the rapid development of information technology and actively meet the demands of "Internet + Education," using standard regulations to guide education informatization in supporting and leading educational modernization.

2. THE APPLICATION OF DIGITAL AND INTELLIGENT TRANSFORMATION IN HIGHER EDUCATION STUDENT AFFAIRS

2.1 Intelligent Student Record Management System

The intelligent student record management system is more than just a simple data repository. It is an integrated platform that combines machine learning and big data analytics to deeply analyze students' learning behaviors and performance trends. Seamlessly connected with other information systems such as academic affairs and library systems, it enables unified data management. By creating comprehensive student profiles, the system provides precise decision-making support for teaching and administration.

2.2 Intelligent Mental Health Service Platform

The intelligent mental health service platform adopts an integrated approach, combining online counseling, psychological assessment, emotion recognition technology, and time-series data monitoring to build a comprehensive student mental health management network. In addition to regular psychological testing and counseling services, the platform introduces AI-assisted emotional analysis technology. By analyzing multidimensional information such as students' interaction data and social behaviors, the system can monitor and assess emotional states in real time. This significantly improves the efficiency of early detection and intervention in psychological issues, effectively reducing the incidence of severe mental health problems. Moreover, the platform provides scientific data support for mental health educators, enabling more precise and personalized services.

2.3 Comprehensive Evaluation and Financial Aid System

The comprehensive evaluation and financial aid system uses automation tools to integrate data from various aspects such as students' moral, intellectual, physical, aesthetic, labor, volunteer services, and family economic status. Through complex algorithm models, it calculates students' overall performance. This data-driven evaluation method not only enhances the fairness and scientific accuracy of assessments but also improves the

efficiency and transparency of distributing scholarships, grants, and loans. The system's real-time update feature ensures the timeliness of evaluation results, reflecting students' latest situations. Furthermore, the system can automatically generate personalized development suggestions based on evaluation outcomes, helping students identify areas for improvement.

2.4 Smart Student Dormitory Management System

The smart student dormitory management system integrates IoT devices to achieve intelligent monitoring and control of the dormitory environment. The system can monitor dormitory safety and detect anomalies in real time while automatically adjusting lighting, temperature, and humidity based on environmental data to create the optimal living conditions for students. By analyzing students' living habits, the system also provides personalized living suggestions and energy-saving solutions, enhancing the living experience and energy efficiency in student accommodations.

2.5 Academic Style Construction Management System

The academic style construction management system uses intelligent technology to improve the scientific and targeted approach to managing academic integrity. Through automated data collection and analysis, academic honesty monitoring, comprehensive evaluation and feedback, and goal setting and tracking, the system monitors student learning behaviors, upholds academic integrity, and provides personalized improvement suggestions. The system incorporates AI, big data analytics, and cloud computing technologies, enhancing precision in management and decision-making support, effectively promoting a positive academic environment and fostering students' self-management skills.

2.6 Student Affairs Team Management System

The student affairs team management system is a comprehensive platform designed specifically for student affairs professionals. It integrates personnel information management, task allocation and tracking, performance evaluation, training and development management, communication tools, and data analysis reports. These features improve team efficiency, foster collaboration, support

professional development, and provide data-driven insights for management decisions. This system aims to elevate the overall management level of student affairs, offering strong support for more scientific and refined management in higher education student affairs.

The application of digital and intelligent transformation in higher education student affairs has become a critical force in driving educational modernization. Digitalization and intelligent systems not only improve the efficiency and quality of student management and services in higher education but also significantly enhance student satisfaction and convenience in learning and living, thus promoting the modernization of the entire educational ecosystem.

3. CHALLENGES AND COUNTERMEASURES IN THE DIGITAL AND INTELLIGENT TRANSFORMATION OF STUDENT AFFAIRS IN HIGHER EDUCATION

3.1 Data Security and Privacy Protection

As the digital and intelligent transformation of higher education deepens, student data, as a core resource, is becoming increasingly sensitive. This data includes but is not limited to personal identity information, academic records, mental health data, consumption habits, and social networks. The leakage of such data not only severely infringes on students' privacy rights but may also lead to identity theft, academic misconduct, and a series of other serious problems. These issues further diminish students' trust in digital systems, affecting the completeness of data collection and the effectiveness of system applications.

Faced with these challenges, universities must adopt effective measures to strengthen data security and privacy protection in order to maintain data integrity and security while ensuring that the digital transformation process gains widespread trust and support from students and society.

To effectively address the challenges of data security and privacy protection during the digital transformation of universities, a comprehensive, systematic, and efficient data security and privacy protection framework should be established. Specific measures include:

- Improving data security management systems: it is to formulate detailed data security strategies and privacy protection policies, implement data classification and grading management, establish and improve emergency response mechanisms for data security incidents, and regularly conduct security audits and risk assessments.
- Strengthening technical protection measures: it is to use advanced encryption technologies to protect data storage and transmission, deploy multi-factor authentication and fine-grained access control systems, introduce intrusion detection and defense systems, and establish comprehensive data backup and disaster recovery mechanisms.
- Promoting data anonymization and de-identification: it is to implement necessary anonymization measures during the data collection phase, anonymize and de-identify datasets used for analysis, and explore the application of advanced technologies such as differential privacy in data protection.
- Enhancing privacy protection education and training: it is to provide systematic privacy protection awareness education for students, regularly train faculty and staff on data security and privacy protection, and organize data security and privacy protection awareness campaigns.
- Improving data usage transparency: it is to clearly inform students of the purpose, scope, and protection measures of data collection, establish a data usage review mechanism, and provide students with channels and permissions to view and manage their own data.
- Ensuring legal compliance: it is to keep track of the latest developments and requirements of domestic and international privacy protection laws and regulations, involve legal experts in the formulation and review of data management policies, and regularly conduct compliance self-assessments and external audits.
- Implementing data lifecycle management: it is to set clear data retention periods and destruction standards, properly manage or delete personal data of graduated students according to their wishes, and strengthen supervision and auditing at all stages of the data lifecycle.

- Enhancing third-party collaboration management: it is to rigorously review and assess the security qualifications of external service providers, sign detailed data protection agreements and confidentiality clauses with partners, and strengthen oversight and auditing of third-party service providers.

By implementing these measures, universities will be able to significantly improve data security and privacy protection, reduce the risk of data breaches, and enhance students' trust and satisfaction with digital systems, providing a solid foundation for the smooth advancement of digital and intelligent transformation in higher education.

To effectively address the challenges of data security and privacy protection in the digital transformation of higher education, universities should establish a comprehensive, systematic, and efficient data security and privacy protection framework. Specific measures include improving data security management systems by developing detailed data security strategies and privacy protection policies, implementing data classification and grading management, establishing and improving emergency response mechanisms for data security incidents, and regularly conducting security audits and risk assessments. Strengthening technical protection measures is also essential, such as employing advanced encryption technologies to protect data storage and transmission, deploying multi-factor authentication and fine-grained access control systems, introducing intrusion detection and defense systems, and establishing comprehensive data backup and disaster recovery mechanisms. In addition, promoting data anonymization and de-identification through necessary measures during the collection phase and applying advanced technologies like differential privacy in data protection is critical. Enhancing privacy protection education and training for students, along with regular data security and privacy training for faculty and staff, and organizing awareness campaigns, will also contribute to this effort. Improving data usage transparency by clearly informing students of the purpose, scope, and protection measures related to data collection, establishing a review mechanism, and providing students with the ability to view and manage their own data are vital steps. Universities must ensure legal compliance by keeping up with the latest developments in domestic and international privacy laws, involving legal experts in policy formulation

and review, and conducting regular self-assessments and external audits. Implementing data lifecycle management by setting clear data retention periods and destruction standards, properly managing or deleting personal data of former students according to their wishes, and strengthening oversight throughout the data lifecycle is necessary. Finally, enhancing third-party collaboration management by rigorously reviewing and assessing the security qualifications of external service providers, signing detailed data protection agreements and confidentiality clauses, and strengthening oversight and auditing of third-party service providers will help secure external collaborations. By implementing these measures, universities will significantly improve data security and privacy protection, reduce the risk of data breaches, and increase students' trust and satisfaction with digital systems, providing a solid foundation for the smooth advancement of digital transformation in higher education.

3.2 Technology Integration and System Compatibility

In the digital transformation of higher education, technology integration and system compatibility are crucial challenges that require systematic strategies and innovative technological applications to resolve. The main challenges include the compatibility issues between new and old systems, which may lead to the formation of data silos, hindering the effective flow and integration of information. Additionally, the diverse system architectures and platforms used by different departments exacerbate the difficulty of system integration, impeding real-time data sharing and analysis. The rapid iteration of technology demands continuous system upgrades, which not only increase financial and human costs but also may negatively impact system stability and user experience due to frequent changes.

In terms of solutions, the first step is to adopt open standards and API interfaces. Open standards can minimize compatibility issues between different systems, and API interfaces provide an easily implementable way to exchange data between various applications, facilitating campus-wide system integration. Secondly, creating a unified data platform is the core of establishing higher education data governance. Through a unified data platform, various data resources such as teaching, research, finance, assets, faculty, and students can be centrally managed, standardizing and structuring data assets, thereby improving data

accessibility and analyzability. Additionally, adopting modular and microservice architectures can provide better system flexibility and scalability. Modular design allows each functional module to be developed, tested, and deployed independently, significantly reducing the complexity of system upgrades and maintenance. Microservice architecture allows each service to operate and be managed independently, making it more adaptable to rapidly changing technological and business development needs. Lastly, it is crucial to formulate and maintain a long-term technology development plan. This plan should not only cover the technologies and tools to be adopted but also include continuous evaluation of existing systems and analysis of future technological trends, ensuring that the technology development plan aligns with the long-term strategic goals of the university.

By implementing these measures, universities can effectively address the challenges of technology integration and system compatibility, providing strong support for their digital transformation.

3.3 Talent Reserve and Training

In the process of digital transformation in higher education, talent reserve and training are core components. The main challenges include the lack of interdisciplinary talent with both educational expertise and data analysis skills, the possibility that existing staff may not possess the necessary skills and knowledge to operate new systems, and the rapid development of technology requiring continuous and systematic training for personnel.

As for solutions, the first step is to strengthen university-enterprise cooperation by jointly offering targeted education and training programs with companies. This approach can cultivate interdisciplinary talents that meet the needs of digital transformation and provide students with learning opportunities in real-world application scenarios, enhancing their practical skills and proficiency in technology. Secondly, establishing a regular training mechanism is essential. Regular digital skills training for faculty and staff, covering areas such as data analysis, system management, and emerging technology applications, will help enhance the digital literacy of existing employees and improve their ability to adapt to new systems. This training should not be limited to technical operations but also include understanding data-driven decision-making processes to improve

overall work efficiency and decision-making quality.

Additionally, introducing professional technical teams to support system operation and data analysis can effectively address the shortage of expertise in these areas within universities. These teams can not only ensure the stable operation of systems but also provide expert services for technical updates and troubleshooting, ensuring the accuracy and efficiency of data analysis. Lastly, fostering cross-departmental learning and experience sharing is crucial. Creating an open knowledge-sharing platform and organizing seminars, workshops, and open-day events will promote communication and collaboration among different departments, enhancing teamwork and collectively raising the institution's level of digital transformation.

3.4 Capital Investment and Cost Control

In the process of digital transformation in higher education, the first challenge is the substantial upfront capital investment required, which often carries the risk of exceeding budget. Additionally, the ongoing costs associated with system maintenance and technological upgrades bring long-term financial uncertainties. Lastly, since the return on investment (ROI) typically has a longer cycle, it can be difficult to observe significant short-term results, which may weaken the motivation for continued investment.

To enhance the feasibility and economic efficiency of digital transformation projects, universities can adopt several strategies. First, by developing a phased implementation plan, institutions can allocate funds more effectively, gradually advancing the project while adjusting future investments based on real outcomes. Second, choosing cloud services and Software as a Service (SaaS) solutions can significantly reduce upfront investment and ongoing operational costs, while also increasing flexibility. Third, establishing an investment benefit evaluation mechanism is crucial; regularly reviewing the progress and effectiveness of the project ensures that each expenditure delivers the expected value. Lastly, actively seeking financial support from government and social sources can diversify funding streams and provide more stable financial backing for the project.

Through these comprehensive measures, universities can effectively control costs and ensure the success and sustainability of their digital transformation efforts.

3.5 Organizational Change and Management Innovation

In the process of digital transformation in higher education, the challenges related to organizational change and management innovation are significant. First, existing traditional management models often do not align with the requirements of digital transformation, making it difficult to meet the rapidly evolving demands. Additionally, some faculty and staff may be resistant to new ways of working, fearing changes to job security and established work habits, which can lead to resistance to change. Furthermore, as business processes are restructured and technologies integrated, the need for cross-departmental collaboration increases, which can cause issues with role definition and lead to internal friction.

To address these challenges, universities can adopt several strategies. First, establishing a dedicated leadership team for digital transformation is essential. This team would be responsible for overall planning and coordinating resources to ensure that all transformation initiatives progress smoothly. Second, by implementing effective change management strategies, universities can enhance communication with employees, explaining the necessity and long-term benefits of the transformation. This can help reduce resistance and increase acceptance of the changes.

Additionally, redesigning work processes and clearly defining departmental responsibilities within a digital environment can effectively resolve issues related to unclear roles in cross-departmental collaboration. Finally, creating incentive mechanisms, both material and non-material, can encourage employees to innovate and collaborate across departments, fostering team cohesion and creativity.

Implementing these measures will help universities successfully navigate organizational change and management innovation during digital transformation, laying a solid foundation for future development.

3.6 Data Quality and Decision Dependency

In the process of digital transformation in higher education, data quality and decision dependency are closely related and important aspects. The main challenges include, firstly, poor data quality leading to erroneous decisions, which can negatively impact the strategic direction and operational

effectiveness of the institution. Secondly, over-reliance on data in decision-making may overlook the crucial aspects of human care and individual differences in education. Lastly, the inherent biases in data algorithms might not be adequately identified and managed, potentially leading to unfair or inaccurate decision outcomes.

To address these challenges, universities can implement the following strategies to ensure the successful implementation of digital transformation. First, establishing a robust data governance framework is essential. By formulating strict data management standards, universities can ensure the accuracy, completeness, and timeliness of collected and utilized data. Second, it is important to combine data analysis results with the subjective judgment of professionals in the decision-making process to avoid fully mechanized decisions and ensure that decisions are comprehensive and reasonable.

Additionally, regular audits of algorithms and models should be conducted to ensure transparency and fairness in the application of technology, allowing for the timely identification and correction of potential biases. Lastly, maintaining a strong human-machine collaboration is crucial, especially at critical decision points. Retaining mechanisms for human intervention ensures that decisions take into account various interests and impacts.

Through these measures, universities can ensure high data quality while relying reasonably on data-supported decisions, effectively advancing their digital transformation journey.

4. FUTURE DEVELOPMENT TRENDS OF DIGITAL AND INTELLIGENT EMPOWERMENT IN HIGHER EDUCATION STUDENT AFFAIRS

With the development of society, the digital and intelligent transformation of higher education student affairs has become a trend. The key to this transformation lies in the integration of advanced information technologies and student management systems, including cloud computing, big data, machine learning, and artificial intelligence, which greatly improve administrative efficiency and service quality. By establishing a comprehensive data management platform, universities can achieve unified data integration and real-time analysis, ensuring consistency and completeness of information. Higher education student affairs'

intelligent systems are not only applied to basic tasks such as academic and performance management, but are also expanded to more complex areas such as mental health monitoring and personalized tutoring, thus providing students with more precise and individualized support for learning and personal growth.

Secondly, data sharing and resource interconnection will become more seamless, promoting the effective integration of resources both inside and outside the university. Data-sharing mechanisms between universities and external institutions will be improved, enabling wider utilization of educational resources, research outcomes, and information. Additionally, with enhanced data analysis capabilities, universities will be better equipped to achieve personalized education. From course design to career guidance, each student will receive tailored support based on their individual characteristics.

Finally, data-driven decision-making will become a key support for higher education management. Real-time data analysis will not only improve the accuracy and efficiency of management decisions but also help predict future trends, providing a foundation for strategic planning. As digital and intelligent transformation develops rapidly, universities must ensure the security and compliance of technology applications, balancing the need for technological efficiency with the demand for individualized student development.

4.1 Deep Data Integration and Intelligent Analysis

In the future, higher education student affairs will place significant emphasis on deep data integration and intelligent analysis. This will not only involve the analysis of academic performance but also extend to multidimensional information such as students' social interactions, mental health, and lifestyle habits, creating a comprehensive student profile. Through this holistic data integration, universities will be able to more accurately identify student needs and implement personalized education and guidance. For example, systems will analyze social behaviors and psychological questionnaires to detect and intervene in potential mental health issues, while predictive models can be used to proactively prevent academic challenges.

This approach not only improves the timeliness and effectiveness of educational interventions but

also promotes students' overall well-being. At the same time, universities must strictly adhere to data protection regulations, ensuring the security of data processing and the protection of students' privacy. The transparent use of data, avoiding bias and discrimination, is crucial to ensuring the ethical and fair application of technology. Through these strategies, universities can better utilize educational resources and fully explore and support students' potential.

4.2 Personalized Learning Paths and Career Planning

With continuous technological advancements, higher education institutions are now able to provide personalized learning paths and career planning advice for each student. By deeply analyzing students' learning habits, interests, and real-time changes in the job market, AI-driven systems can intelligently recommend courses and practical projects that best align with students' personal development goals. Personalized teaching methods enable students to choose the most suitable courses based on their interests and career aspirations, helping them more effectively prepare for their future careers.

For instance, for a student interested in computer science, the system might recommend courses in programming, data structures, algorithms, and artificial intelligence, and provide specialized training in cutting-edge technologies based on market demand. Additionally, this system can dynamically adjust teaching content according to industry needs, ensuring that students' skills remain in sync with the job market.

Personalized learning paths and career planning greatly enhance the relevance and effectiveness of education, making learning more flexible and meaningful. This also optimizes resource allocation, ensuring that every student receives the educational resources best suited to their personal development needs. This shift in the educational model not only promotes students' personal growth but also lays a solid foundation for their future careers.

4.3 Comprehensive Mental Health Monitoring and Support

With the increasing societal focus on mental health issues, higher education institutions are placing greater emphasis on the management of students' mental health. In the future, universities will adopt intelligent tools for comprehensive

monitoring and support of student mental health, utilizing AI technology to analyze students' social media behavior, learning activities, and behavioral patterns to predict and identify mental health risks.

Through the analysis of these data, intelligent systems can promptly identify students who may be facing psychological stress, anxiety, or depression. Once the system issues an alert, relevant departments can quickly take action to provide necessary psychological counseling and intervention measures. In addition to passive interventions, these systems can also actively provide mental health education, online counseling services, and self-help tools to help students better manage their mental states.

Furthermore, intelligent monitoring tools can assist schools in evaluating and optimizing the effectiveness of their mental health services, ensuring that students receive the most appropriate support. This comprehensive mental health monitoring and support system not only improves students' overall well-being but also helps create a more caring and inclusive learning environment. In this way, universities not only focus on students' academic achievements but also actively care for their psychological and emotional health, making education more humane and holistic.

4.4 Enhancing Sustainability and Inclusivity

As global attention to sustainability and inclusivity issues grows, universities are adopting various advanced technologies to enhance environmental friendliness and social inclusivity on campus. On one hand, by implementing smart building management systems, schools can effectively manage and reduce energy consumption, promoting a green and low-carbon campus environment. These systems optimize the operation of lighting, air conditioning, and other energy systems, improving energy efficiency while minimizing environmental impact.

On the other hand, to enhance campus inclusivity, universities are actively utilizing augmented reality (AR) and virtual reality (VR) technologies to provide richer and more convenient learning resources and assistive devices for students with disabilities. For example, through VR technology, visually impaired students can experience course content traditionally focused on visual elements through touch and sound. Meanwhile, AR technology can aid students who

are hearing-impaired or have speech disorders by helping them understand classroom communication and discussions through images and symbols.

Additionally, the application of AR and VR technologies can help all students better comprehend complex subject concepts. In fields like medicine, biology, and engineering, virtual reality simulations can allow students to conduct experiments or engage in fieldwork without risks, enhancing their learning and practical experience.

By integrating these technological measures, universities not only improve teaching quality and learning efficiency but also foster a more sustainable and inclusive learning environment. This is crucial for cultivating well-rounded and highly adaptable talents needed for the future society.

4.5 Strengthening Data Protection and Privacy Security

As universities increasingly rely on technology to manage and analyze student data, the importance of data security and privacy protection grows. To address this, institutions must adopt a series of stringent measures. These include data encryption technologies to protect stored and transmitted data, ensuring that even if data is intercepted, it cannot be deciphered by unauthorized third parties. Additionally, through anonymization and de-identification processes, universities can safeguard students' personal identities during data analysis and research.

Strict data access control must also be implemented to ensure that only authorized personnel can access sensitive information. Regular security audits and risk assessments should be conducted to continuously identify and patch vulnerabilities. Moreover, universities must comply with relevant national or regional data protection regulations and provide training to students and staff on data security and privacy protection, raising awareness and enhancing operational capacity.

By employing these comprehensive strategies, universities can effectively protect student information, creating a safe and trustworthy academic environment for both students and staff.

5. CONCLUSION

The digital transformation in student affairs management has significantly improved efficiency and service quality, making management processes

more convenient and effective. However, this transformation also brings challenges such as data privacy protection, the rapid pace of technological updates, and balancing technology use with humanistic care. To fully leverage the advantages of digital transformation in student affairs, universities must take targeted actions, such as enhancing data security management, establishing continuous technical training systems, and improving human-machine collaboration models.

Universities should continuously monitor technological trends and changes in educational needs, optimize digital strategies, adopt advanced tools, and focus on personalized student needs and mental health. By doing so, they can steer student affairs toward a more scientific, precise, and humanized approach, ensuring that technological advancements truly serve the core mission of education and help students grow and succeed.

REFERENCES

- [1] Ministry of Education of the People's Republic of China. (2018). Notice on the issuance of the "Higher Education AI Innovation Action Plan." Ministry of Education Bulletin, 2018(04), 127-135.
- [2] Central Committee of the Communist Party of China & State Council. (2019). Issuance of "China Education Modernization 2035." Ministry of Education Bulletin, 2019(Z1), 2-5.
- [3] Ministry of Education of the People's Republic of China. (2021). Notice on strengthening educational management informatization in the new era. Ministry of Education Bulletin, 2021(04), 33-37.
- [4] Ministry of Education of the People's Republic of China. (2021). Notice on the issuance of the "Higher Education Digital Campus Construction Standards (Trial)." Ministry of Education Bulletin, 2021(05), 14-42.
- [5] Shen, L., Zhang, S., & Chen, H. Construction of a student management model based on the smart cloud platform in higher education institutions. *Forest Area Teaching*, (2023, September 14). 147.
- [6] Wu, Z. Research on the current situation and improvement path of intelligent teaching in ideological and political theory courses in colleges and universities (Huang, M., Supervisor). Master's Thesis, Wuhan Polytechnic University, (2022, May 1).106.
- [7] Miao, L. Practice and reflection on the migration of regional educational management information systems to government cloud. *China Educational Informatization*, (2023, April 20).72.