Research on Online Education Informatization of Cadres from the Perspective of Management

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Abstract: The informatization of cadre education refers to the informatization construction, application and management specially aimed at cadre education. From the perspective of management, this paper summarizes the basic connotation of informatization of cadre education through the analysis and definition of related concepts of informatization of cadre education. At the same time, through the analysis of big data, cloud computing framework, "internet plus" and other modern technologies, explores the role of modern technologies in promoting the informatization of cadre education. On this basis, the author tries to put forward relevant measures to promote the informatization of cadre education.

1. The basic connotation of cadre education informationization

1.1. Informationization

"Transformation" refers to the process of changing things from one state to another[1]. Informatization is a concept which appears with the development of large-scale information processing and application technology, it is closely related to modern information technology and has the characteristics of the times. According to the available data, the method of really starting to explore and study informatization began in 1970s. For example, in 1976, then French President Valery Giscard d'Estaing wrote a letter asking for "promoting the discussion of the methods of social informatization"[2]; In 1979, Chinese scholars also started the research on informatization, the representative literature is the article "Informatics and Information Society" published in Nature by Mr. Wang Xinggang, Institute of Computing Technology, Chinese Academy of Sciences. In his article, he regards informatization as the abbreviation of "the mechanization of information processing in human society"[3]. Obviously, different era technology, different economic bases and different application concepts determine that the main ways and means of processing, receiving and using information on large-scale will be different. Nowadays, modern information technologies such as Internet, Internet of Things, big data and cloud computing, with the computer as the core technology, have made unprecedented changes in the storage, dissemination and application of human information. In this case, informatization in the modern sense can be understood as the electronization and intellectualization of information stored, processed, disseminated and used by human beings.

At present, informatization has become the key means to enhance the comprehensive national strength and international competitiveness of all countries in the world, and it has increasingly

become an important part of all aspects of contemporary human society. It can be said that in today's era, politics, economy, culture and life are inseparable from the informationization of modern society, and so is cadre education. Informatization is so important, naturally, higher education will pay more attention to the education and research of informatization. For example, in the core courses of MBA, in addition to the contents of economics and management, it also offers information-related courses such as Management Information System, Data, Model and Decision-making.

1.2. Informationization of cadre education

As the name implies, the informatization of cadre education refers to the informatization construction, application and management specially aimed at cadre education, which mainly includes related hardware infrastructure construction, software system development and integrated use of information resources, it is generally manifested in the informatization of cadre education and training institutions. Compared with the social informatization, the informatization of cadre education is a little later, probably originated in the 1990s, but the real stage of high-quality development should be calculated from 2000. In order to further understand the informationization of cadre education, several concepts related to it need to be differentiated, such as multi-media, office automation, website and Network College.

Firstly, multi-media, also known as the popularization of multimedia applications, but it is not simply using multiple media, but making full use of modern information technology to effectively and cooperatively integrate multiple media information, the purpose of which is to better enhance the interaction effect between people and media machines. At present, in cadre education, multi-media is mainly used in daily classroom teaching and special conferences.

Secondly, office automation. It mainly refers to the application of modern information technology to realize the automatic processing of office data and the electronic intelligence of business processes, aiming at strengthening the co-construction, sharing of data resources and improving the efficiency of administrative work. For example, the educational administration management system used for curriculum setting, calculation of tuition fees and evaluation of teaching quality and the cadre training system used for the selection of students, study summary, and file inquiry all belong to the office automation system.

Finally, the website and network college. The website has been widely used as an information publishing platform in cyberspace, mainly for the internal and external publicity of cadre education information. Network college is a learning platform in cyberspace that has gradually emerged in recent years. Generally, it offers learning columns such as "special training, customized training, bridging training and cadre selection" to supply courseware resources, with the purpose of helping the majority of students (leading cadres) to expand their learning ways, enrich their learning content and solve the contradiction between work and study.

Compared with the above three, the informatization of cadre education is a whole concept of a larger category, in different stages of development, the emphasis of informatization of cadre education will be different. Multi-media, office automation, website and network college are all important components of cadre education informationization and are concrete practices of cadre education informationization in different stages. For example, before 2005, the focus of the informatization of cadre education institutions at all levels was the website; after 2010, the network college was gradually developed and popularized; around 2015, the construction of intelligent campus based on intelligent application has become a new hot spot of cadre education informationization.

2. Innovate the modern information technology of cadre education informationization

2.1 Big data

According to the relevant information, "at present, the growth rate of human storage information is four times faster than that of the world economy, while the growth rate of computer data processing capability is nine times faster than that of the world economy"[4]; obviously, in modern society, human beings have almost no choice but to be exposed to a huge amount of data and information all the time. In this context, a new concept "big data" came into being. How to understand big data? Different research perspectives give different definitions. For example, methodologists believes that big data is "an approach that doesn't take the shortcut of random analysis, but takes all the data." This is a conceptual explanation under the whole data model, which emphasizes that the sample comes from all the data, rather than a few random individuals or parts. Others see big data as "a collection of data whose contents cannot be captured, managed and processed with traditional database software tools in a certain period of time"[5].

In fact, big data is not an entity, but a dynamic activity across the cyberspace which is a new phenomenon, new thinking and new method in the network information age. Glivenko-Cantelli Theorem tells us that when the sample size n tends to infinity, the sample distribution function $F_n(x)$ will uniformly converge to the overall distribution function $F(x)$ according to the probability 1 (about x):

$$P\left(\lim_{n \to \infty} \sup_{-\infty < x < +\infty} | F_n(x) - F(x) | = 0\right) = 1$$

This is also the basis for using the sample characteristics to infer the overall characteristics. According to this theorem in applied statistics, we know that the more samples, the more accurate the prediction and judgment will be, this makes it easier for us to understand the use and value of big data. On the whole, big data, no matter as a technical method or a way of thinking, seems to be born with the mission of storing, processing and using large-scale data based on as large or even infinite sample intervals as possible, and then analyzing the data laws of specific objects (such as epidemic prevention and control, traffic dispatch in Spring Festival travel rush) and making as accurate a scientific prediction as possible, which is also its core concept and value. Big data thinking has great application potential in cadre education.

2.2 Cloud computing architecture

Cloud computing, like big data, is also a new concept emerging with the development of the Internet. Cloud computing is one of cloud technologies, which is closely related to cloud services and virtualization. "Cloud" itself is a natural meteorological concept, which is used in the aspect of computer science and is an image metaphor for networking applications, and a series of new concepts are derived, such as cloud computing, cloud service, cloud search, cloud storage. Why is there cloud computing? Under the influence of capital expenditure, operating expenditure, efficient processing, supercomputing, convenient service and many other factors, on the one hand, large scale data need to be distributed on different computers for calculation and processing, and then synchronized to form a unified data result; on the other hand, information services faced to different users need to be realized instantly at different times and places. This gives birth to the emergence of distributed computing technology, parallel computing technology and serial computing technology. Cloud computing can be regarded as the comprehensive development of these technologies.

Some scholars define cloud computing as "an IT model or computing environment composed of

IT components as well as the processes around the deployment of these elements that together enable us to develop and deliver cloud services via the Internet or a private network"[6]From this definition, it can be seen that the realization of cloud service is an important value embodiment of cloud computing. Specifically, cloud computing realizes the general mode of cloud services.

2.3 Internet plus

"Internet plus" is based on the Internet platform, using modern information technology to combine the Internet with traditional industries and create a new application ecology in new fields. According to the innovation standards of "Internet plus", Amazon, Ctrip and Alipay are relatively successful innovation cases. However, judging from the date of establishment of these cases, they all predate the concept of "internet plus" (2013). This shows that before the formation of this new concept, the exploration and practice of "internet plus traditional industry" mode has been effectively carried out in many fields. From the actual effect, "internet plus traditional industry" does not simply make this traditional industry Internet-based, but makes full use of the advantages of Internet technology and resources to redefine and upgrade the traditional industry. For example, "Didi Taxi" formed by "internet plus traditional taxi mode".

Through analysis, we have a certain understanding of "Internet plus" at this time:the Internet is not just a technology, nor can it be viewed simply as a tool. "Internet plus" has become an important technological thinking mode in the present era, some scholars have even summed up the specific thinking mode of "Internet plus" from the perspectives of "customer first, extreme simplicity, iterative update, scale flow, socialization, cross-border platform and big data", the gist of it is that "subversive innovation, win-win cooperation and open game", but its core point still is "people-oriented". To a great extent, a deep understanding and rational use of the above concepts can scientifically and effectively promote the further innovation and upgrading of traditional industries. The same should be true of cadre education.

3. Technical thinking on optimizing the informationization of cadre education

3.1 Optimization of simulation drill system

Cooperation and sharing is the distinctive label of the Internet, which also indicates that in this era, cooperation and sharing should become an important work attitude and concept. When carrying out theoretical publicity and public opinion guidance, cadre education institutions should not stay in the past state of accomplished anything all alone. They should actively innovate thinking, grasp the internal and external resources, strengthen relevant cooperation, and form a joint force, so as to improve the effectiveness of work. At present, some mainstream media and universities rely on their own professional advantages have a very mature ability to collect public opinion information, analysis, research and judgment. From the perspective of informatization, it can enhance the theoretical publicity and public opinion leading ability, and carry out cooperation and sharing, taking mainstream media as an example, we can explore the following modes, including four procedures:

Firstly, mainstream media timely provide online public opinion cases to cadre education institutions. Public opinion events have attracted the attention of the whole society, as a cadre education institution, on the one hand, it can actively voice through appropriate channels and strengthen the correct guidance of online public opinion; On the other hand, the case should be used as the material to focus on training students' ability to cope with public opinion crisis. However, during the evolution of online public opinion from scratch and from small to large, the public opinion monitoring system of mainstream media will have detailed data. During the evolution of

online public opinion from scratch and from small to large, the public opinion monitoring system of mainstream media will have detailed data; what educational institutions of cadres need is only public opinion data information, so it is not necessary to develop public opinion monitoring information system by itself and just need to sharing it directly with mainstream media.

Secondly, educational institutions of cadres timely convert case data into classroom content. At present, in the higher level of cadre education institutions, basically set up a certain proportion of scenario simulation teaching courses, network public opinion crisis response is one of them. Then, how to make the students carry out the simulation training of network public opinion crisis on the public opinion data provided by mainstream media? Therefore, it is necessary to develop and construct a set of crisis response simulation system, in this system, teachers can input public opinion data into the system before class; in class, students will be divided into different role groups such as "public security, industry and commerce, price, urban management, media" by simulation, and then they can conduct face-to-face discussion on public opinion cases.

Thirdly, while students improve their public opinion awareness and coping ability, they actively feed back the incident handling methods and experiences. The so-called "teaching and learning complement each other", in this teaching mode should be more adequate performance. Through this kind of teaching activity, the majority of cadres not only deeply improve the understanding of network public opinion, but also can share their own experiences or lessons with everyone, and timely feedback to cadre education institutions through the teacher.

Finally, the cadre education institutions timely share the actual experience to the mainstream media. The opinions and suggestions of students and the professional analysis of teachers will form valuable reference materials for online public opinion response and incident handling. The cadre educational institutions share these reference materials with mainstream media in time, which will further improve the mainstream media's ability to lead online public opinion.

3.2. System design based on cloud computing architecture

Cloud computing is a structural shift, and its core concept actually is system co-construction and resource sharing. In the past, we might have thought about problem on the basis of the power of a single computer; now, through cloud computing, multiple servers can be enabled to complete the work at any time, and the cost is more economical than the traditional way.

SOI (Service-Oriented Infrastructure) is Service-oriented infrastructure framework, it can be roughly divided into physical layer, data link layer, network transport layer, session presentation layer and application layer. The data link layer establishes the data link between adjacent nodes on the basis of the bit stream service provided by the physical layer, virtualization services will also be implemented in this layer, aiming at solving the information processing differences between different types of hardware devices. The network transport layer will provide data exchange between different information systems such as student management, resource management and data management and so on. XaaS (Everything as a service) in the session presentation layer serves everything, and directly docking with the application layer which is facing system users.

It is worth noting that the function of SOI framework lies in the integration and application of resources. Taking the provincial level as an example, if the cadre online education system of the province is planned as a unified whole, designed according to the SOI framework, hardware resource integration and courseware resource integration can be realized through the integration of information platform, which can naturally reduce unnecessary repetitive behaviors and improve the effectiveness of construction. Specifically, it can be elaborated from the following three aspects:

Firstly, hardware resource integration. At the bottom of the SOI framework is the physical layer, where infrastructure such as server storage devices, network security, and core switching are located.

The integration of online education for cadres in the whole province, the collection of limited manpower, material resources, financial resources and other production factors, centralized and unified allocation of hardware resources, the implementation of intensive management, will surely save a lot of hardware purchase costs.

Secondly, courseware resource integration. The public subjects are purchased uniformly by the platform and used by the vast number of cadres in the province, and at the same time of uniformity, the allocation of personalized curriculum resources is allowed. In this way, limited funds can be used to purchase and allocate more and better curriculum resources, and the efficiency of the use of curriculum resources can be significantly improved.

Finally, management system integration. Databases such as student management information system, courseware resource management information system and data management information system of online education for cadres should also actively apply modern information technology for unified planning and design. In this way, it can effectively eliminate the data island, avoid the waste phenomenon of repeated development and construction in various cities.

3.3. Use big data to effectively improve the level of online education services

In the previous content, we have introduced the basic knowledge about big data, and we can understand big data from many angles. Big data is a new data processing technology, a new thinking method and a new research paradigm. From the perspective of management, there are obvious differences between big data management mode and traditional management mode.

Under the big data management mode, the electronic traces of students' learning activities in online education system will no longer be static and useless redundant data, but will become valuable data information. On the one hand, online educational data mining process. Data mining is a technique to find general rules from a large number of data by analyzing specific data, it is also an important operation step of database knowledge discovery.

On the other hand, specific application of knowledge. Mining and transforming the originally scattered, static and useless data into knowledge information for specific purposes will form materials with important reference value, so as to further improve the management and application level of online education. For example, firstly, you can know the peak learning time, which helps to balance the load more scientifically, ensure the unimpeded information of online education platform, and solve the problem of network congestion. Secondly, it can summarize the knowledge preference, help to provide courseware resources more pertinently, meet the learning needs of students as much as possible, and solve the problem of knowledge 'blind supply; at the same time, it can also provide reference information for the curriculum arrangement of traditional cadre education, so that the resources of traditional and online modes can complement each other, thus better enriching the knowledge structure of students and solving the problem of repeated learning. The third is specific to the individual students, by analyzing the learning content, learning time and learning effect, to a certain extent, we can also infer the basic knowledge reserve of this student, it provides reference basis for better selection and employment, further achieves the matching of people and posts, and gives full play to their talents.

3.4. Pay attention to the multiple thinking of technical design

The first few contents mainly elaborate the strategy of innovating the informatization of cadre education from the perspective of technical details, However, technology alone is not enough to better accomplish the tasks assigned by the organization, the key factor is the various types of applied technology talents, which need to utilize relevant theories in management to innovate services, enhance the "1+1>2" working force of the team. On the one hand, it is necessary to

innovate management services, use scientific decision-making methods, give full play to the positive role of each team member as much as possible, and scientifically analyze the influence of various variables in the informatization of cadre education. On the other hand, informatization itself is a kind of work that requires highly innovation. Therefore, unit leaders should also innovate services and inspire team members to make decisions more creative. When making decisions, the organizer can innovate the service and use the decision-making theory method in business administration to make the decision more creative. Among them, the creative decision-making method can be divided into the following three methods:

Firstly, Delphi Method. This is an intuitive forecasting technique developed by Rand, an important strategic research institute in the United States. It mainly uses anonymous communications to solicit repeated opinions from relevant people (experts, consultants, business department heads, etc.), and these people propose solutions by thinking along without others help. The sponsor synthesizes the schemes from the first round of feedback, then conducts the second round of anonymous correspondence based on the comprehensive situation, and continue the solicitation of new ideas. This repeated several times, a satisfactory decision-making scheme can be formed.

Secondly, brainstorming method. Follow the principle of "speak freely, without restriction, exclude criticism, a certain amount", in order to seek the object of merger and the improvement method. This method can be considered when solving the project problem of cadre education informationization.

Finally, nominal group method. Before discussing a problem, each participant independently writes down his or her creative views on the problem, then shows them seriatim to all the staff, until everyone knows everyone's views, and then formally discusses them. This method has greatly changed the traditional meeting mode, avoided authoritarian individualism, and helped to find new ideas.

3.5. Innovates and improves the performance level of technical teams

3.5.1 Scientific motivation and build efficient business team

The business team here refers to the business department of full-time informatization construction and management within the cadre education institutions. According to management theory, whether a team is efficient or not can be analyzed from four dimensions: "goal, technology, trust and evaluation". Firstly, clarity of purpose. What is the mission and responsibility of the team? High performing business teams have an accurate understanding of what the business is supposed to accomplish. No matter the upper leaders outside the team or the staff inside the team, they should not be vague about the team objectives, and must have clear responsibilities and clear tasks.

Secondly, trust and cooperation. Trust is the premise, cooperation is the key. Trust and cooperation, not only within the business team, the upper leadership and business team also need to have full trust and cooperation, otherwise, it is inevitable to get half the result with less effort. To achieve the necessary trust and cooperation, we must respect each other's opinions and suggestions in communication and coordination.

Thirdly, Science of appraisal. What to do and what to assess is an issue at the orientation level; what to do and what to assess is a matter of assessment level. Both have the function of motivation, but the content of assessment should be consistent with the content of actual work, so that there will be positive motivation.

Finally, Skilled. Education informatization of cadres is a business closely related to modern information technology, so skilled technology is the basic requirement for building an efficient business team. Educational institutions of cadres should attach importance to practical training of

business departments, especially business departments should be encouraged to participate in technical exchanges, learn new technical knowledge in time and do the best of daily technical training.

3.5.2 Reasonably purchase socialized services and give full play to the professional advantages of talents

With the expansion of information scale, the number of various types of information equipment terminals in cadre education institutions has also increased a lot, and the daily maintenance of these hardware facilities will bring a great workload. For such practical problems, the scientific approach should be to buy social services rationally. On the one hand, it entrusts the maintenance of low-tech and time-consuming hardware to professional companies, and implements socialized services. On the other hand, give full play to the professional and technical advantages of the staff of the information business department, so that they have time and energy to carry out more important work such as project planning, scheme design, network security, and further improve the management level of human resources.

3.6 The application of Benchmarking principle

According to the discussion of the previous content, cadre education informatization is a dynamic process, its environmental situation and tasks are constantly developing and changing, and its construction and application results are deeply influenced by many factors. Therefore, the status quo level of cadre education informatization in different levels and regions is also uneven. How to play a leading role, from point to surface, comprehensively promote the overall level? Using benchmarking principle, innovative management should be a good method. Benchmarking, also called benchmark management or benchmark comparison method, refers to "seeking best practices from the advanced people that lead them to achieve excellent performance". The enlightenment thought of benchmarking was reflected as early as "SUN TZU ON THE ART OF WAR" in the Spring and Autumn period of our country: "If you know the enemy and know yourself,you need not fear the result of a hundred battles. "As a modern performance management theory, it was mainly put forward in the 1970s and has become an important content in the core curriculum of MBA. The basic principle of benchmarking is "learn from others and improve yourself". The reason of benchmarking is that organizations have found existing problems or new tasks, but they are dissatisfied with the status quo or have to complete new tasks, by seeking benchmark, comparing benchmark and self-innovation, finally achieve self-improvement or successfully complete the target tasks. Education informatization of cadres, whether as a project or as a job, will always have new problems to be solved and new tasks to be completed. Therefore, benchmarking should be often used in the process of cadre education informationization. Here, taking the informatization construction of think tank as an example, benchmarking can inspire some innovative ideas.

Firstly, discover the problem, appear new task: build a distinctive think tank information system. Secondly, seek and select a benchmark: on January 28th, 2016, Guangming Net published the "Top 10 Events of Chinese Think Tank in 2015", one of them is the China Think Tank Index (CTTI) jointly developed by Guangming Daily and Nanjing University, which was officially put into operation. According to the introduction, this is "the first think tank index system in China that comprehensively describes and collects think tank data, and provides users with functions such as data sorting, data retrieval, data analysis and data application. "Thus, the benchmark CTTI appears.

Thirdly, learn from benchmark: CTTI positioning is not only the statistical platform of think tank, but also the information query platform of think tank. It initially constructs the data structure and data item system of the related data of China's think tank, which consists of four basic data

warehouses, including 34 data tables and 558 data items.

Finally, innovate the implementation plan and achieve the expected goal: benchmarking management is by no means simply copying, it is an important reference to innovative thinking. Learning and reference is only to expand ideas, not to mechanically copy, encourage the use of benchmarking management innovation to form a full of individual characteristics of the program and active implementation. The construction of information system of think tank, according to the actual situation, can be implemented step by step, the first phase should mainly be used for information management of think tank. Therefore, we should learn from CTTI's design ideas and actively innovate to create a more efficient and distinctive think tank information management system.

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