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The Problems and Coping Strategies of Scientific Research Management in Universities under the Background of Big Data

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Abstract: Teaching and research are the important work content of colleges and universities. With the deepening of the strategy of rejuvenating the country through science and education, colleges and universities attach great importance to scientific research, which puts forward new requirements for the management of scientific research in Chinese colleges and universities. Introducing big data technology into scientific research management can greatly enrich the content of scientific research management, broaden the management path, and greatly promote the level of scientific research management in colleges and universities. Given this, this paper will analyze the management of scientific research in colleges and universities under the background of big data, and put forward some strategies as reference.

Keywords: Big data; Universities; Scientific research management; Problems; Strategy

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1. Problems existing in the management of scientific research in universities under the background of big data

1.1. The level of scientific research personnel and communication is inadequate

At present, the analysis of the system of scientific research management in colleges and universities shows that the scientific research management system and the corresponding personnel management system have not been effectively integrated, which will lead to the uneven comprehensive quality of scientific research personnel, which will greatly affect the development of scientific research work, thus negatively impacting the scientific research management work. The number of undergraduates and postgraduates in colleges and universities is large, but the corresponding scientific research staff is small. Many teachers in addition to carrying out scientific research work also undertake teaching tasks, which will also negatively affect their scientific research work efficiency [1]. On the other hand, the communication between many colleges and departments is not smooth enough, which will also impact the development of scientific research and hinder the researchers for the application of scientific research resources in the school, making researchers between different departments difficult to carry out in-depth cooperation, which will greatly hinder the efficiency and quality of scientific

research work.

1.2. Duplication of scientific research projects

At present, many colleges and universities have certain problems of duplication in scientific research projects, which is also an important factor affecting the effect of scientific research management in colleges and universities [2]. The reasons for this problem can be analyzed from two levels. First, when selecting the subject, there is usually a national special research carried out by a special team, and other subjects are allocated by the subject management group. Due to certain communication problems, there will likely be duplication of the subject, which greatly affects the development effect of the university project. For some popular scientific research topics, many researchers will study from different levels and angles, but there are many contents of the research itself with high repeatability and similarity, which will also cause a certain degree of waste of funds, thus affecting the effect of scientific research management work.

1.3. Disconnection from social development

According to the analysis of the current scientific research projects in colleges and universities, it can be found that there is a disconnect between the scientific research projects, research results, and the development of society in many colleges and universities. The reasons for this problem can be analyzed from two angles. First, many groups in scientific research work, often start from their hobbies or have completed the results of scientific research projects to further study, such research methods ignore the actual scientific research needs of enterprises and institutions [3]. Second, when scientific research teams carry out scientific research, they rarely communicate with enterprises in society. The information exchange between the two is insufficient so colleges and universities do not know enough about the social information, which will lead to the poor practicality of scientific research results.

1.4. The level of scientific research information management is relatively backward

Under the background of big data, the comprehensive level of information technology of scientific research management in the country is insufficient, which will greatly affect the implementation effect of scientific research management. Its performance is specific in the following aspects. First, the lack of information awareness of staff. In the actual work, many researchers do not realize the promotion of big data technology, information technology, and other means for scientific research work, ignoring the relationship between information technology, big data technology, and scientific research results transformation, which greatly affects the development effect of scientific research management under the background of big data. Second, the scope of scientific research information management is small [4]. Under the background of big data, the informatization construction of many colleges and universities has just started, and many researchers will reflect informatization in data collection. However, informatization means are rarely introduced in the corresponding data analysis, data sorting, data mining, data sharing, and other aspects, so it is difficult to highlight the effect of university research management under the background of big data.

1.5. The situation of information island exists

When carrying out scientific research, there are certain differences in data types and system types between various departments of colleges and universities, which will have a great impact on the development of scientific research and the implementation of scientific research management. A large number of different types of data will greatly hinder the development of scientific research [5]. In addition, the work content and job responsibilities between different departments are also different. Due to the lack of corresponding effective

communication, it is easy to lead to the situation of information island in scientific research work, and the comprehensive level of information sharing is relatively low, which greatly affects the development of scientific research management. With the influence of information islands, the project decision-making and achievement transformation of scientific research management work will be greatly affected, which greatly restricts the smooth development of scientific research work in colleges and universities.

2. The advantages of scientific research management in colleges and universities

2.1. Abundant scientific research data

Combined with big data technology, teachers can introduce more high-quality resources into the scientific research management of colleges and universities, which has a great role in improving the comprehensive level of scientific research management. Combined with big data technology, colleges and universities can apply a large amount of data generated in previous scientific research activities, to lay a solid foundation for the management and mining of scientific research data [6]. In addition, big data technology can help staff to better explore valuable content from massive experimental data, which can help the scientific research team to make more correct decisions, to assist in the smooth development of scientific research work.

2.2. Provide the basis for information management

Generally speaking, each university has an information management department, which is responsible for carrying out comprehensive information construction and management and is equipped with corresponding technical personnel, which also lays a solid foundation for the development of scientific research work in colleges and universities under the background of big data. In addition, to better meet the actual needs of college students and teachers for scientific research work, many colleges and universities have further optimized the network environment, and even some colleges and universities have built a smart campus information system. Such infrastructure and conditions have laid a solid foundation for the development of scientific research management under the background of big data [7].

3. Disadvantages of scientific research management in colleges and universities under the background of big data

3.1. The current management mode is outdated

At present, the management mode of scientific research in many colleges and universities is relatively outdated, and the scientific research work itself is strongly result-oriented. Under this model, the management of scientific research will appear very passive, and there is no in-depth analysis of the shortcomings of scientific research management [8]. In addition, scientific research management will produce a large amount of data. The big data technology, information technology, and other reasonable introductions of scientific research work will greatly affect the effect of scientific research management work in an outdated management model, leading to experimenters having difficulty in carrying out in-depth analysis of scientific research data, which greatly affects the development effect of scientific research management work.

3.2. The overall quality of personnel is not high

At present, many university scientific research management personnel are from ordinary management positions, and few people are specialized scientific research and management staff, which will greatly hinder their scientific research management work. In addition, few people have an information management background

in the team of scientific research management personnel. Their understanding of big data technology, information technology, and other means is not comprehensive, and their scientific research management ability is insufficient, which will also hinder the innovation and optimization of subsequent scientific research management work [9].

3.3. Insufficient sharing of information resources

At present, many universities fail to share data resources when carrying out scientific research projects. The reasonable introduction of big data technology can effectively save manpower, material resources, and financial resources when carrying out the transformation of scientific research results. However, in the actual scientific research projects, the data communication and sharing between universities and enterprises, and between various scientific research projects are not reasonable, which will greatly affect the development effect of scientific research work [10]. In addition to the lack of corresponding sharing of resources, colleges and universities also lack a reasonable incentive system, which affects the effect of scientific research management in colleges and universities.

4. The optimization strategy of scientific research management in universities under the background of big data

4.1. Evaluation of existing scientific projects

Under the background of big data, universities can carry out in-depth analysis and evaluation of the current scientific research projects and judge the value and significance of each scientific research project, to ensure the smooth development of scientific research projects and further improve the effect of scientific research management, laying a solid foundation for the subsequent scientific research management [11]. Scientific research managers should actively carry out project evaluation, set up a more reasonable and scientific evaluation goal, and avoid approving projects that do not meet the evaluation criteria. In addition, scientific research managers should analyze the value of scientific research projects, study the data involved in the projects, conduct in-depth analysis and identification of the type and content of the project, and find the key information points that can provide help for the development and management of scientific research projects. Not only that, when carrying out the management of scientific research projects under the background of big data, they should also manage equipment procurement and costs, and incorporate some core scientific research papers and patents into the evaluation activities, to carry out three-dimensional and comprehensive evaluation of scientific research projects, highlight the value of scientific research projects, and improve the effect of scientific research management [12].

4.2. Optimize the allocation of scientific research resources

In the management of scientific research in colleges and universities, the government and the university have invested a lot of manpower and funds, whose purpose is to improve the overall level of scientific research. However, in the daily management of scientific research, there is still a certain amount of resource waste and improper allocation, which greatly affects the implementation effect of scientific research projects, and will also hinder the subsequent management of scientific research [13]. In response to this situation, the school can use big data technology to rationally allocate existing scientific research resources, enhance the collection of high-quality data, ensure that high-quality data can cover the entire scientific research process, and create a more high-quality scientific research resource library, which will lay a solid foundation for the subsequent scientific research management. In addition, they should also carry out an in-depth analysis of the collected scientific

research data combined with the actual needs of schools and enterprises and formulate a standard related to scientific research projects, to provide assistance for the development of scientific research management [14]. In addition, they can reasonably classify different resources in scientific research management activities, achieve better resource allocation, and greatly improve the utilization efficiency of scientific research resources.

4.3. Proper management of scientific research funds

In addition to the operation of scientific research projects involving scientific research management, funding management is also an extremely important content. In the context of big data, it is necessary to carry out proper management of scientific research work in colleges and universities to improve the efficiency of research funds. First of all, universities can use big data technology to expand the scope of the use of scientific research funds, realize the level of information sharing between each level and each system, improve the efficiency of funding information collection, and provide the corresponding basis for subsequent scientific research financial management decisions. Additionally, they can also use big data technology to connect various databases, help financial departments and scientific research departments to carry out more in-depth and timely communication, and eliminate information barriers between different departments as much as possible, to assist in the use, calculation and planning of scientific research funds [15].

4.4. Improve the level of information security

Under the background of big data, when carrying out scientific research management, universities should pay attention to the improvement of information security level and do the corresponding information security protection work. To achieve this goal, should take the initiative to improve the information security awareness of researchers. In practice, they can use security-themed lectures, security education, and other forms to further improve the information security literacy of scientific research managers. In addition, it is necessary to ensure the implementation of security management responsibilities, so that when problems occur, timely traceability can be achieved, to encourage researchers and managers to further improve the comprehensive level of information technology. Not only that, colleges and universities should also increase safety protection technology, which can ensure the security of scientific research data from the technical level.

5. Conclusion

In summary, universities can evaluate the existing scientific projects to further improve the effect of scientific research management in universities under the background of big data. Optimizing the allocation of scientific research resources and management of scientific research funds can improve the level of information security, which virtually promotes the quality of university research management under the background of big data to a new height.

Disclosure statement

The author declares no conflict of interest.

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