

Thinking and Research on the Construction of University Database Management Team

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Abstract

The university database management team is an important guardian of university informatization data and an indispensable backbone force in the process of achieving intelligence in universities. In the stage of smart campus construction, strengthening the construction of university database management team is of great significance and far-reaching effect. Based on the particularity of database management positions and team value, this article analyzes the general problems existing in the current university database management team, and puts forward constructive countermeasures and feasibility suggestions.

Keywords

University Database; Database Management; Team Construction.

1. Introduction

2021 as the first year of the 14th Five-Year Plan period, universities are making rapid efforts in the construction of educational informatization. The construction of smart campus such as data center and affairs hall has become the focus of the construction of university management informatization. On the one hand, for business data, governance has become a key point in the intelligent construction of universities. On the other hand, the massive data generated in the process of refined management puts forward higher response requirements for data collection, storage, processing, and application, and at the same time, it also increased the difficulty and complexity of the business integration, data center will appear obvious spurt of growth. It is obvious that data center data will appear blowout growth. How to do a good job in data-based database management is an important issue that university data centers need to face.

As we all know, database management positions have always occupied a very important position in data center operation and maintenance management. The requirements of database management positions involve a wider range of knowledge, and the ability to analyze and solve problems has higher requirements. This is also the main reason why it is difficult for database administrators to train. Judging from the salary comparison of various job search websites, we can also see the gap between this type of position and other positions. In operational position, the salary of database operation and maintenance is generally 2-3 thousand higher than that of other operation and maintenance positions such as system operations, network management and other operational jobs. The salary report of DBA (database administrator) in China in 2020 released by the largest database community in China [1] shows that the average salary of DBA is 20,000, which is enough to explain the shortage of database management talents in the industry. Moreover, the report also points out that the age composition of DBAs is becoming younger, which fully demonstrates the importance and scarcity of database management positions. Of course, the generous salary package also has a positive impact on the youth's career choice.

At present, it is difficult for universities to attract external excellent technical talents from the system and mechanism, while the informatization practitioners of universities generally face the status quo of low status, low salary, unreasonable distribution, and poor stability of the team. It is more difficult to cultivate database talents from the inside [2]. From the perspective of long-term goal, the advancement of database construction and the level of management must be an important factor that determines the level of data application and data service in universities. Therefore, it is extremely urgent to optimize the mechanism, improve the distribution scheme, strengthen the construction of the database team, and build a stable and efficient database management team based on the actual situation of the university.

2. Current Situation of Database Management Team Construction in Universities

Due to the particularity of data management work and the shortage of talents, most universities have not set up special posts to engage in database management. The absence of this part of work has led to the following obvious characteristics of database construction and management in universities:

(1) The construction planning of the database mainly depends on the constructor of business system, and lacks unified planning and design, which not only leads to the complexity and diversity of university business, but also further leads to the isomerization and exclusiveization of database products. Take our school as an example, there are various databases including Oracle, Mysql, Posgresql and Sql Server. Meanwhile, there are different versions of the same type of database such as Sql Server database. During the construction of most business systems, independent database servers are required to be configured and independent databases are used, which is not only waste precious computing and storage resources, but also increases the workload and operation difficulty of database management.

(2) The management, operation and maintenance of the database rely too much on outsourcing service companies. It is precisely because of the lack of technical support for database positions, in order to ensure business continuity and availability, universities themselves lack the management and maintenance of important databases, so they must rely on professional operation and maintenance service companies to support and guarantee the stability of the database. This not only increases the risk of security management, but also further aggravates the significant increase in operation and maintenance costs.

(3) It is difficult to adjust database service resources. As most of the current databases are deployed independently, it is difficult for database services to achieve centralized management and unified resource scheduling. At the same time, it is easier to waste resources at the operation and management level due to insufficient resources in the later period.

3. The Main Problems Faced by the Construction of Database Management Team in Universities

The current major problems faced by university database administrators are also common problems faced by university informatization staff, which are mainly manifested in the following aspects:

(1) The system is rigid and the mechanism is backward. Universities have always had the stubborn problem of attaching importance to scientific research and neglecting management. The information department of universities has a low status in schools, and database management personnel are not taken seriously. Compared with scientific research and discipline construction, the university has insufficient investment in informatization, and education informatization is faced difficulties in the system and the mechanism.

In terms of incentive mechanism, the main indicators considered for promotion of professional titles are papers and scientific research achievements. Because of the limitation of the scope of work of database administrators, it is difficult for staff to form outstanding scientific research achievements in their field, and it is very difficult to obtain professional titles on the job. The professional titles level of informatization staff is generally not high, and the promotion mechanism of professional title greatly weaken the enthusiasm of existing staff[3][4].

In terms of salary and treatment, the performance salary of university staff has been biased towards teaching and scientific research for a long time. The salary and treatment of information practitioners are generally at the middle and lower levels of the school. Compared with the high salaries in the industry, database employees have less sense of gain in terms of benefits, and generally have a low sense of job identity [5].

(2) University data center posts are less staffed and have more part-time jobs, data center staff are under greater pressure on operation and maintenance. Therefore, the staff would rather choose other positions with lower salaries but relatively easy, rather than engaging in operation and maintenance work. The loss of technical personnel is serious, so it is difficult to form a stable technical team [5]. The large loss of personnel has a profound impact on the operation and maintenance of the data center. Taking Southwest Petroleum University as an example, the data center computer room is currently equipped with 4 staff. Since 2020, there has been one resignation and one transfer within a year, which has seriously affected the normal development of work.

(3) It is difficult to train database management talents. Database management ability training needs take into account the learning of hardware, operating system, network and network security, database, application system and other fields of professional knowledge, which are wide and complex. Database administrators have to deal with all kinds of failures and problems in the computer room, and it is difficult to study the database from principle, so they have to rely on outsourcing service companies. At the same time, it is difficult to achieve results on the post, which further aggravates the staff to give up upgrading in technology and management.

In summary, combined with the data in the introduction, the university environment does not have the external conditions for attract excellent technical talents in terms of salary. From the perspective of system and operating mechanism, database practitioners generally work under great pressure, staff have a low sense of acquisition and recognition, and the team stability is very poor [6].

4. Countermeasures to Strengthen the Construction of Database Management Talent Team

Through the previous analysis of the common problems existing in the database management team of universities, combined with my experience in database management, the following constructive countermeasures are proposed:

(1) Job classification and grading to enhance the sense of belonging of the job. First of all, schools should take the realization of educational modernization as the goal and formulate a long-term talent training plan in terms of capital investment, job setting, title promotion, and salary ratio to strengthen and enhance the status of information practitioners. On the one hand, increase the tilt of professional title evaluation, establish a systematic and scientific talent evaluation system, and transform from thesis -only evaluation to the ability evaluation. For example, the scope of industry certification can be expanded, and achievement of landmark project construction can be identified as an important indicator for ability evaluation. On the other hand, it is to strengthen the classification and grading of informatization positions, and significantly improve the status of key positions such as database management and system management to enhance employees' sense of professional belonging [7].

(2) Encourage learning and strengthen team assessment. Set database team building goals and formulate assessment plans. Functional departments are in charge of leadership intervention and care about the whole process of team building, and at the same time stimulate employees' motivation in skills learning through incentives. Taking Southwest Petroleum University as an example, academic research teams in different fields have been established at the level of technical personnel, and high-quality research results have been formed through team cooperation. At the same time, they have organized technical lectures, team building activities, professional certification and other measures to create a better skills training atmosphere.

(3) Strengthen peer exchange and business cooperation, improve the concept of database construction and management. One of the effective ways to acquire knowledge quickly is cooperation and communication [8]. Actively strengthen communication with other universities, actively participate in industry activities, and learn the latest developments and successful experiences of database technology. In the meantime, it also uses cooperation projects with enterprises to quickly improve the technical level of internal database practitioners. For example, practice bases and certification training are all feasible forms of cooperation.

(4) Use computational thinking to guide database construction and management to standards and norms. Database management practitioners should constantly improve their computational thinking ability in combination with actual work, and they should be used to using advanced information technology to continuously innovate the development of business work [9], and make full use of database intelligent operation and maintenance platform, audit platform, early warning analysis platform and other technical means to improve work efficiency and database management effectiveness. At the framework level of database construction, security, stability, and efficiency must be considered while considering the openness of the framework and the convenience of horizontal expansion. Based on the standardization of management behaviors, the platformization of management methods is promoted, and the intelligence of database management is finally realized.

5. Conclusion

The informatization construction of universities have entered the stage of smart campus construction. Big data and artificial intelligence have quickly penetrated into the teaching, scientific research and management of universities. The prelude to the big explosion of universities data has arrived. Data as data as the foundation of the future university informatization, its importance is obvious, universities must attach great importance to the work of database team and construction. From the capital investment, title review, and salary guarantee to quickly construction their own data management team, focusing on data collection, storage, processing, and presentation of each link. Strengthen the support ability of database management in the top-level design and operation management. Only by focusing on the future and making long-term plans to lay the foundation for database management can we guarantee the smooth realization of future data pool and data lake and lay a solid data guarantee foundation for the construction of smart campuses in universities.

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