

# Design and Implementation of Staff Training Management Information System for SMEs

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**Abstract**—This paper mainly discusses the function, characteristics and development status of the technology-based training management information system. It uses B/S mode and SQL database to realize the analysis of each functional module, and describes the main functions of the system: user login, query, authorization and modify the information; introduce its overall structure and design ideas; introduce the relevant information of each module of the system, including module composition, function and actual implementation. The system is in good working condition during the testing process, which can greatly improve the training management level and work efficiency of the enterprise.

**Keywords**—*Management information system, technology type, training management system*

## I. INTRODUCTION

SMEs are small and medium-sized enterprises that are founded by scientific and technological personnel and are mainly engaged in scientific research, research, development, production, sales and service of high-tech products[1-3]. The small and medium-sized enterprises of science and technology have a small scale of operation, but the innovation mechanism and innovation efficiency are unmatched by other industries. It can accelerate the application of scientific knowledge in practice and accelerate the transformation of scientific and technological achievements. It has become a good and favorable carrier for China to achieve better technological innovation. In recent years, science and technology-oriented SMEs have become an important part of the national economy both in quality and quantity, and are also a new growth of regional economy and national economy. force. Employee training [4-6] refers to the organization of the organization's development goals and the individual development goals of the employees, based on the planned organization of employees to carry out targeted learning and training, so as to improve the staff's knowledge reserves, improve employees The work skills, improve the work attitude of employees, and motivate employees' sense of innovation, so that employees can better be qualified for their work in a form of human resource management. For SMEs, the ability to grasp market opportunities is the determining factor for the development and growth of SMEs. The update of knowledge, the application of new machines, the mastery of new technologies and new skills are inseparable from the training of employees. Training can truly enable enterprises to achieve their own strategic goals and improve their competitiveness.

## II. CONSTRUCTION OF STAFF TRAINING SYSTEM FOR SMES

The construction of the staff training system for SMEs is a very important part of the enterprise's human resource management, and it is also the top priority of an enterprise's sustainable development. Aiming at the status quo of the training of SMEs and the problems reflected by them, we will build a scientific staff training system, give full play to the potential of human resources, and enhance the market competitiveness of enterprises so as to better enhance the human resources of SMEs. The resource advantage makes the company in an invincible position in the fierce market competition.

### A. Guide the Development of the Company with the Strategic Significance of the Training System

Technology-based enterprises are one of the fast-changing industries as knowledge updates. Only practitioners can continuously learn from industry knowledge to be eliminated, and effective training can provide employees with more learning opportunities and development space, so that employees have constant A sense of accomplishment of progress, thus creating a sense of belonging to his position. Rationally look at the status quo of enterprises, clarify the importance of training for the deep development of enterprises, and establish scientific training concepts. These are the first steps in the construction of a training system for SMEs.

The biggest beneficiary of change training is the one-sided concept of employees rather than businesses. Training benefits not only the employees but also the business itself. According to the strategic planning of the company, choose the right time to train the appropriate content of the appropriate employee groups. In combination with the company's own development status and job requirements, the specific implementation details of the training are continuously adjusted. Rationally look at the issue of employee training and employee turnover. There is no corresponding relationship between employee turnover and employee training. Most employees are trained in the enterprise or are willing to serve the enterprise. Training is a long-term investment. If a company's system design and cultural guidance are relatively complete, have good remuneration packages and career development prospects, and can continue to learn and improve, then employees will naturally be loyal to the company, and the

*B. Establish the Objectives of the Training System*

The goal of establishing a training system is to achieve an important support for the win-win situation between the company and its employees. The company pays attention to the cultivation of reserve talents, and plans to cultivate employees in the existing departments through its own plans. The combination of talent training and departmental performance appraisal is the training plan of reserve talents as an important indicator of training. Through internal communication and training, activate the vitality of departmental personnel, enhance their comprehensive business capabilities, reserve a group of reserve talents with strong plasticity, form the echelon and level of talents, and quickly find suitable when the current talents leave. Talent replacement will reduce the loss of talent flow to a minimum, so that there will be no serious decline in the business level of the enterprise due to the loss of business backbone. The principle of organizational behavior believes that the organization's internal organization culture is built to promote and recognize a sense of recognition and acceptance among employees in a positive, lively and harmonious spirit. , concepts, ethical standards, behavioral norms, etc., form an overall awareness of the organization and the common pain, develop the intellectual quality of employees, mobilize the enthusiasm of employees, initiative and creativity, and enhance the cohesiveness of the organization. Establish the goal of training system construction, shape the psychological contract mechanism of enterprise employees, and enhance their sense of belonging and enthusiasm.

III. TRAINING MANAGEMENT INFORMATION SYSTEM DESIGN

The establishment of a science and technology enterprise training management information system must first analyze the enterprise training organization and process in detail, and be familiar with all aspects of the company's training management process: from the company's top leadership to training personnel; on the system itself, the system needs to provide itself Management module, used to manage the system itself, such as: the system's framework structure, system data backup, etc. SQL Server 2005 is a database, and is the background. The storage of the relevant data of the training management information system is in the background, and its role in the application is very important.

The purpose of this paper is to establish a corporate training management information system based on B/S framework. The structure of the B/S is shown in the figure 1 below.

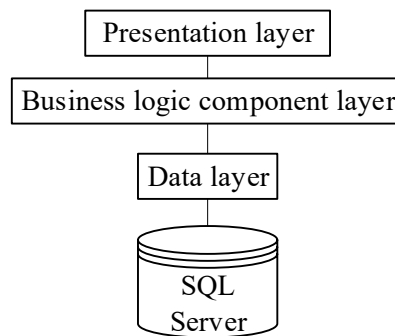


Figure 1 system logic architecture diagram

As far as the B/S architecture is concerned, the installation and maintenance of the software can be completed at the same time on the server side, and the corresponding modification can be performed. This structure can be used without the use of the client, and the upgrade function can be realized in the running process. At this point, the user can operate all the modules by simply accessing the browser. For the structure of the system, it provides the most realistic and development basis, through which it can provide networking, unified services and online services for heterogeneous application services, heterogeneous networks, and heterogeneous machines.

*A. Training Management Information*

System Workflow It has the following five functions: (1) input training information; (2) input time of participating trainees in the sub-category catalogue (month); (3) training management product training project (suspend/suspend/acceptance); (4) Provide a variety of simple and fast training project query methods; (5) provide a variety of practical statistics, analysis charts.

TABLE 1 TRAINING SYSTEM TABLE

Operator role	Administrator, trainer
Input	Product Technology Innovation Training Project Application Information: Structure, Applicant, Training Source, Training Name, Application Date, Training Field, Whether Project
Output	Same input

After the system administrator has set up, the trainer can use the system administrator to log in with the set user name and password (the user name is compiled according to the rules, and the user's password can be modified by himself). After the user logs in, the user can click on the current page according to the user. The usage habits use the "Function Trimming" and "Home Settings" to set the page. The purpose of this setting is to make it easier for users to view the process information related to

themselves in the future. The entire training management information system must be able to record and track the corresponding behavior. In this process, members with specific permissions can create and modify them, and also perform many operations such as reopening and reviewing and closing; they can also Copying the previous inability into a new defect; not only that, the operational record of the defective page is different compared to the modified history, it records the modification time and number of the defect, and the recipient, while the former It is necessary to modify the details of it, suggesting that the new defect trend chart only counts the data of the next day, and the data of the day cannot be counted.

**B. System testing and Verification**

The content of the training management information system software testing phase can be divided into two parts[7,8], which are verification test and confirmation test. Verification testing ensures that the software has the functionality it requires to implement. The main contents of the verification test include: the process of determining whether the product in a given stage of the system life cycle can be consistent with the requirements established in the previous stage; the formal proof of the correctness of the program, based on the formal theory, a statute for the program symbol The process of verification; review, test, inspection, verification and other activities, analysis and study of the gap between specific documents, services and other established goals. Validation testing involves multiple activities and processes, and its core objective is to verify the logic of the software to ensure that the software implements the specified event in a scientific and reasonable manner. The confirmation can be divided into two different types, namely: static confirmation, using manual and program methods to verify the software function without running the software; dynamic confirmation, using the actual implementation of the software on the computer The analysis of the dynamic behavior of the training management information system to achieve the evaluation of the training management information system function.

In the design of the functional module test case, the hierarchical structure of the system function module needs to be considered. The test workload depends on whether the implemented function module satisfies the principle of “high cohesion, low coupling”. Secondly, the design of the functional module use case can It is very good to detect the implementation quality of each functional module of the system, and provide analysis data for subsequent system integration debugging. The input and output data of each module test is shown in Table 2.

TABLE 2 SYSTEM TEST INPUT AND OUTPUT INFORMATION

Test function	Input	Output
Authentication	Username, password, identity	Enter the system interface or administrator interface
Training program	Training related information	Training table to increase records
Personnel management	Personnel related information	Training table to increase records
Training data import	Training related data	Training table to increase records
Training fee management	Training fee related information	Training table to increase records
Risk change	Risk information	Risk table increase record
Registered administrator	account password	Training table to increase records
change Password	Account number, password, new password	Training table to increase records

After the system function integration test, this paper determines whether the system meets the system performance requirements in the system design. The performance test covers the entire phase of the training information management system test. It is usually tested in conjunction with the strength test. When the test system is running in the limit state, the performance degradation is within the allowable range. Performance testing uses MI's automated performance testing tools load runner, script editing and compilation work in the VU Generator (script workshop), comprehensive performance testing of system response time, processing speed, throughput, processing accuracy, etc. . The test user client operating computer is a brand machine configured in 2012. The hard disk is in SOOG, the CPU is 2.5 G (four core), and the server is a company dedicated IBM dedicated server with a network bandwidth of more than 100M. The performance test chart is as follows:

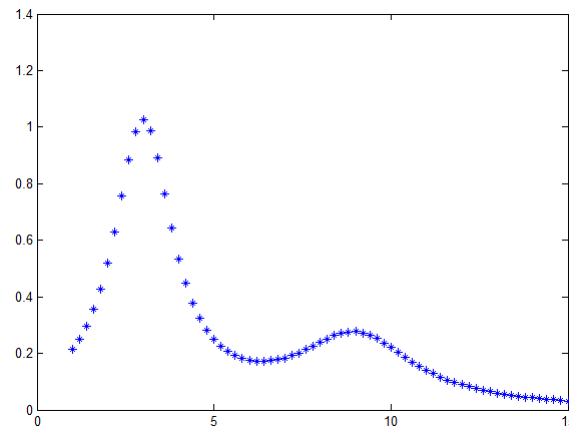


Figure 2 System performance verification diagram

The performance test results show that the server resources are generally consumed and the server performance is good. The CPU utilization of the server where the system is located is always controlled at about 15%.

#### IV. CONCLUSIONS

The system realizes the complicated training project management work by using computer and network technology, improves and perfects the training business process, and greatly improves the management level and work efficiency, and realizes the automation of training project declaration. The system effectively realizes online declaration, modification and management of scientific research information in the testing process. After the training personnel fill in the project application form online and save it, the data will be directly stored in the database of the training management department. Compared with the previous paper application submission method, the system will greatly improve the efficiency of the project management department, and also help the enterprise training department to manage the information. The system has the advantages of good safety, operability and high transmission efficiency. It is in good condition when the system is running, and the work efficiency and management level can be greatly improved to a large extent.

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