Design of Man Hour Management Information System on SpringBoot Framework

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Abstract. This paper introduces an information system based on SpringBoot framework of man hour management, by analysing the problems existing in the man hour management workflow and process in an industrial design and assembly company. Like fraud timesheet, confusion of validation, etc. This paper designs the different function modules and provides the overview of the system, and explains the reason of using SpringBoot framework. Finally, describe the improvement for the company in both controlling and processing level.

1. Introduction

For an industrial design and assembly company, it is a vital processing that on-site instructors and engineers do their jobs properly. The integrity of an information system largely depends on the automation level of the whole enterprise. Man hour management is the most important part of enterprise management. Its effective opening will directly affect the product quality, production efficiency and economic benefit for the enterprise.

2. Current Problems of the System

2.1. Lack of Supervision

There are some drawbacks in the working hours management of various departments of the company. The formulation and audit of working hours only take into account the interests of some people. The authority of department managers is very large, which causes some employees in the Department not to work actively. These employees did not improve the level of operation technology and skills through their own efforts, and obtained working hours by wasting time. Due to the lack of supervision system, it is easy to cause small groups and cause difficulties to the operation of the enterprise.

2.2. Lack of Balance

The company is project-oriented, but employees' working hours are manually registered on different projects. Judging the progress of the project according to the employee's man-hour registration, it is difficult for the finance department to analyse the progress of the project, especially the operating cost of the project will easily exceed the budget without knowing, it is quite dangerous for a running company.
2.3. Difficulties of Statistical Work Hours
Because each department uses the manual statistics man-hour, summarizes the manual statistics man-hour to the EXCEL table, generates the statistical report, causes the finance department, the personnel department's work intensity is high, the task is heavy, the accuracy is poor. A lot of repetitive data are scattered in different tables, which makes reporting more difficult. At the same time, because these reports are artificial operation, the accuracy of data also becomes very poor. Also needs to consume a lot of manpower to process error, repeat, blank data.

2.4. Difficulties of Standardize Form
Because most of the Statistic data is based on the manual processing, administration encounters a lot of difficulties to find work hour of a worker. Also, administration finds it is no chance to get proper data of how enterprise is running. And it is impossible to estimate the cost and income of a period of time whilst enterprise is running.

First of all, it is necessary to carry out quota management on the working hours of enterprise employees, with clear measurement standards and basis, and accurately control the working hours of each employee through the database, so as to avoid the phenomenon of favouritism and malpractice. Secondly, if you master the working hours of employees, you can manage the plan intelligently. There should be a unified standard, according to the proposed standard, reasonable distribution of each project. Make the management of the company more intelligent.

Therefore, it is necessary to carry out man hour management system on the data of working hours to realize the informatization of man hour management and all information departments.

3. Workflow Design of the System
When the company is running, it is necessary to fully decompose the administrative orders issued. The design department participates in the design project, and the design project is divided into four categories, glass, steel, stamp and curve, which can only be completed after the approval of the financial department; the sales department and the coordination department participate in the field project. And the man hour statistics of on-site projects also need to be audited by the financial department. And the leave of the above-mentioned departments need to be approved by the personnel department. The audit process of these projects is supervised by the administration. The overview of the process shown in Figure 1.

![Figure 1. Flow chart of man hour management system](image)

4. System Function Module Design
The design of system function modules must meet the needs of enterprises. Standardized management of a single independent module can improve the cohesion of a single module. According to this
principle, the system can be divided into the following modules: system management, input management, audit management, change management, data statistics and comprehensive query. System management is generally divided into two parts. User management and project management. Through these two parts, the foundation stone of the system is built. Input management for each department user input their own working hours and related project numbers. Includes the approval process node for the working hour. Audit management, different roles of different audit authority management. Change management, change audit project, change man-hour project. Data statistics, for the financial department and personnel department from the man-hour point of view of the project time, staff attendance and the overall cost of labour hours. Comprehensive query includes regular query on the progress of each project, monitoring and checking the efficiency and process of use. The relationship between functional modules are show as following figure 2.

**Figure 2.** Diagram of man hour management information system

### 5. SpringBoot Integration

SpringBoot is a new framework provided by the Pivotal team designed to simplify the initial construction and development process of new Spring applications. The framework uses specific ways to configure, so that developers no longer need to define boilerplate configurations. Through this approach, Spring Boot is committed to becoming a leader in the booming field of rapid application development (rapid application development).

This paper develops a man hour management information system with SprintBoot framework, integrated with maven manage the packages, and with following advantages:

#### 5.1. Supervision

System built with SpringBoot framework, SpringBoot technology is used in the system, which can integrate a variety of control plug-ins. The customization of working hours is generated automatically according to the budget and schedule of the project according to the pre-written program, and no user has the right to modify it. In case of need to modify, all need to pass 3 levels of approval to proceed. This eliminates the disadvantage of poor controllability. In addition, any employee's man-hour filling
is recorded in the man-hour system, and the superior management can know the employee's man-hour filling status at any time. The system is also equipped with automatic notification function, three times a month to remind employees to fill in working hours. To some unwilling employees, find excuses not to fill in the system hours of behaviour played a warning role.

5.2. Balance
In system, each project has predefined time budget. and every employee input their work-hours based on a real project code. It is impossible for an employee skip the analysis. Also, system can provide the precise cost of each project and human consumption. Administration can track the direction of each on-going project safely.

5.3. Easy Statistic
Because all employees' working hours in the company are digitized, it is very simple to carry out various projects, departments, and personal working hours of employees. administration can analyze the performance and efficiency of projects, departments, employees from different dimensions. And that's a big help for finance and human resources

5.4. Standardize Form
Due to the digitization process, most of the paperwork of all companies are electronic using SpringBoot plug-ins. And according to the need, you can generate different pdf documents. Because pdf documents can only be printed, can not modify the characteristics. When both employees and management produce data deviations, there is also a channel through which the original data can be adjusted from the system for comparison. This fundamentally realizes the equal treatment of employees and management. All employee records can be queried in the employee's personal account and electronic documents can be generated.

6. Summary
This paper introduces the main business logic, system design and difficulties and problems in man-hour management system. By means of this system, the tisheng of personnel management and project management can be realized on the basis of man-hour management and the integrity, timeliness, accuracy and fairness of reporting data

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8. References
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