



Optimal Allocation of Human Resources in Gerontological Educational Institutions Based on Temporal Data Model and Its Algorithm Implementation

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Abstract. In the age of the knowledge economy, human resources have an increasing influence on enterprises and even economic and social development. Whether an enterprise's structure is reasonable and its activities are effective is not how many highly educated and professional talents the enterprise must have, but if the internal allocation human resources of the enterprise is reasonable, and if the need for the post requirements, personnel capabilities and costs are matched. How to optimise the human resources allocated scientifically to significantly enhance the linkage between competitive advantages of enterprises has aroused widespread concern in academic circles. Scientific and reasonable allocation of human resources can create or maintain the competitive advantage of enterprises. Taking this as the starting point, this paper expounds and analyzes the optimal allocation of human resources and countermeasures. And put forward the optimal allocation model of human resources based on temporal data model. The model is universal, which transforms advanced human resource management concepts into scientific management modes and operation processes, and realizes the integration of human resource management concepts and information technology.

Keywords: Temporal data model; Human resources; Optimized configuration

1 Introduction

In the era of knowledge economy, due to the rapid growth of high-tech industry, knowledge-based industry has gradually risen to the leading industry of society, the employment proportion of technology intensive and intelligence intensive industries has increased significantly, employment opportunities tend to intelligence intensive groups, and human resources have become the "first resource" [1]. Its quantity and quality are the key factors of economic growth and social development. How to improve the core competitiveness of enterprises is a difficult problem that needs to be solved in front of enterprises [2]. It includes the focus and foothold of the optimal allocation of human resources, and how to use the optimal allocation of human resources to realize the competitive advantage of enterprises. A company or other en-

enterprise is a system. The type of people needed to fill a particular position should be designed according to the overall optimisation of the system, rather than simply selecting the best people in the same position. [3]. From the perspective of differentiation strategy and cost strategy, human resources can significantly improve the competitive advantage of enterprises in terms of value creation and personnel allocation [4]. Typically, operators are statically assigned to one or more machines in the current approach. With the aim of minimising production delays, we propose an optimisation model to dynamically assign tasks to operators [5]. And make full use of various effective resources inside and outside the organization, so as to maintain and develop their own core competence, and try to expand their own scope of resource acquisition and application. Allocating resources to maximise benefits or minimise costs is known as the resource allocation problem [6].

In recent years, terms such as resources, talents, technical capabilities, capabilities, skills, intangible resources, invisible assets, core capabilities and core talents have been appearing in the literature of economics and enterprise management [7]. This is because the rise of competence based competition makes these management issues increasingly valued by management theory and industry, and core competence has become one of the hot issues of enterprise management [8]. For example, the research on human resource management in core competence construction has less literature related to specific human resource management processes [9]. This means that in the selection of staff, there must be a good identification and selection process to select the needs that have corresponding skills, knowledge and experience and can realize the optimization of the organizational system [10]. With the change of the role of human resource management in the organization, as an auxiliary tool of human resource management, human resource management system plays an increasingly important role in human resource management. It is the basis and indispensable condition of human resource management, which has been recognized by the majority of decision makers [11]. More and more organizations begin to implement human resource management systems.

2 Research on Human Resource Allocation

2.1 Organizational Structure Design

Enterprise strategic management is inseparable from organizational structure, which is its concrete work. The matching degree between enterprise strategy and organizational structure and the rationality of organizational structure will greatly affect the realization of enterprise strategy. In the traditional management mode, human resources are equated with equipment, machines and other materials. In the modern human resource management mode, we should give full play to people's subjective initiative, change traditional ideas, respect talents, absorb talents and listen to their suggestions and opinions. And put their opinions and ideas into it to improve the comprehensive competitiveness of enterprises [12]. It is the innovator of entrepreneur system, the planner of organizational structure and the shaper of enterprise culture. Entrepreneur is the core of the contract between human capital and non-human capi-

tal, which can influence the organizational structure of the enterprise by making all the transaction contracts and making the enterprise strategy. Through its own values, decision-making style, personal qualities and other factors, the shaping of corporate culture is determined, and the core competence is built from the inside and outside of the enterprise. In terms of allocation quantity, enterprises mainly consider the allocation ratio, that is, the ratio of knowledge workers to non-knowledge workers. Seeking the best combination ratio of knowledge workers and non-knowledge workers is the goal of human resource allocation.

As an extremely valuable and high-profile human resource in gerontological educational institutions, operators, a special human resource, have attracted more attention. The increasing productivity attribute of marginal return largely determines the formation of enterprise rent. The benign interaction between enterprise managers' human capital and organizational capital is conducive to the construction of core competence, and the rigidity of core competence can be prevented through the heterogeneous human capital of managers. The market requires the diversified salary system to be gradually improved, and the role of human capital will become increasingly prominent. "Knowledge capital will participate in distribution. Human resource planning involves a wide range of contents. The initial allocation of human resources mainly refers to the talents introduced through the external talent recruitment market, while the secondary allocation of human resources is to divide the positions and functions of talents through the internal talent market of enterprises, which plays an adjusting role to a certain extent. Under the current social background, enterprises are often faced with great competitive pressure, and enterprises in the same industry have a serious homogenization tendency in both development direction and business. Based on this, in optimizing the development of human resources of enterprises, we should develop the unique competitiveness of enterprises themselves, walk out of the road of their own development, and not be easily imitated by others. It is an important part of enterprise development to build values that are consistent with the motivation of employees and enterprise vision, that is, enterprise culture, which can retain people, attract people, make talents feel useful and win competitive advantages for enterprises.

3 Optimal Allocation of Human Resources Based on Temporal Data Model

3.1 Temporal Information Model

Information model is a static data model, which provides information sharing for the whole enterprise and provides professional business rules and requirements in a graphical way. Information model is the bridge between technicians and enterprise personnel. Temporal data representation mode is to add temporal information on the basis of relational mode, which is a very complicated process. Because the human resource management system requires paperless office, it integrates the roles in the ecological chain and realizes business process processing. Therefore, it is necessary to

record not only the time when facts enter the database, but also the time when each business is processed. Now, dozens of temporal data patterns have been proposed. At present, there is no unified temporal expression mode. Entity diagram represents the relationship diagram among entities, attributes and relationships. Different objects have different support for tenses. After a fact is stored in the database, it must be reviewed and reviewed by leaders at all levels before it can finally become a valid record for publication.

3.2 Optimal Human Resources Allocation

In the network era, human resource management has changed from traditional personnel management to strategic human resource management. This not only reduces the workload of human resource managers for data collection, confirmation and update, but also better ensures the data quality and data update speed. Especially after China's entry into WTO, the education market is open to the outside world, and the pressure and challenges of foreign educational institutions after entering the country will make higher education more integrated into the global economy, and at the same time, it will face wider and fiercer international competition. If an enterprise intends to improve its core competence through optimal allocation of core human resources, it should consider from what aspects and where the starting point is, and construct a general theoretical framework, lacking empirical research links, and not explaining whether there are differences in the selection of core competence and optimal allocation of core human resources among different enterprise scales or types from an empirical point of view. The optimal allocation of core competence and core human resources is a research subject to be improved. I hope this paper will optimize the allocation of core human resources based on core competence.

The attributes of the same temporal relationship should satisfy the principle of simultaneity. Therefore, it is necessary to decompose the original relationship according to the principle of simultaneity. Divide the attributes in the relationship into frequency-varying attributes and slow-varying attributes, separate the frequency-varying attributes, establish a feature entity for the frequency-varying attributes, and keep the slow-varying attributes. A relation is a simple temporal attribute and a temporal constraint of a temporal relation class as an attribute.

R represents the A relationship, and r_1, r_2 is an instance in R.

The snapshot reducibility of the effective time in the relationship A satisfies the formula (1)

$$\forall r_1, r_2 \in R(r_1 \cdot k = r_2 \cdot k \Rightarrow [r_1 \cdot VT_s, r_1 \cdot VT_e] \cap [r_2 \cdot VT_s, r_2 \cdot VT_e] = \phi) \quad (1)$$

The snapshot reducibility of transaction time in A relation satisfies formula (2)

$$\forall r_1, r_2 \in R(r_1 \cdot k = r_2 \cdot k \Rightarrow [r_1 \cdot TT_s, r_1 \cdot TT_e] \cap [r_2 \cdot TT_s, r_2 \cdot TT_e] = \phi) \quad (2)$$

The bitemporal snapshot reducibility in A relation satisfies formula (3)

$$\begin{aligned} & \forall r_1, r_2 \in R(r_1 \cdot k = r_2 \cdot k \wedge [r_1 \cdot TT_s, r_1 \cdot TT_e] \cap [r_2 \cdot TT_s, r_2 \cdot TT_e] \neq \phi) \\ & \Rightarrow [r_1 \cdot VT_s, r_1 \cdot VT_e] \cap [r_2 \cdot VT_s, r_2 \cdot VT_e] = \phi \end{aligned} \quad (3)$$

In order to allocate human resources in the best possible way, it is necessary to establish the management concept of "people-oriented" in the whole process. Although there are various modern human resource management modes, no matter what kind of management philosophy, its fundamental principle is people-oriented. Core competence is the material and spiritual civilization which is different from other enterprises and formed by the integration and infiltration of a series of elements and resources in enterprises. Among the various resources and elements of an enterprise, human resources are at the core, and among the human resources, the core human resources are the most scarce, the highest quality and the highest level resources. Through the promotion of core human resources, elements and resources can interact, match and integrate effectively. In order to optimize the allocation of human resources, it is necessary to establish an information work system, correct errors in time and improve the ability to cope with emergencies. For the high profit of the organization and the high benefit of the society, three guarantee systems must be established: establishing external coordination and market response system; Establish the dynamic incentive system and mechanism of internal human resources initiative; Establish a fast, smooth, accurate and timely information feedback and application system.

4 Conclusions

Human resources has an increasingly important role to play in modern society. From the perspective of cost strategy and differentiation strategy, human resources can effectively enhance the competitive advantage of enterprises in terms of staffing and value creation. How to make effective use of human resources is of great significance to improve employees' enthusiasm and creativity, work efficiency and benefit. Temporal data processing technology is a research hotspot at present, and it is the key technology of modern database application information system. Therefore, the introduction of temporal database into human resource management system not only has practical application value, but also has high academic research value. The competitive advantage of an enterprise depends not only on high-quality products and technologies, but also on the formation of a reasonably configured team of high-quality employees. In this paper, an integrated data source is constructed based on temporal data model, and the model is automatically transformed from logical model to physical model. It is universal and flexible to expand. It covers process management, provides self-service and hierarchical sharing of information; The advanced human resource management concept is transformed into a scientific management mode and operation process, and the integration of human resource management concept and information technology is truly realized.

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