Business Management System and Information Analysis Platform Based on Science and Technology Innovation Ecology

Tingting Zhou¹, Ying Ma¹,*
¹Yingkou Institute of Technology, Yingkou, Liaoning, China, 115014

*Corresponding author e-mail: ruibing125@yku.edu.cn

Abstract. With the development and application of computer technology, business management system has been widely used and popularized, and the complexity of application is also increasing. Scientific and technological progress is an important force to promote human civilization and economic and social development, and scientific and technological innovation will also play a huge role in promoting enterprise development. In the process of building most information platforms today, the analysis and design of the system are in a split state. Requirements analysts analyze problems from business requirements, without considering technical feasibility, which leads developers to change corresponding requirements unconsciously in a way that adapts to technology. Science and technology management system needs to realize the transformation from rigidity to flexibility, from management informatization to decision-making informatization, so as to further improve the level and effect of science and technology management. The establishment of enterprise scientific research business management system can not only save the cost of evaluation, but also enhance the fairness of project evaluation, increase the transparency of project evaluation, and improve the quality of demonstration construction projects.

Keywords: Computer Technology, Business Management System, Technological Innovation

1. Introduction

Information technology is one of the most advanced and active productive forces in the world today, and has become the foundation of contemporary social economy. Its rapid development has promoted the changes in various fields of social economy, and the old enterprise model is no longer suitable for
the new economic environment. Reforming enterprise management means and realizing enterprise management informationization have become important measures to enhance enterprise competitiveness [1]. As one of the important components of national informationization and social informationization, scientific and technological informationization has become a growth point to promote social and economic development and an important means to promote scientific and technological development [2]. With the progress of science and technology and the development of social economy, the process of informationization has become an inevitable trend. In recent years, informatization has made great achievements in many fields, and has made immeasurable contributions to national economic construction and social development [3]. With the deepening of industry informatization construction, more and more large enterprises begin to sort out their own business flows, hoping to integrate multi-dimensional data analysis that can provide decision with their own related business processes [4]. Business rule management technology takes business rules as the core concept, separates business logic from program code, expresses it in the form of business rules, and stores it in the rule library for management, which greatly improves the status quo and thus also A new development methodology [5] has been produced.

It is expected that computer information processing technology can promote the standardization of corporate management and greatly improve management efficiency and corporate economic benefits. Traditional software systems process business logic in the form of program code. When requirements change, the program code must be modified, which increases the cost of system maintenance and makes it difficult to upgrade and update [6]. The existing technology management work has a low degree of informatization and fewer means. It is based on a simple combination of paper manual implementation and single-function office software. The operation is relatively simple, extensive, scattered and has a large amount of repetitive work. Unification, it is difficult to deal with the processing requirements of enterprises for a large number of technology management services [7]. With the rapid development of computer software and hardware technology, the scale and complexity of business management systems have increased dramatically, and the development process of business management systems has become increasingly complex [8]. The expansion of scale has led to an increase in developers, and developers need closer cooperation. The establishment of a corporate scientific research business management system not only saves review costs, but also enhances the fairness and fairness of project review, increases the transparency of project review, and improves the quality of various demonstration construction projects of the enterprise, which is beneficial to the informatization and commutation construction of the enterprise Important role.

2. Globalization of scientific and technological innovation supported by informatization strategy

2.1. The strategic promotion of globalization of scientific and technological innovation to enterprise development

In the last century, the leading role of science and technology in promoting economic and social development has become more and more obvious. Major developed countries have regarded technological innovation as a national strategy, and striving for the commanding heights of science and technology as the key to their national development strategy. To fundamentally solve the problems in system development, it is necessary to solve the problem of cooperation between system developers. For this reason, a new business management system development method and
management method must be established to suit the development process of the business management system. Science and technology competition has increasingly become the focus of competition between countries and enterprises, and technological innovation capabilities, especially independent innovation capabilities, have become a decisive factor in the competitiveness of countries and enterprises. In the new national competition pattern, developed countries and their multinational companies use their own technological and capital advantages to maintain a leading position, use technology to control markets and resources, and form a high degree of monopoly on the world market, especially the high-tech market. From an operational point of view, the process monitoring software collects system business events according to the process monitoring model stipulated by the analysts, analyzes and processes them, and then transforms them into key business indicators with clear meaning to the business personnel, and graphically Present the analysis results in front of users [9]. The software requirement process is the initial stage of the whole software development and plays a decisive role in the quality of software. Software requirements engineering studies how to understand and explain users’ requirements and expectations for developed software. Process monitoring is a record of business operations. On the one hand, it saves the business data of business operation, such as the time spent on a certain node, and on the other hand, it also saves the information of the process itself, such as time information and industry.

The basic idea of business rule technology is to extract the business logic processed by the system from the program code, transform it into simple business rules, express the business behavior with structured business rule data, describe it with natural language, and store it in the rule base. If developing countries can improve their independent innovation ability and comparative advantage, they may gain opportunities and initiative for development, and make use of the advantages of backwardness to realize the leap of social productivity, otherwise, they will widen the development gap with advanced countries and even be marginalized. In the software system based on business rules, business rules are stored in the rule base, and business personnel can query, add, update and make statistics, accumulate experience and realize knowledge management of business behaviors, which makes business rules become important assets of enterprises like data information of enterprises. On the whole, economic globalization is the interweaving and superposition of various globalization networks, among which the globalization of science and technology is the core and important component of economic globalization. Because the fundamental force to promote economic globalization is the progress of modern science and technology and productivity, especially in recent ten years, with the rapid development of high-tech centered on the information technology revolution, the degree of global networking has been further improved, which has pushed the world economy towards globalization at a deeper level.

2.2. Information strategy choice of innovative large enterprises

Innovative large enterprises, especially multinational companies with diversified operations, mostly take the core of enterprise management and information centralized control center as the operation hubs of enterprises, and constantly acquire, store and transmit internal and external information of enterprises. Business intelligence provides a quantitative decision analysis support means for senior managers. It starts with historical business data, and predicts future trends by mining current data patterns. Software objects can better correspond to real-world entities one by one, thus realizing the unification of information technology and real-world information, and making it possible to model
software and business management systems. Each functional department of the enterprise expands the boundary of the enterprise by network divergence, and uses network information technology to realize interconnection, which breaks through the geographical restriction of external management and the functional boundary of internal management [10]. Business process management pays attention to process execution, which focuses on short-term tactics and provides more detailed monitoring means. Essentially, business intelligence focuses on long-term planning, while business process management solves the problem of short-term tactical execution. Object-oriented technology makes software development go beyond procedural programming, thus entering a reusable programming world that simplifies application development. Unlike the database-driven way, when the volume of the program increases, the maintenance and debugging of the program becomes difficult [11]. Innovation center is an open innovation system, which is formed under the premise of vertical and horizontal integration of enterprise management core, taking innovation demand rather than management demand as the leading factor, closely surrounding the main body of enterprise innovation, and composed of enterprises, government, universities, research institutions and financial institutions, supported and supplemented by other innovation partners and various innovation resources.

3. Construction of scientific and technological innovation system and information system

Under the original mode, the declaration of SMEs' funds was carried out through the provincial online declaration system, and the municipal bureau could not grasp the situation of enterprises in time, and the items declared by enterprises were not very clear. The most fundamental reason why well-known innovative multinational companies have strong international competitiveness and remain prosperous is to always put innovation at the strategic core height of enterprise development, which runs through all fields, levels and stages of enterprise development. The fact table connects various dimension tables, and the objects in the dimension table are associated with the objects in another dimension table through the fact table, thus establishing the association among the objects in each dimension table. Business rules are stored in the rule base, completely independent of data and programs. Managing business rules is just like managing data in a database. Using the rule query language, you can query, add, update, count and submit business rules. Each dimension table is bound to a certain row in the fact table by using dimension keywords and foreign keys in the fact table, so as to realize the association with the fact table [12]. The advantage of this structure is that users can easily get dimension keywords from the data analysis in dimension tables. In order to better provide convenient, fast and high-quality services to all small and medium-sized enterprises in the city, the project application of special funds for supporting the development of private economy was carried out, and a project service platform between enterprises and SME Bureau was launched, through which management departments at all levels can browse, view, review and summarize directly on the Internet.

Rational managers always seek such a management portfolio X, which minimizes the risk under the condition of a given expected return level R_{0}, that is, solving formula (1) or maximizing the expected return under the condition of a given risk level V_{0}, that is, solving formula (2):
\[
\begin{align*}
\min & \quad x^T \Sigma x \\
\text{s.t.} & \quad r^T x \geq R_0 \\
& \quad \sum_{i=1}^{n} x_i = 1, \quad x \geq 0 \\
\end{align*}
\]

(1)

\[
\begin{align*}
\max & \quad r^T x \\
\text{s.t.} & \quad x^T \Sigma x \leq V_0 \\
& \quad \sum_{i=1}^{n} x_i = 1, \quad x \geq 0 \\
\end{align*}
\]

(2)

Among them, \(x = (x_1, x_2, \ldots, x_n)^T\), \(r = (r_1, r_2, \ldots, r_n)^T\), \(i = 1, 2, \ldots, n\). \(r_i\) represents the ratio coefficient of the i-th enterprise management to the total management; \(r^T x\) represents the rate of return of the corporate management portfolio; \(x^T \Sigma x\) represents the risk of the corporate management portfolio; \(\Sigma = (\sigma_{ij})_{n \times n}\) represents the rate of return covariance matrix.

Every process node has a start time, which is an important attribute of time dimension. Time dimension is one of the most basic dimensions in multidimensional data model. By setting time dimension, you can compare the same process in different time periods, or different processes in the same time period, and you can understand the process progress in a specific time period more intuitively and deeply. In order to obtain a reference, the client must create an object or obtain it from another object through an existing association. For example, when obtaining a value object in an aggregate, the client needs to send a request to the root of the aggregate, and the premise is that the client must have a reference to the root of the aggregate. Science and technology investment plan is included in the comprehensive budget management, including scientific and technological projects, intellectual property rights, scientific and technological achievements awards, scientific and technological cooperation and exchanges, postdoctoral work and other financial plan support. The planned financial support for future prospects also includes platform construction, talent construction, scientific and technological innovation activities, etc. Business rule management technology builds a business object model centered on business rules, and uses business rule management system to create and manage business rules [13]. From the data point of view, different regions deal with different data. By setting this dimension, the decision-maker can observe and analyze the different processing efficiency caused by the different processing data. From different information category dimensions, you can know the process progress of different regions, industries or access types through slicing operation.

When an object is created, it can be saved in the warehouse, and then retrieved from the warehouse when it is used later. If the client program requests an object from the warehouse and it does not exist in the warehouse, it will get it from the storage medium. The purpose of warehouse is to encapsulate all the logic needed to get object references. Domain objects don't need to deal with infrastructure to get the required references to other objects in the domain, but only need to get them from the warehouse, so the model regains its due clarity and focus. The factory should abstract the result of the
construction to the required type, not just the type of the concrete class it created. In domain model-driven design, objects have a life cycle from creation to deletion or archiving. When the demand changes, the business personnel modify the business rules online, changing the way of modifying the code, reducing the maintenance cost and shortening the update cycle. After the completion of the construction of the science and technology management system, the management and control will be extended to the three-level institutions such as factories, mines and sections vertically, so as to realize the way of the Group's scientific and technological innovation management and control to the end. Try to pilot, optimize, build and run at the same time, so as to achieve the best effect of system construction.

4. Conclusion

At present, the global economic recession has a far-reaching impact, and international competition is becoming increasingly fierce. With the development of social informatization and integration, enterprise science and technology business management system has become the focus of science and technology work management in large and medium-sized enterprises. The rapid development of scientific and technological revolution has made technology the most dynamic factor in the productivity of various countries and multinational enterprises. All countries and internationally renowned multinational enterprises are rushing to the commanding heights of technologies in related fields, adjusting their strategies and industrial layout, and seeking new development and growth poles. Based on the actual work demand of enterprise science and technology information management, this paper expounds the process of demand analysis, system design and database design, and puts forward the software architecture of enterprise science and technology business management system. Information technology has created a borderless and flat earth, which requires enterprises to make full use of modern information technology to control the technological achievements of the whole innovation network linked by the industrial chain. Scientific and technological progress and independent innovation are the fundamental help and main support for Chinese enterprises, especially central enterprises, to enhance their core competitiveness, move towards internationalization and participate in global competition. Through the combination of business intelligence and business process, it not only optimizes the access process, but also helps decision-makers to make more accurate judgments and pay attention to priority issues.

Acknowledgments

This research has been financed by Liaoning Provincial Natural Science Foundation Project in 2020 of "Science and Technology Innovation Ecosystem Construction and Governance Mechanism Research" (2020-YKLH-21) and The key project of Yingkou Institute of Technology's teaching reform "The exploration and practice research of our school's innovation and entrepreneurship education under the background of new engineering (JG202001)

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