**Research on Ship Management ERP Integrated Platform System of Offshore Engineering Exploration and Scientific Research Enterprise**

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**Abstract.** This article reviewed the marine exploration and scientific research enterprises in the process of marine exploration, to control the ocean fleet, including personnel, materials, finance, and other aspects of a centralized control, but due to the special characteristics of the marine exploration and scientific research industry industry, Design a comprehensive management platform specifically for marine engineering exploration. This platform can effectively control the exploration of ocean-going marine fleets. The purpose of this article is to efficiently manage the marine engineering activities. This article studies a large amount of data and based on the management of related enterprises, a comprehensive ship management and control ERP platform system has been developed. This system can effectively control the ocean fleet, and it is convenient for scientific research units to manage and control the entire process of marine exploration, effectively control financial costs, and can more efficient management of offshore engineering exploration activities, this system can achieve the characteristics of high efficiency.

1. **Introduction**  
The choice of topics in this article comes from the practical problems faced by marine exploration and scientific research enterprises. In addition, the limitation of my knowledge structure is also one of the reasons. The formation of the current ship management and control ERP integrated platform system for marine exploration and scientific research enterprises is a product of the macro-political economic environment and the industry management environment in a certain period of time. Improving the ship management and control ERP integrated platform system of marine exploration and scientific research enterprises requires multiple joint efforts, including various policies. Adjustments and improvements in marine exploration and research enterprises themselves. This article chooses to study the improvement of the ship management and control ERP integrated platform system from the perspective of offshore exploration and scientific research enterprises. [1].

2. **Historical evolution**

2.1. **Background of ERP integrated platform system**  
After the founding of the People's Republic of China, China has always implemented a planned economic system and a planned scientific and technological system. Although the basic ideas of
economic system reform were introduced in 1978, before the mid-1980s, the operation of social economy did not break through the basics of the planned economy Mode, the scientific and technological system is still an independent structure of enterprises, research institutes, universities, and marine exploration and scientific research, and plans to promote scientific and technological projects and tasks. At this stage, due to the weak foundation of China's offshore engineering and the dangerous safety environment, the development of offshore engineering has become a priority industry protected by the Chinese government. Production factors such as capital, raw materials, and talents have been prioritized for offshore engineering. Teams use it, all profits are turned in, and losses are fully subsidized by the state. Marine exploration and research units can strengthen their scientific research role in marine engineering exploration in comprehensive management.

2.2. ERP integrated platform system development period
With the continuous development of the economy, the country’s main scientific and technological forces have turned to economic construction as the center. The size of ocean-going fleets and the size of marine fleet control requirements have begun to shrink sharply. Economic resources have also been prioritized to protect the needs of national economic construction. The exploration department has since lost its halo. In order to adapt to the market-oriented reform of the economic system and the science and technology system, the marine exploration technology industry has begun to implement a series of reform measures. With the start of the management and control of the supply and demand of marine fleets and the start of corporate reforms, government departments have gradually decentralized human rights and financial rights to marine exploration and scientific research enterprises. More and more marine exploration and scientific research enterprises are and will be on a self-supporting path. Avoid the situation of survival of the fittest in market competition. How to establish an ERP integrated platform system that can meet the needs of marine exploration and scientific research management and promote the development of marine exploration and scientific research enterprises has become an urgent problem for marine exploration and scientific research enterprises. At this stage, the most basic method of corporate economic activities, the marine engineering integrated platform system, was introduced into marine exploration and research enterprises.

2.3. Period of dual-track marine engineering integrated platform system
The market’s restrictive effect on the guidance of production factors has become increasingly stronger, and the basic framework of a socialist market economy has been formed. At this stage, the scientific and technological development strategy and the reform of the scientific and technological system have also undergone substantial adjustments. The rejuvenation of the country through science and education has become a national strategy. The main policies for the reform of the scientific and technological system are focused on promoting the transformation of scientific research institutions and improving the innovation capabilities of enterprises and industries. In addition, from the perspective of the marine engineering integrated platform system framework, the current marine engineering and research enterprise's current marine engineering integrated platform system mainly meets the role of marine exploration and faces the management of scientific research systems. For the exploration of scientific research systems, the exploration of marine science, and the control of ocean-going fleets, it is mostly a method of separately setting up a comprehensive marine engineering platform system. The reason why such a ship management and control ERP integrated platform system can exist in marine exploration and scientific research enterprises has its profound roots.
3. Design of ERP integrated platform system for marine exploration and research enterprises

3.1. Features of Integrated Platform System for Scientific Research and Production and Offshore Engineering of Offshore Exploration and Research Enterprises

3.1.1. Multi-step production in small batches. Marine exploration and scientific research enterprises have undertaken nationally planned scientific research tasks (mainly marine exploration scientific research projects), and they are also the main suppliers of marine engineering products and services. From the perspective of the organization of scientific research and production, limited by financial resources and equipment requirements of offshore exploration enterprises, marine exploration and scientific research enterprises generally conduct trial production and small-scale production together. The cost of the product is very high, and it is unlikely to be put into mass production. In terms of process flow, due to the large specifications of marine exploration and research enterprises, such as weapons and equipment, the internal scientific research and trial production process is more complicated, and there are many models of research and production products, which are generally multi-step production. In addition, product diversification and complex production procedures require the participation of multiple R & D and manufacturing companies, and external collaborative relationships often occur in marine exploration and research enterprise products.

3.1.2. Uncertainty in the production process. Due to the special strategic significance of marine fleet control for national defense and security, marine exploration and scientific research projects and marine fleet control have strict technical parameters and quality requirements. Their technical feasibility is often discussed. The government and ocean as a monopolistic demand side, the fleet has constantly put forward requirements for improving technology and product performance. Uncertain product characteristics cause frequent changes in instructions during the production process. Often, products that have been put into production must be redesigned and changed according to the buyer's needs. The production process is highly uncertain. These uncertainties increase the difficulty of the system and control of integrated marine engineering platforms. Although marine exploration and research enterprises have the advantages of technical observation and cost estimation, the use of ERP systems can effectively respond to marine scientific research activities. National and marine fleet management and demand parties often require marine exploration and scientific research companies to provide detailed and accurate scientific planning.

3.1.3. ERP system diversification. The cost compensation methods for various products of marine exploration and research enterprises are different. The marine exploration research project belongs to the national plan scientific research task, and its funding comes from the national plan. Because the marine exploration research project development cycle is generally very long, in order to meet the needs of marine exploration, the marine exploration research project funding is implemented on an annual basis; the marine fleet at present, the management and procurement adopts a contract system. The marine fleet controls the demand side to sign orders with marine exploration scientific research enterprises according to the needs of marine exploration. The management method is based on the perfect cost-oriented method and gradually introduces a market-oriented scientific management method. In order to determine the marine fleet under the management of the ERP system through tender selection, marine exploration and scientific research enterprises have become a scientific method for marine scientific exploration. The management and control of marine fleets can no longer be reliably controlled as in the purely legal period, and can be effective. Improve the efficiency of Haiyan exploration.
3.2. Design of multi-dimensional ship management and control ERP integrated platform system for offshore exploration and research enterprises

3.2.1. Taking the goal of the integrated platform system of offshore engineering as the starting point Design of multidimensional costing model for offshore exploration and scientific research enterprises

![Diagram of ERP system integration](image)

**Figure 1.** Relationship between costing ERP system accuracy and operating costs.

The multi-dimensional ship management and control ERP integrated platform system makes the marine fleet scientific research and exploration control more precise and accurate by refining the marine engineering integrated platform system. However, the design goal of a reasonable ship management and control ERP integrated platform system is not to have the most accurate ship management and control ERP integrated platform system, because the operation of any ship management and control ERP integrated platform system has a cost, and to have the most accurate ship management and control ERP integrated system The price that a platform system can pay is also huge. Robin Kupai and Robert S. Kaplan gave the relationship between the scientific research management system error and the scientific research management system caused by inaccurate estimation of the integrated marine engineering platform system, as shown in Figure 1. The precision level of the offshore engineering integrated platform system, and the Y axis indicates the operation scientific research management system.

3.2.2. System target of integrated marine engineering platform. The multi-dimensional ship management and control ERP integrated platform system is based on the diversification of the objectives of the marine engineering integrated platform system. The determination of the multi-dimensional marine engineering integrated platform system target has a guiding role in the specific content design of the multi-dimensional ship management and control ERP integrated platform system. Other research in the field of systems is to ensure the realization of this goal. For example, the offshore engineering integrated platform system object is a marine engineering integrated platform system object that is determined in order to complete a specific marine engineering integrated platform system object that is determined in order to complete a specific marine engineering integrated platform system object, and the scientific research management system project is the accounting content involved in this accounting object. They are all subject to marine engineering integration. Constraints on platform system goals. As shown in picture 2.
In addition, the marine engineering integrated platform system methods and procedures are specific means and basic specifications for achieving the objectives of the multidimensional marine engineering integrated platform system. With the development of the marine engineering integrated platform system goals, they will be continuously improved and perfected. Only by clarifying the objective of the integrated platform system for marine engineering can we provide targeted research and exploration control of the marine fleet and better serve the scientific research management system management. In addition, in general, marine exploration and scientific research enterprises have a large number of external collaborative relationships, and their own inventory is large and high in value. They must accurately calculate the inventory scientific research management system in order to make better pricing decisions and resource allocation decisions; departmental scientific research Management system cost management is a more mature scientific research management system management method used by Chinese enterprises. In addition, there are cases where various scientific research management system management methods are used in combination, and typical cases such as matrix management of project scientific research management system management and departmental scientific research management ERP system cost management are combined. The application of these scientific research management system management methods requires the marine engineering integrated platform system to provide relevant information about departmental scientific research management system costs, project scientific research management systems, two-dimensional joint scientific research management systems for projects and departments, quality scientific research management systems, and inventory scientific research management systems.

First, set the scientific research management system library and scientific research management system motivation for each dimension of the system object of the marine engineering ERP comprehensive platform. Assume that the scientific research management system library includes a product scientific research management system library, \((P_1, P_2, ..., P_m)\)'s cost library, and its cost is driven by \((D_1, D_2, ..., D_n)\). Then indirect cost allocation. That is, each indirect cost is first collected into the cost database of the costs of each dimension. Assuming that the total cost allocation is \(X\), the indirect cost allocated on the product dimension is \(X_p\):

\[
X_p = X \frac{1}{\sum_{i=1}^{m} P_i} \begin{pmatrix} P_1 \\ P_2 \\ \vdots \\ P_m \end{pmatrix}
\]

If according to the requirements of the system target of the offshore engineering integrated platform, it is necessary to obtain the joint two-dimensional cost of the product cost and the department cost, then
each product cost item should be allocated according to the department dimension, and then it can be obtained Extra charges \( X_{pd} \) at any point in the two-dimensional space is obtained.

\[
X_{pd} = X \left( \sum_{r=1}^{P} \frac{1}{m_{r}} \left( \sum_{i=1}^{n} D_{i} \right) \right)
\]

Therefore, the scientific research management system can be allocated to the scientific research management system of each dimension and the joint scientific research management system of each dimension to form a two-dimensional or more-dimensional scientific research management system framework, and provide more accurate scientific research management system data for the scientific research management system management. It should be noted that the allocation of scientific research management system is not only an academic issue, but also a management issue. The higher the system dimension of the marine engineering integrated ERP platform, the more complicated the accounting must be. According to the management objectives of the scientific research management system, the type of scientific research management system data needs must be determined, and then the allocation method must be selected.

4. Case study of marine engineering integrated ERP platform system of a marine exploration and research enterprise

4.1. Objectives of Integrated ERP Platform System for Offshore Engineering

(1) Marine exploration control management of department scientific research management system. The main content is to first prepare the marine exploration control of the scientific research management system of each department, and reflect the implementation of the department through the marine exploration control accounting system of the scientific research management system of the department, to control the marine exploration control of the scientific research management system of each department, and evaluate the department head The goal. (2) Project scientific research management system management. The main content is the same as the department's scientific research management system, marine exploration control management. First, the scientific research management system for each project's marine exploration control is compiled, and the project marine engineering integrated ERP platform system is used to reflect the department's implementation. The main goal is to control the project scientific research management system, and assess the project manager. (3) Matrix management of projects and departments. The project scientific research management system management and departmental scientific research management system marine exploration control management are further refined. By compiling the scientific research management system ocean exploration control of each department in each project, and using the accounting system to reflect the implementation situation, the completion process of each project is achieved. The scientific research management system of each department in China controls the marine exploration control and implements the objectives of the assessment. (4) Inventory management. Through the calculation of finished products and work-in-progress scientific research management systems, the physical management and value management of finished products and work-in-progress within the scope of the firm are combined to provide a basis for product pricing decisions and resource allocation decisions.
Figure 3. Ocean Engineering Integrated ERP Platform System Ocean Control System

4.2. Three-dimensional marine engineering ERP integrated platform system method
When the marine engineering integrated ERP platform system object is a semi-finished product of the marine fleet management and special spare parts project, some of the scientific research management system contents in the eight or seven scientific research management system projects set up above are only for the whole project or at the end of the project. Occurs, but does not occur in the semi-finished product stage. Therefore, it is necessary to reset the scientific research management system project of the semi-finished product. Materials research management system and personnel research management system are the main components of product research management system. Therefore, based on the design principles of scientific research management system benefits, Institute X only accounts for the direct manufacturing of scientific research management systems for the entire part, sub-system, and entire machine.

4.3. Collection of Scientific Research Comprehensive ERP Management System
(1) Each marine exploration control is divided into direct marine exploration control and indirect marine exploration control according to the correlation with the project. (2) Include direct ocean exploration control in each project, semi-finished products in the process of project development and production, and scientific research management systems in various departments. Among them, the ocean exploration control that can be directly attributed to the semi-finished product scientific research management system is included in the semi-finished product scientific research management system, and the ocean exploration control that cannot be directly included in the semi-finished product scientific research management system is included in the project scientific research management system. (3) Indirect ocean exploration control is included in each ocean exploration control library under the subjects of ocean exploration control library and management ocean exploration control library, including materials ocean exploration control library, salary ocean exploration control library, equipment ocean exploration control library, and management ocean exploration control library. (4) Carry forward the semi-finished product scientific research management system of the marine fleet management and control project and special spare parts project that were put into storage in this period.
5. Conclusion
This paper believes that the design of a multi-dimensional ship management and control ERP integrated platform system under the concept of a multi-dimensional scientific research management system can meet the diversified goals of the marine engineering integrated ERP platform system of marine exploration and research enterprises. The article first analyzes the characteristics of the integrated ERP platform system of marine exploration and scientific research enterprises and marine engineering, and puts forward the idea of designing an integrated ERP platform system for marine engineering based on the concept of a multidimensional scientific research management system. Feasibility in theory and reality. Then, the article points out the principles that should be followed in the design of the multi-dimensional marine engineering integrated ERP platform system, which mainly include the principles that are conducive to improving the management level of the scientific research management system, the benefits of the scientific research management system, and the principle of coordination. Based on the main scientific research management system management methods, the objectives of the marine engineering integrated ERP platform system system, the design of the marine engineering integrated ERP platform system objects, the scientific research management system collection and allocation procedures, and the design of the scientific research management system calculation system are specifically studied.

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