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NAVIGATING FINANCIAL SUCCESS: THE IMPORTANCE OF COST ACCOUNTING IN THE OIL AND GAS INDUSTRY

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A B S T R A C T

This study delves into critical challenges faced by oil refineries, particularly focusing on issues such as insufficiently developed cost management systems and the intricacies surrounding the formation of production costs. It highlights the pivotal role of computerization within the production process, emphasizing its capability to effectively address modern challenges in oil refining production. The paper further explores the primary objectives of accounting within the oil and gas sector, shedding light on the necessity for robust systems that accurately capture and analyse financial data. Additionally, it discusses the pivotal role of digital information derived from automated control systems in facilitating production management, showcasing the importance of leveraging technology for informed decision-making in the industry.

K E Y W O R D S

Information technology, production management, modern production, process computerization.

Introduction

Currently, information for effective enterprise management is becoming more and more relevant. The determining indicator of the retention of all types of resources of an economic entity are costs, information about which forms the basis of the information space of management accounting, and also serves as the initial data in a large number of tasks solved in it.

Against the backdrop of instability in global energy markets, as well as the introduction of a tax manoeuvre, the main strategic goal of oil refineries was to increase the efficiency of oil refining, and the strategic objectives were to increase profitability and optimize costs. Every decision made regarding cost reduction, as well as the volume and structure of product sales, ultimately affects the key indicator of the company's performance, namely, net profit.

Today, the main problems of oil refineries remain the insufficient development of the cost management system and the formation of product costs. In this regard, the competent use of sound cost accounting methods will significantly reduce production costs, and increase net profit and profitability, which is the primary goal of any business entity.

In a dynamically developing market, the question arises about the advisability of using alternative approaches to cost accounting. One of the modern tools for approaching and implementing cost accounting today is carried out using information technology.

Materials and Methods

Information technologies serve as the most important tool for the most effective implementation of business process management. A rational approach to the use of information technology in the oil and gas business is needed; this will improve the profitability and quality of management of economic processes. One of the areas of application of information technology in the oil and gas business is the use of intelligent technologies [1-4].

Information technology plays the highest role in the development of intelligent technologies in the oil and gas industry. Data obtained using innovative technologies are processed using computers; a more conceptual approach is required to calculate all the necessary parameters in the overall conduct of the oil and gas business.

Production management and obtaining prompt, accurate information about the condition of equipment in modern production is not an easy task.

Modern production is a production where the technological production process is inextricably linked with computer information technologies, namely, the production process is programmed and controlled by computers under the direct participation and supervision of the operator [5-11].

Computerization of the production process allows you to effectively solve the following problems:

- For working equipment, set the specified parameters for the production of products, which allows you to achieve high identity and quality of the finished product;
- Promptly and locally or centrally make adjustments to the production process;
- Receive information about the state of production and compliance of products with design parameters and standards;

At the same time, with the use of information computer technologies, it becomes possible to receive a package of the following digital information and, taking them into account, manage production:

- dynamically receive information about the real state of the equipment and predetermine deviations from the calculated parameters;
- manage equipment maintenance based on a software package that displays its real condition and includes a database of enterprise equipment, modules for planning maintenance and preventive maintenance, filing repair requests, etc.;
- module and package of digital information on costs for material support of production, warehouse accounting and requests for the purchase of materials, equipment, spare parts, sales of products, etc.;
- the condition of metering devices and the actual metering of energy consumption, accounting for losses of raw materials and finished products and their compliance with established standards;
- financial condition and accounting of the enterprise;
- accounting for the availability and movement of material, financial and labour resources and providing information on them to managers;
- accounting for costs and income and deviations therefrom from established norms, standards and estimates for the organization as a whole, structural divisions, responsibility centres, product

groups, and technological solutions;
- calculation of various indicators of the actual cost of products (works, services) and deviations from standard and planned (indicators of full production cost, incomplete production cost, full cost of products sold, cost of products sold by sales zones, etc.);
- determining the financial results of the activities of individual structural divisions by responsibility centres, new technological solutions, products sold, work and services performed and other items;
- control and analysis of the financial and economic activities of the organization, its structural divisions and other centres of responsibility;
- planning the financial and economic activities of the organization as a whole, its structural divisions and other centres of responsibility;
- forecasting and forecast assessment (providing an opinion on the impact of expected future events based on the analysis of past events and quantifying them for planning purposes);
- preparation of management reporting and its provision to management personnel and specialists for production management and decision-making for the future.

The main purpose of this accounting is to provide managers and specialists of the organization and structural divisions with planned, actual and forecast information about the activities of the organization and the external environment to ensure the possibility of making informed management decisions [12-17].

Of course, at enterprises, there are various systems for operational control of the technological process, dispatch control systems, production communications, etc., but still, it is currently impossible to achieve a completely objective picture of the state of production without modern computerized automated control systems for equipment maintenance and repair systems. Paperwork and the human factor cannot ensure troubleshooting and deviations of the parameters of manufactured products from the calculated ones specified by generally effective production management [18-21].

How does a Computerized Digital Information System for Production Management differ from numerous “paper” production management systems, and what are the tasks and ways to solve them:

1. The condition of the equipment should be displayed on well-known technological diagrams. But the vast majority of available diagrams display technological indicators and the “working” or “not working” status. To solve this problem, it is necessary to create a software package that, through conversion, generates and creates a database from existing diagrams and drawings, which will allow recognition of all elements, their numbering, creation of an active database of all equipment (pipelines, fittings, pumps, pressure vessels, etc.) with their current state displayed on the “mother” technological diagram. In other words, based on the existing diagrams, an engineering database of the technical condition of equipment is created, and accessible to all interested specialists of the enterprise. If there are no diagrams and drawings, you need to create them, i.e. “draw” pipelines, pumps, and vessels from nature, taking all necessary measurements, including flanges, gaskets, studs, bolts, welds, etc. and direct application of them.
2. Undoubtedly, there is a lot of equipment and how to deal with them. To do this, it is necessary to create a hierarchical structure of the enterprise, into which all available equipment is reduced by ownership or technological relationship (by workshop or division). In addition, the software package must have a strict system of access to information: each user gets only into “his” department and the

master has access to his information (for example, to applications for technical inspection, and the planner - to the general repair schedule, summary reports on readiness for repairs, etc.) [22-26].

3. What state of the equipment needs to be displayed? Of course, the diagrams should display all the results of monitoring and measuring the condition of the equipment: vibration levels according to the results of vibration diagnostics, the thickness of the walls of pipelines and apparatus according to the results of thickness gauging, properties (ageing) of metals according to the results of metallography, tightness of the fittings ("holds/does not hold" and how much "does not hold") "), leakage levels, i.e. where and how much it passes through, the state of thermal insulation, etc. The program used must generate a measurement scheme, indicating, for example, in which places it is necessary to measure the thickness of the walls of an elbow or pipe branch, calculating the frequency of diagnostics of devices and pipelines, which are carried out based on GOST, RD and other standards [6, 7].

4. It is important to record warehouse records and requests for the purchase of materials.

5. Energy resources are accounted for, actual consumption is measured, possible deviations from the norm are recorded, the state of the metering devices is verified by the state, and metrological support for measurements is carried out. Why is a diagram of the specific location of metering devices being created, indicating their purpose, type, and date of last and previous verification? The operating condition of the devices and the compliance of the operating parameters with the calculated ones are monitored. Measures are taken promptly to eliminate deviations or malfunctions.

7. Loss rates and their reduction.

8. Problem. Advanced training, and personnel training schedules are a problem. Centralized computer accounting of all the above problems and shop-by-shop accounting of its complete shop information,

Solution. Creation by the system of access to information: each user gets only into "his" department and to his information - the master, for example, to requests for maintenance, and the planner - to the general repair schedule, summary reports on readiness for repairs, an accountant for financial matters, etc.

9. Financial position of the enterprise. Accounting, cost accounting, product costs, and cost analysis must be carried out systematically throughout the year to identify internal production reserves and reduce them. It is obvious that the purpose of this accounting is the production activity of the enterprise as a whole and its structural divisions (responsibility centres), and its main objects are costs, costs and results of activity of both the entire enterprise and its individual structural divisions - production, workshops, sections, departments, etc. Proper distribution of costs among responsibility centres will allow the enterprise to minimize costs [8].

Summarizing the above, we can say that a computerized maintenance management system is based on a software complex that displays the real state of the equipment and includes a database of enterprise equipment, modules for planning maintenance and preventive maintenance, filing requests for repairs, warehouse accounting modules and applications for the purchase of materials, financial accounting.

Thus, based on the above reasoning, it can be stated that the essence of automated accounting is the provision of all levels of data management necessary for making management decisions on planning, control, and generation of information that serves as a means of communication within the enterprise.

Moreover, automated accounting information must be based on financial information. At the same time, it should be more detailed and not necessarily expressed in monetary terms.

Based on the above, the following main management and accounting functions can be distinguished:

1) operational management of the enterprise;
2) operational control and evaluation of the enterprise's performance;
3) planning and coordination of the future development of the enterprise based on analysis and evaluation of the results of the enterprise's activities.

At the same time, the structure of management and accounting, both in theory and in practice, follows from the needs of the management apparatus in three types of accounting information and represents:

1) production accounting (traditional production cost accounting and costing);
2) planning and control of costs and results;
3) accounting and analytical support for management decisions.

The main characteristics of management accounting: are flexibility;

a clear focus on the final result (constant comparison of costs, output and results in all areas and segments of activity, structural divisions, and responsibility centres); operating with different cost categories: full, standard, variable, marginal; isolation, autonomy to maintain trade secrets [9, 10].

Conclusions

A modern computerized enterprise management system allows the enterprise to create a system for continuous online monitoring of the condition of equipment with its display on technological diagrams based on appropriate software, a qualitatively new system for monitoring equipment and the production process with significant economic effects.

The advantage of modern computerized automated control systems is that the enterprise can influence not only the overall production costs but also the selling price of products. Thus, the volume of the enterprise's gross profit is regulated, which is reflected in the cost of each type of petroleum product. In this connection, the use of modern computerized automated control systems allows us to avoid the negative consequences of distortion of the cost of certain types of products that arise in the process of making management decisions at oil refineries.

Thus, production management based on digital information from automated control systems can be considered as an accounting subsystem that combines accounting, analysis and control and provides information for making management decisions using modern digital information technologies, which certainly makes it an integral part of the enterprise's economy.

One of the main requirements for the software package should be package configuration, i.e. presence of adjustment tools for new indicators. In this case, the problems of the emergence of new indicators disappear, the types of which can be entered and configured without replacing the software package. It is also necessary that the program be flexible, open and systematic. This means that it is possible to enter new data into it without making changes to the structure and keep records at each stage. The software product must be reliable and versatile. Versatility makes it possible to take into account the peculiarities of production and other areas of activity. The program should be universal, and not require cumbersome and complex settings, and at the necessary moment from this program you can extract from this program the price list form necessary for managers, the financial director - profit analysis, the accounting department - calculation of sick leave or VAT declaration, etc.

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