

THE INTEGRATED APPROACH TO THE DESIGN OF INFORMATIONAL BUSINESS MANAGEMENT SYSTEM

Karakozov G.S., Ph.D. in economics, Ass.Prof. Yerevan branch Plekhanov Russian University of Economics,
e-mail: karakozov.gs@rea.ru

Abstract

It is well-known, that the business management system contains at least three entities: resources, process and value. The analysis that is made in this article shows, that the integration of these entities through the establishment of economic links between them, allows to form a system. That lets you control its output to get some financial result. After adding in the system-level accounting and analysis in the form of feedback, it turns the classical scheme of cybernetic management model. We give a rationale for the adoption of the basis for the design of management informational systems, received a cybernetic model. A comparative analysis of this model with the resource model, which is the basis for the most effective to date ERP-management information systems. We introduce a proposal on the organization of the database corresponding to the integrated model. It proved the advantage of an integrated model compared with the resource model, and proved the prospects of the proposed approach to the design of information management system of doing business.

Keywords: business, management, resources, processes, value, integration, system model, decision-making.

Introduction

The complexity of the business management process is that it contains an element of uncertainty it complicates the prediction of events. At the same time, business today requires improving management efficiency, in order to create an opportunity to boost economic growth in the conditions of global economic crisis. This article presents an approach to business management based on the construction of an integrated conceptual model, which contains three entities, and on the basis of which creates the possibility of developing an effective business management system.

Running a business is a complex form of activity in which you need to keep a constant search for opportunities, preserve and improve their market position. Running a business has the property as the system integrity, because all of its structural units are connected to each other, and are targeted at solving the general problem of achieving the goal. Correct target should have four important features:

- To be real;
- To be achievable;
- To have adjustments' ability;

- To make it possible to describe themselves using quantitative indicators [4].

The goal of business management system, in general has a financial nature, most often, it is planned profit.

To achieve these goals using available to the management of the various resources. Resources can be material, financial, technological, human, intellectual, informational, and possibly others. At the same time, any organization that fights for profit must create value by transforming supplied to the input of resources in the financial result. Convert resources in the financial result is done by implementing business processes that transform resources and create value.

Thus business management system as a management object comprises:

- The resources needed to achieve the goal;
- The goal purpose of the financial results to be achieved;
- The processes that lead to the goal;
- Governing body, directing resources to the transformation and implementing business processes.

The formulation of the problem and its solution

We agree that any business management system must contain a minimum of three subsystems:

- Resource-Management;
- Process-Controlling;
- Controlling formation of a new value as the financial result.

These subsystems are connected to each other, serve as the resource base of the actuator, are aim at achieving a common goal and have a single governing body.

From the point of view of a cybernetic approach, the system must be closed, that is, the system has to be feedback between its output and the governing body. The business management system serves as a feedback structure that provides accounting and analysis of the financial results. And, as can be seen from Figure 1, the analytical framework is monitoring not only the end point of formation of financial results, but also with the intermediate points on the outputs of the resource and process subsystems.

For controlling such systems generally hardware and software are used. At the same time, the development of information technology and mathematical methods create conditions for the improvement of management systems. Therefore it looks relevant and logical analysis and comparison of the most productive capacity today, of ERP-systems modeled as part of our proposed approach, based on integration into a single system of three entities-RESOURCE-PROCESS-VALUE.

The prospect of the practical application of the proposed concept

It is necessary to find out - whether the functionality of ERP-systems to be surpassed within our proposed model. Carrying out such a comparative analysis can be considered as a prospective study of interest and relevance today and in the near future. While it can be argued that any business management system, ranging from corporate integrated system and to the simple business process can be considered as the model shown in Figure 1.

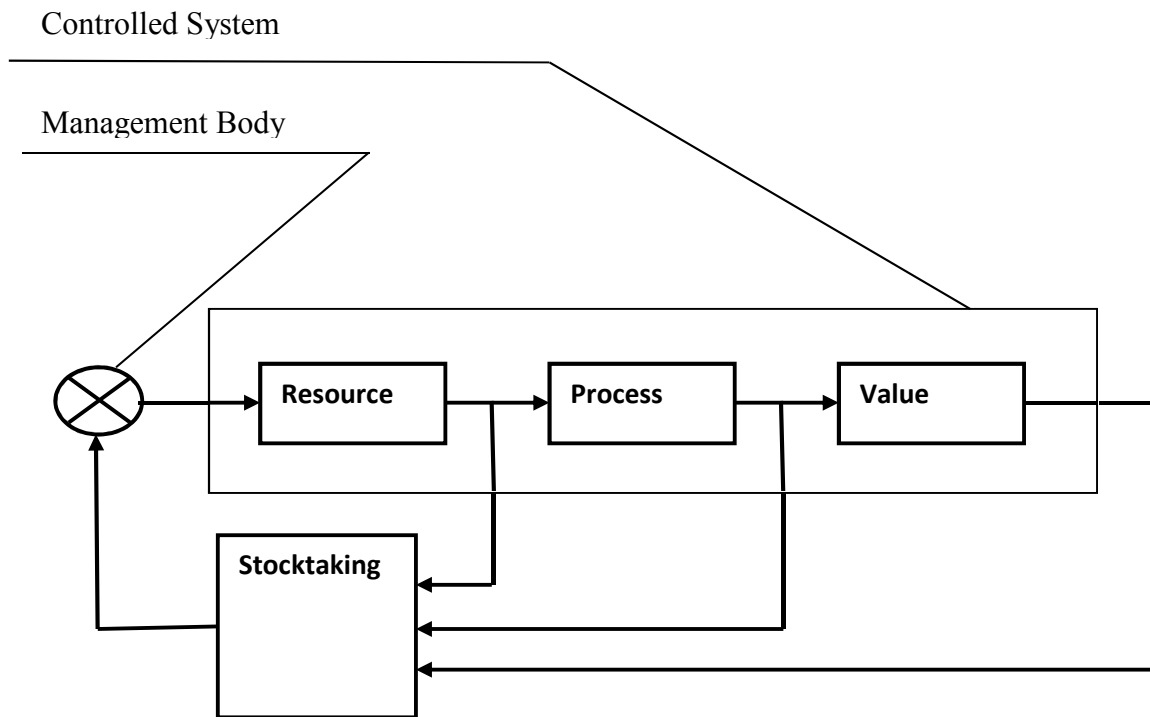


Figure 1. Schematic of business management based on the integration of the three entities into a single system.

Resource-based approach, the use of which largely determines the success of the activities undertaken in any sector of the economy, the basis for the concept of ERP, which is today considered the best business management tool. The main fundamental difference between the approach of the resource from the previously dominant cost approach lies in the fact that it comes from a profitable role of resources in business operations, not only captures their actual costs. However, in ERP systems, such an approach is not fully implemented. In our opinion, this is due to artificial limitation by developers of ERP-systems, that the problem area is only by the scope of the enterprise resources. For example, the implementation of logistics service function "Formation of orders for delivery" in the ERP-system has based on information on the available stocks in the warehouse, and data production program. It has easily seen that the presence of residues at the disposal of the analyst's stocks on the resources and the production program is not sufficient for

optimal control. It requires more information and to calculate the performance of the process performance of the production program and the norms of consumption of resources per unit of production. That is, one way or another, we have to involve additional and information about ongoing business processes and operations. Under this condition, it achieved a harmonious, natural and full provision of the necessary information management system to implement a function "Formation of orders for deliveries."

ERP concept considers the relationship between resources and business processes in the usual way "SUPPLIER (RESOURCE) - CONSUMER (PROCESS)", but the link that has a more complex structure and acts on the already reduced our scheme - "RESOURCE-PROCESS-VALUE", where the process it serves as a resource converter in the value. This account of the features of the design of control systems with the use of information technology can allow the optimal distribution of functions between the three main entities of economic systems.

Thus, an essential condition for ensure a systemic in business management is manifested in the unity of the information resource base, implemented and planned processes and circulating financial flows, as in the most simplistic interpretation of the processes of transforming the resources in the financial result, and the resource base is supplemented by funding. In the analysis of the efficiency of business processes, an important parameter is the cost of the resources used. At the same time, of fundamental importance to the chosen method of calculating the cost of resources. Conventional methods based on the summing of all the costs of creating a resource and then dividing the sum by the number of units acquired or created resource, can lead to distorted results, since the inception of the resource until its transformation in the financial result, it may take a significant amount of time [5].

Such specificity of calculating the cost of individual elements of the resource base requires analysts application of dynamic methods for calculating the cost of this element, which leads to discounted costs and seek to choose the most objective value of the interest rate that takes into account the dynamic calculation. This approach forces for circulation to the classical formula for calculating the net present value of cash flow:

$$NPV = \sum_{i=1}^n \frac{P_i}{(1+r)^i} - I_0,$$

where I_0 - the cost of the acquired or created by the resource;

P_i - part of the created value attributable to the reporting period of resource i in its life cycle;

r - discount rate.

Net Present Value it reflects the value of the cash flow, calculated by discounting separately for each period of time, all amounts, reflecting the share of the resource considered in the financial results from the implementation of business process j .

Discussion

There is a problem that requires to take into account the time required for the execution of business processes. It has believed that management through the implementation of ERP-approach is a system, which is mandatory based on the principle of maximum integration of data and have the ability to optimize the use of resources of all kinds available to the enterprise. Therefore, ERP-systems is a set of integrated software applications, which integration in a single information space, support all major aspects of the management of enterprises, namely:

- All kinds of accounting;
- Sales Management;
- Procurement Management;
- Logistics Management;
- Customer Relationship Management;
- Analysis of economic performance;
- Planning of resources (financial, human, material, production).

Achieving these goals requires a system for the following properties:

- The versatility of in terms of production types;
- Support the processes of integrated multi-level and multi-link resource planning;
- The presence of the system analysis units and decision support;
- Integration with the planning unit of accounting subsystems, decision support and analysis.

This high degree of integration of data to be processed, which covers the entire system completely, it has considered the source of the main advantages of such systems. However, one should pay attention to the fact that according to experts, the effect of the introduction of ERP-systems basically only achieved by optimizing the inventory management, by reducing their average level and reducing the time of their turnover [2]. Many experts believe it is the only source of the direct effect that this level seems low indicator for complex systems. All other advantages of ERP-systems are reduced to the achievements of the indirect effect is mainly manifested in increasing the reliability and efficiency of the formation of accounting reports [1].

In our opinion, the cause of such imbalances should be sought in an effort to ERP-systems developers to maximize the universalization of its product, which has led to its bulkiness and complications in adapting to the requirements of a particular user. There have been a large investment of time, attributable to the implementation of ERP-product to a specific object. At the same time, in the process of binding the software to a specific implementation of an object, even have to recompile the individual software modules and adjust the system tables [1]. Such reasoning leads to the conclusion that the introduction of the ERP-system informatization of enterprise management process should not be terminated, since experience shows that to date, enterprise

information management software, ERP-systems performed enough. Once again, that the ERP system aimed at the planning and management of resources, which is static in nature, and not well focused on the automation and computerization of business processes running in dynamic mode [3]. This is due to the fact that in the ERP-system shall continue to apply relational database management systems, which are not suitable for the storage and use of dynamically changing data, because these bases are recorded only the last recorded values of an indicator. The solution to this problem can be found in expanding the functionality of the relational database based on an input to the database so-called "time line" which allows to store and retrieve data using SQL query language based on the point in time when a particular parameter value was fixed at database. Such databases are called temporal and theoretical and applied research in this area is actively underway. One of the interesting practices of their construction may be the use of storage language and presentation of XML data. The technological solution to this problem is to build the base of business processes on the basis of temporal model and its integration with the resource base. The use of temporal models for business processes of storage for analysis is the need to use software tools and business intelligence technologies. In particular, there is actual use of knowledge extraction from «big data», Data Mining technology and multidimensional analysis based on OLAP-technology.

Conclusions

The above considerations make it possible to formulate some of the tasks that will allow, through the joint application of an integral approach to the management of the organization and model RESOURCE-PROCESS-VALUE really improve management capabilities of the system to a new level:

- Development of a model of an integrated information environment that includes a resource base and business processes of the object;
- Development of an effective and reasonable method of ranking business processes to be included in the analytical system in terms of their significance, because of the large number of their formal description may be unrealistic;
- Increase the efficiency of the analytical work necessary to carry out the development of methods and the use of technology in the analysis of business processes means the computer business intelligence and data mining;
- Research use of the question with the development of specific methods used in circuits and methods of the traditional economic analysis of the organization, analysis of the results of the individual business processes.

References

1. Holland, C. and Light, B. A Critical Success Factors Model for ERP

Implementation // IEEE Software. 2009. No 05/6. P. 30–35

2. I. J. van Vuuren, L. F. Seymour Towards a model for user adoption of enterprise systems in SMEs // Enterprise Systems Conference (ES). Cape Town. 2013. P. 1-9.

3. Lokutsievskiy V.O. Features of implementing of multifunctional informational systems. Materials of Free Economists Community of Russia. Vol. 186, Moscow 2014

4. Op't Land M., Proper E., Waage M., Cloo J., Steghuis C. Enterprise architecture: Creating value by informed governance. Springer, 2009.

5. M. Wynn, M. Dumas, C. Fidge, A. Ter Hofstede, and W. van der Aalst. Business Process Simulation for Operational Decision Support. In Business Process Management Workshops, pages 66–77. Springer Berlin / Heidelberg, 2008.