Controlling Application for Improving Company Management Using Information Systems

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Abstract: The article analyzes modern problems of controlling application for improving company management using information systems. On the basis of respective monographs theoretical bases of controlling were analyzed in details. Authors’ interpretation of “controlling” definition has been presented. On the basis of the system approach principal concepts of controlling have been studied and their advantages and disadvantages revealed. The essence of information potential of controlling has been considered and main trends of its optimization have been highlighted. Algorithm for evaluation of efficiency of alternative correlations of the elements of information potential of controlling has been provided. Application of controlling in the enterprises of different countries of the world has been comparatively characterized. Benefits for the economic subject resulted from controlling introduction have been identified.

Key words: Controlling • Company management • Information systems

INTRODUCTION

In the era of formation and development of post-industrial (information) society the information necessary for company management as well as the capability to think over and efficiently manage information flows becomes especially important that conditions appearance of new requirements to economic subject functioning. Scientific and technological progress and environment dynamics force modern companies to transform into evermore complex systems. Due to possible reflection of all diversity of the reality on the information plane there is an opportunity to manage it on the basis of scientifically grounded technologies providing efficient interaction of the entire pool of resources. In this respect efficient company management requires development of the information system that would provide qualitative and reliable modern data for decision-making; this in turn results in the increase of the role of controlling as an important element of the management contour. Controlling being a crosspoint of accounting, analysis, planning, information provision, control and coordination plays specific role in company management: it combines all these functions into a single whole, integrates and coordinates them, at that not substituting company management but transferring it to the qualitatively new level.

For the last decade many managers recognized the necessity to use new management style escaping commanding methods but thoughtfully approaching formation and development of management system. It should be noted that foreign specialists have been using controlling for quite a long time and practice of enterprise activities in many countries of the world proves efficiency of its application as an integral concept of financial and economic processes management in economic subjects. In post-Soviet space due to insignificant number of empirical studies of both controlling units establishment in the enterprises and their current situation, firstly, it is rather difficult to formulate scientifically based and practically valuable conclusions and secondly, available wordings and recommendations lack sufficient reliability. At the same time it should be noted that growth of the number of specialists appealing
in their practical work to controlling results in an increasing number of questions and problems faced during the usage of the latter one. Hence development, implementation and improvement of necessary tools and mechanisms of controlling for company management shall be realized on the basis of investigation of foreign experience that should be further adapted to business conditions considering the developing economies.

As an object of scientific research the problem field of controlling attracts attention first of all due to its interdisciplinary nature. For its modern interpretation it is necessary to synthesize approaches and concepts used in different scientific and applied disciplines-from philosophy, management theory and self-organization theory to psychology and sociology. The situation of scientific knowledge in this subject area today is to be recognized as weakly structured. Therefore the topical problem of theory and practice in modern strategic management is clarification of the subject area of controlling as an isolated concept of modern company management, systematization and development of principles, methods and approaches to its implementation in the companies’ business practice. These circumstances condition topicality of the performed research and determine its composition platform.

The problems of controlling development and improvement in the system of company management are described in numerous publications of foreign scientists. Their works may be divided into two large groups. First, these are the works devoted to investigation of national features of controlling introduction in a company business practice. In particular Anglo-Saxon (American) and European (German) concepts of controlling are presented by scientific works of A. Deyhle [1], C. Drury [2], Brzezin W., Nowak E. [3], E. Meyer and G. Mann [4], Douglas C. Montgomery, Cheryl L. Jennings, Michele E Pfund [5], Christopher S. Chapman [6], Robert Luther, T Colwyn Jones, Astrid Saxl [7] et al. The results of analysis of these papers prove that the majority of scientists distinguish two levels of controlling: strategic and operational, at that, still debating on the issue of controlling place in the system of company management. The second group of researches is the fundamental works devoted to investigation and further development of methodological instruments of controlling, where however authors do not always clearly define place and role of these tools in the strategic plan of company development. In particular to this group of works we may attribute series of publications related to the Balanced Scorecard (BSC) [5, 8, 9], management information systems (in particular ERP-systems) [10], indicators of company strategy efficiency [11], etc.

The developments of modern scientists to a greater extent relate to the operational aspects of controlling and strategic plans of company development - diversification, restructuring, change of ownership form and competitiveness forming. At that in practice, methodological approaches to the development and usage of controlling under specific conditions of a company business activities are set aside; problems of theory and practice of strategic controlling are not considered that is conditioned by lack of practical experience and hence of reliable results of strategic controlling introduction at modern economic conditions of post-Soviet enterprises. Besides, methodological principles and ways for developing integrated information technologies for managerial decision-making based on the application of intelligent decision support systems have not been studied in full.

Taking into account all mentioned above the objective of the performed research is to distinguish and systematize theoretical and applied footing of controlling as well as to unify approaches to determination of strategic controlling concept and to adapt its tools to the specificity of information environment of company functioning.

The methodological basis of the research is methods, forms and principles of scientific knowledge.

Theoretical Footing of Controlling: For a rather long time of controlling development in the world practice many consulting projects have been implemented, numerous research works, symposiums and conferences carried out. There are many educational institutions, consulting and high technology companies involved in controlling development and introduction. One of the most influential organizations in this field is the International Group of Controlling, uniting 27 companies and educational institutions in Germany, Switzerland, Austria, Poland, the Czech Republic, Slovenia, Hungary, Byelorussia and Russia. However despite such activeness and breadth of the studied problems today there is no single understanding of the nature, substance and objectives of “controlling”.

Some specialists state that the word “controlling” originates from the Latin “contra” and “rotulus” that agrees with English “counter-roullour” and is translated as “counter role” [12]. Others note that the main root in
the word is - “to control”, i.e. “to check” or “to manage” [13]. It is also believed that the first controller who inspected cash and commodity flows appeared in the XVth century in the English King’s Court. From England practice of controlling considered there as a part of common business strategy in accordance with the requirements of “Company Acts” moved on to America. But both in Great Britain and in the USA the term “controlling” has not taken root and at present the notion “management accounting” is used more often, although employees in charge of management accounting are called “controllers”. In Germany the category “controlling” has been applied since approximately the 1950s. In Russia this new trend appeared in two variants - “management accounting” and “controlling”. At that the first term (“management accounting”) was adopted by Russian business environment from the English one and the second term (“controlling”) - from Germany.

So controlling is a new phenomenon in theory and practice of modern management arose at the joint of economic analysis, planning, management accounting and management. As it has been already mentioned earlier the category of controlling is more familiar to foreign specialists from the companies of the developed countries where it has been used since long ago. So Christian Amrhein, the Microsoft Regional Manager in Eastern Europe, defines controlling as “managing management”. To understand what should be included in the functions of the controlling service he distinguished activities with which it shall deal with: business accounting and financial accounting - managed by the Accounts Department; management accounting and budgeting - sphere of the Financial Service; internal auditing - under the jurisdiction of inspectors and auditors; strategic and operational planning - the competence of the Financial Service; and marketing, human resources, merchandizing, developments, etc. - are realized by the respective company departments. In other words management in all spheres of the company activities requires administration; and the Controlling Service in turn shall perform the function of management process optimization aiming at improvement of management decision quality. This relates to two global aspects: the first one is company economics and business-processes (here we mean marketing, personnel, sales, production and developments) and the second one is management systems namely management in the field of accounting, planning and control [14].

M. Meskon’s “Principles of Management” infers that controlling is the process providing accomplishment of the objectives set by the company [15]. R. Mann and E. Meyer present controlling as a concept of efficient company management and business longevity. At that, main attention is focused on planning, accounting, analysis and control of marginal income, i.e. on costs forming [4]. Albrecht Deyhle and Beat Steigmeier consider controlling as an activity of any manager regardless of his level in the company management hierarchy [1]. The International Financial Executives Institute specifies the controller’s functions as follows: company planning, reporting on execution of plans, consulting, development of tax policy, drawing up reports for public services, inspection and economic research [16]. One of the outstanding specialists in the area of controlling D. Khan defining the essence of controlling gives the first place to the objectives resulted from the company planning and control of the results based on the information from internal production accounting [17].

The scientific environment of the former Soviet Union faced the problem of terminology bound with controlling. This term appeared in publications from different translated materials related to economics, accounting and finance that naturally conditioned the diversity of interpretations of the studied definition at the national level. All this resulted in the situation called “ambiguity of translation” that led to the rise of such categories as “internal control”, “management accounting” and at last, individual component of management - “controlling”. At present due to a number of reasons bound first of all with the development of information systems the concept of “controlling” is evermore approaching to “management, regulation, administration” and expresses new management concept.

Methodological Aspects of Controlling Realization:

Generalizing interpretations of controlling presented in special literature we may distinguish several semantic groups in a certain way reflecting evolution of the concept of controlling, namely: controlling as a tool for internal control and audit; controlling as a tool of company management; controlling as philosophy and managers’ way of thinking oriented at successful long-term company development.

Validity and consistency of controlling as well as the above mentioned stages of controlling evolution should be emphasized. However the author believes that at this point the present scheme of studying controlling does not allow understanding and clarifying its methodological basis to the utmost. Therefore it is expedient to carry out further investigation of controlling in two aspects: general theoretical and applied ones based on the experience of
Kazakhstan enterprises functioning. It should be noted that from the practical point of view methodological bases of controlling are rather well developed and formed but scientific discussions around its theoretical and methodological concept continue. The majority of researchers agree that in the field of controlling implementation it is expedient to adhere to the interdisciplinary approach that conditions attraction of theoretical and methodological grounds and applied instruments of many scientific disciplines: philosophy, economics, psychology, general and strategic management [18]. In structural and organizational aspects the issues of place and role of controlling in the system of company management remain controversial and have no single scientific solution.

Based on the specified methodological apparatus and available developments of the studied problems formulate the authors’ definition of controlling. Controlling is a new concept in company management capable to provide internal balance of the economic subject activities and its efficient development by forming objective information on expenditures and income that all-in-all serves to take optimal management decisions. Controlling provides forecasting result of activities and efficient feedback, transforms company management to a qualitatively new level, integrating activities of different company services and departments and directing them to achievement of the most important objectives.

At present the following concepts of controlling may be distinguished:

- Focusing on the accounting system;
- Oriented at the information system;
- Oriented at the management system;
- Classical concept distinguishing the system of control and planning and the information provision system; coordination between these systems is provided by controlling;
- Practical concept of controlling considering it as an instrument of purpose-oriented company management.

According to the experience of economic subjects of Kazakhstan [19] there is no clear classification of the concepts on their substance; each of them may and shall supplement each other. However it should be noted that the controlling scheme functioning abroad cannot be implemented in full at the conditions of post-Soviet economic systems.

According to the author main disadvantage of the existing concepts of controlling is consolidation of budgeting and control function that, in part, is explained by double interpretation of planning activities within the frameworks of the enterprise. Budgeting is rather complex and many-sided mechanism in which realization large number of different specialists is involved. Therefore, as foreign researchers of controlling suppose, transfer of planning functions to the chief controller in practice will only result in disorganization and decrease of the quality of the planned activities of the company. In this respect consolidation of budgeting and control functions is thought to be ungrounded and inexpedient. The author believes that the most acceptable and rational for Kazakhstan business will be to combine control and information functions of controlling. According to such approach controlling shall be a continuously functioning system concentrating control operations in main business centers of the enterprise and simultaneously providing information support for management decision taking, collection and systematization of information, information system structuring and provision of its efficiency.

The mentioned above allows stating that controlling as a system influencing the management elements by means of accumulation of integral information on evaluation of the factors of external and internal economic environment has certain information potential.

Information potential of controlling

The information potential of controlling is the maximal capacity and possibility to regulate economic solutions and to drive the enterprise development to a new level that provides achievement of the set goals and required work mode in unstable conditions of market economy for the account of qualitative and efficient use of the accumulated resource elements, procedures and types of activities [20]. However to increase efficiency of information potential of controlling in the management system it is necessary to optimize it, i.e. to modify based on the possibilities, resources and objectives set by the company.

Optimization of information potential of controlling is realized by qualitative evaluations and determination of dependence between its individual elements. Therefore during optimization it is important to determine the value and priority of the elements of information potential in order to identify rational correlation and to increase expediency and efficiency of capital investments. So it may be inferred that optimization of information potential of controlling serves to reach the balance between costs.
for forming elements of information potential and results of its realization. At that it is necessary to remember that information potential of controlling is based on interaction of three components (blocks): resource elements, controlling elements and controlling functions.

Information potential of controlling shall be optimized in the following stages.

- Determination of alternative correlations between the elements of information potential of controlling on the basis of maximal adaptation to the conditions of external and internal economic environment.
- Comparison of necessary costs and capital investment for forming different correlations of information potential elements with planned economic result considering influence of different factors.
- Selection of optimal option for forming information potential of controlling and its realization.

The process of forming information potential of controlling may be presented as functional:

\[ F_{IPC} = [RE] \times F_{CE} \times F_{CF} \]

Where \( F_{IPC} \) - functional of information potential of controlling;
- Functional of resource elements;
- Functional of controlling elements;
- Functional of controlling functions.

As a result it is expedient to consider information potential of controlling in the system of company management as correlation and dependence between its elements.

After determination of possible variants of the correlation it is necessary to substantiate their individual financing efficiency considering influence of factors of external and internal economic environment. From the abovementioned it may be inferred that information potential optimization is based on the following principle:

\[ R \rightarrow MAX \]
\[ C \rightarrow MIN \]

where R is result and C - costs.

Evaluation of efficiency of the alternative correlations of information potential elements of controlling is possible by calculation of the net present value obtained from its formation and usage. Selection of optimal variant for formation of information potential in controlling shall agree with the principle of the highest efficiency.

\[ E F_{ipc} = \begin{cases} NCF \rightarrow \text{max} \\ CI \rightarrow \text{min} \end{cases} \]

Where NCF is the amount of net cash flow reduced to the present value for the period of realization (usage) of information potential of controlling; CI - amount of capital investment in formation and realization of the information potential of controlling. According to the analysis of information potential of controlling it should be noted that:

- To achieve high level of information provision in management it is necessary to keep the order of priorities in optimization of information potential of controlling;
- Efficiency of information potential of controlling is based on the optimal selection of its elements ratio from the point of view of capital investment payback;
- The optimal variant of information potential of controlling is determined on the criterion of maximal return from its usage;
- Efficiency of realization of information potential of controlling is determined by the indicator of net present value.

**Comparative Analysis of Controlling Usage in the Context of Different Countries**: During investigation of the essence and mechanisms of controlling realization in Kazakhstan information on peculiarities of controlling system application in the companies of different countries has been collected. The results of the analysis are presented in the Table 1.

Below are the conclusions that may result from the obtained data. In the beginning of 2000s controlling and financial controlling were “novel” concepts in Kazakhstan economic and financial science and usage of controlling in Kazakhstan enterprises was an attribute of luxury. Today on the contrary in science and in respective projections in the enterprises controlling appears to be a typical component. Nevertheless as it turns out, such situation is not deprived of stereotypes on the existence
due to the limited nature of functioning horizons [22]. From both external and internal environment, the system on general results of the entire company activities management on possible risks that the company may face are no analytical materials on the influence of controlling special information system that would signal to the forming but there are some obstacles. For instance there entrepreneurship system it is necessary to develop application of this concept in Kazakhstan are already performance of the role of controlling in the strategic and operational format. Prerequisites for wide competitive advantages. In this regard to provide for the control, analysis and management decision-making aiming factors information is taking a dominant role. It becomes methodological provision of the processes of planning, of the industry century; and apart from other production systematic concept of information-analysis and The century of information has come to take the place of the past to analysis of the future, change of the problems formulated in the strategy of economic identification and detailed theoretical and methodological necessary for Kazakstan companies to substantially comprehensive analysis for its subject sphere reached in reality by using controlling. Controlling is ambiguous phenomenon requiring solid and management but this is worth the effect that may be practice of company management controlling is an efforts, changes in accounting systems, control, analysis and expediency of establishing a company unit with such functions within only the large-scale, mostly industrial companies [21].

**CONCLUSIONS**

Having completed the investigation we may state that controlling as a new branch of science arose because of the following main reasons: shift of emphasis from control of the past to analysis of the future, change of technologies, differentiation, diversification and internationalization of companies, complication of communications and cycle of decision-making and realization and complication of environment where the company functions. In the context of modern theory and practice of company management controlling is an ambiguous phenomenon requiring solid and comprehensive analysis for its subject sphere identification and detailed theoretical and methodological and applied developments. Generalizing approaches to controlling substance interpretation known in scientific literature we should recognize the latter one as a systematic concept of information-analysis and methodological provision of the processes of planning, control, analysis and management decision-making aiming at successful realization of the company goals realized in strategic and operational format. Prerequisites for wide application of this concept in Kazakhstan are already forming but there are some obstacles. For instance there are no analytical materials on the influence of controlling system on general results of the entire company activities due to the limited nature of functioning horizons [22].

Efficient implementation and functioning of controlling system will allow the economic subject reducing time of adaptation to the changes of external and internal environment, optimizing management risks, decreasing the possibility of bankruptcy and increasing profitability and competitiveness. By means of well-timed modification of the forms of accounting, analysis, planning and methods of financial management the efficient controlling system serves to qualitatively solve the problems formulated in the strategy of economic subject development.

Controlling should be introduced into the system of internal economic mechanism as its main sub-system at all stages of company organization and functioning. Undoubtedly introduction of controlling requires certain efforts, changes in accounting systems, control, analysis and management but this is worth the effect that may be reached in reality by using controlling. Controlling is necessary for Kazakhstan companies to substantially increase their efficiency and to provide competitiveness and optimal solution to the problem “limitedness of resources - looseness of needs”.

The century of information has come to take the place of the industry century; and apart from other production factors information is taking a dominant role. It becomes the most important resource that creates serious competitive advantages. In this regard to provide for the performance of the role of controlling in the entrepreneurship system it is necessary to develop special information system that would signal to the management on possible risks that the company may face from both external and internal environment.
Considering complexity and universality of the subject of investigation it should be admitted that within the frameworks of one article it is difficult to touch on all aspects of controlling. Further studies are required in the areas of unification of approaches to identification of the controlling system in the enterprise as well as the issues concerning the development of the methods for applying controlling tools adapted to specific features of Kazakhstan.

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