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STRATEGIC CONTROL INDICATORS AS A COMPONENT OF
DIGITAL ENTERPRISE MANAGEMENT

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Abstract

The paper analyses scientific approaches to formation of strategic control indicators as an important component of digital management that may be applied to optimize strategic decision-making and monitoring the general development of the managed object in accordance a the selected strategic development vector on the foundation of their integration into automated control systems. The purpose of the paper is to systematize scientific views and develop methodological approaches to formation of a system of indicators for strategic control as an important component of digital management in present-day conditions. Principal attributes of strategic indicators are given, namely: integrated nature, comparability, urgency and objectivity. Methodological approaches to determining business process management indicators have been studied, with determination of the nature and main formative principles of the strategic control system in an organization. The research data were used to systematize and characterize strategic control indicators according to the following classification attributes: sphere of influence in the object of management, content, functional attributes and management levels. Application of proposed approaches to classification of strategic control indicators will allow systematizing development of digital management systems to facilitate movement of enterprises along the chosen strategic development path.

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1. Introduction

Accelerated digitalization of economy and society creates new challenges and advantages for improving enterprise management processes. Fast development in information, communication and economic sphere determine a necessity for strategic control as a component of enterprise digital management. Nowadays, application of digital equipment and platforms allows forming a foundation for competitive advantages, minimizing costs and, most importantly, timely reacting to both internal and external changes.

2. Problem Statement

A current issue in management under the present conditions is determining key system indicators that would allow monitoring of strategic development, identifying obstacles (opportunities) that were not taken into account during development of the strategies in order to make timely decisions. Additional incentive for formation of an efficient indicator system is presented by development of digital technologies allowing forming a common system of interrelated indicators and relevant software application of which will facilitate development of flexible managerial solutions as well as modeling of their influence onto achievement of strategic goals.

Analysis of scientific sources shows that the question of determining key indicators, subindicators and models of managerial control was studied by various scholars, including Detmer and Schragenheim (2009), Kaplan and Norton (2003), research into strategic planning by Russian and foreign scholars such as Akoff (2002), Ansoff (2001), Kleiner (2005), Rokhchin (2005). Research into digitalization was conducted by Aleksandrov and Sarychev (2010), Galbraith (2017), Schwab (2016) and others.

At the same time, the problem of efficient control over implementation of enterprise's development strategy stays open, while determining key indicators of strategic control as integrated measurement system for efficiency of strategic decisions remains an important step to resolving this problem.

3. Research Questions

At the modern stage digital management may be defined as a system of enterprise management where managerial decisions as well as managerial functions are a synthesis of software-generated digital data and managerial experience of a manager. That is, digital management is not a recipe for ideal management, but is aimed at digitalization and automation of information streams in order to obtain current data on operation of the enterprise in any given moment of time, optimize communications and provide optimal decision-making according to predefined criteria of analytic data.

4. Purpose of the Study

The purpose of the study is to systematize scientific views and develop methodological approaches to formation of a system of indicators for strategic control as an important component of digital management in present-day conditions.

5. Research Methods

Theoretical and methodological foundation of the research lies in propositions of economic theory, management theory, system theory and system analysis. The methodological foundation includes provisions from scientific approach in economics and management, Management-by-Objectives, regulatory and scenario-driven approach in planning, systemic and situational approaches in management of entrepreneurial structures, as well as methods used in development of managerial decision-making expert systems.

6. Findings

The nature of strategic development of an enterprise lies in preparation of available resources to future opportunities by means of application of broad strategic analysis and development of strategic plans with the aim of attaining set goals and obtaining stable competitive advantages thanks to timely reaction and fast adaptation to unpredictable changes of the environment and development of products which are in demand with the consumers.

A set of events that the enterprise passed through forms an event resource, which is very important for managing the enterprise and predicting its reaction. “Enterprise’s reaction to external changes is almost never paradoxical, but in order to explain it there is a need to see the enterprise as a complex multi-level system, homomorphic to a country-wide socio-economic system” (Kleiner, 2005, p. 31). Scenarios represent possible variants of further development of events. They facilitate development of strategic vision of the company’s management. It is important to take into account that the scenario shall be based on multiple objective factors which are out of reach of the company’s management and governmental structures (Cherepovitsyn, 2018).

A principal characteristic of strategic development of an enterprise is its commitment. That is, all the processes of quantitative and qualitative structural changes shall undergo in the context of set goals. Strategy and tactical measures formed on the basis of monitoring of a group of factors acting upon the enterprise in a certain period of time serve as a tool for attaining the goal. Timely identification of problems and deviation with subsequent correction of processes or strategic content (and even changes in goals are not out of question) require strategic control.

Strategic control is determining whether further implementation of the existing strategies possible and will their implementation lead to attaining the set goals. It may not exist without current and finalizing control, in the same way as strategic management is based upon current activities of the enterprise. That is why one of conditions for formation of strategic control indicators is their integration with the data reflecting current changes in the enterprise’s business processes.

The strategic control covers:

- Control over strategy preparation: strategic broad-focus observations (strategic monitoring, continuous scanning of environment) and control of prerequisites for strategic plans (checking assumptions against external factors and available resource potential);
- Control of strategy implementation (control over deviations from strategic plans);

- Control of crisis development – timely prevention (information support for decision-making in the context of prevention of strategic deviations).

Under the present conditions, which are characterized with active implementation of digital technologies in all areas of economic activities, a question arises on formation of a digital strategic control system integrated into digital management of the enterprise while keeping the main principles of digital management.

The principles of enterprise management in the context of digital economy development may be defined in the following way:

1 Digital technologies together with modern management technologies create a unified space for efficient management

2 Traditional business models are either improved upon or completely replaced.

3 Constant updating of information space and communication in management.

4 Optimization of communication channels and a combination of traditional and electronic models of business activities.

5 Activation of remote labor: outsourcing, outstaffing, etc.

6 Dynamic stages of product life cycle and company development.

7 Continuous communications with customers through a variety of channels.

The system of strategic control indicators shall be developed at a stage of strategic goals formation and contain indicators that will serve as control points for efficient implementation of the strategy through its certain stages.

Using a limited system of indicators generally corresponds to the main postulates of Detmer and Schragenheim (2009), who compare managers to pilots and state that it is sufficient to analyse the speed, height and direction of movement to predict efficiency of plane systems under conditions of turbulence and there is no need to wait for a larger set of data pertaining to multiple other parameters.

Andersen (2003) also compares the control indicator system to an instrumentation panel:

Unlike ancient master switch of the financial department, which with a significant lag turns the red light on or off alerting of profits or losses, the new instrumentation panel is to include a number of measuring instruments allowing assessing the real situation. Such an instrumentation panel will point us out to appearing negative trends, will demonstrate temporal development and help determine prerequisites for specific efforts aimed at improvement. (p. 78)

At that, each indicator may consist of a certain set of interconnected subindicators that characterize efficiency of a certain process. For instance, efficiency of implementation of enterprise competitive strategy cannot be determined exclusively through a sales volume indicator. It is an integral indicator that characterizes simultaneously the sales volume, price of a product and its profitability.

So, the system of strategic control indicators is a set of integral criteria that demonstrates efficiency of the enterprise's strategic development in a given direction in real-time.

Today, many methodological approaches and measurement and evaluation systems are known for the process of strategic development. One of the most famous models is a so-called Balanced Scorecard

Model, proposed by Kaplan and Norton (2003). They identified four components of the enterprise attractiveness and efficiency assessment system that take into account interests of all stakeholder groups (shareholders, investors, consumers and owners), namely: financial and marketing component, quality and personnel development component and business process ranking component. A drawback of such a system in the context of the strategic control is insufficient account for external factors that influence the process on its way to its goal.

An interesting model called Results and Determinants was developed by a group of scientists headed by Fitzgerald et al. in 1990s (1992). Its feature is grouping of all the evaluation indicators into results (financial and non-financial) and determinants, that is, factors influencing achievement of results, thus delineating summary indicators and forward-looking indicators. According to the model, typical financial indicators of company's activities (financial results, equity capital, asset value, etc.) are defined as lagging indicators. Using exclusively lagging indicators in strategic control is counterproductive, as their information is of summary nature and does not allow either for justified forecasting or for influence onto the process of goal reaching.

An efficient control model that may be used on any type of enterprise is the Performance Wheel, suggested by Watts and McNair-Connolly (2012). This integrated model combines traditional and modern views of control, including both top-down and bottom-up indicators, internal and external prospects for stakeholders and, finally, interactions between the control focus (organizational role) and incentive types that may be most useful in creation of stable increase of productivity. In each new version it accounts for and removes identified drawbacks and provides efficiency of a complex management model that may be adapted to the needs of most organizations.

Having studied the principal approaches, one may come to a conclusion that as of today there is no a common list of indicators to be used for creation of a strategic control system of an enterprise. However, generalization of our research allows outlining the main requirements to it: observing a common methodological approach in order to provide a clear determination of an algorithm for indicator calculations and a just equilibrium in understanding of their economic nature and interpretation by specialists of various levels; coherence of indicators; coverage of all the important characteristics of the management system; optimal number of indicators; close relation of the indicators to the stages of strategic goal implementation; capabilities for modelling of the strategy implementation process depending on actual indicator values; dynamics and flexibility; quality information support; accounting for influence of external factors.

During the research it has been established that different scholars propose different sets of control indicators and different approaches to their classification:

- external indicators, reflecting the state of the relevant factors of the external environment (state of the market, competition level, tax policy, etc.);
- incoming indicators – a set of indicators that characterize qualitative and quantitative aspects of resources coming to the organization;
- internal indicators that reflect efficiency, productivity and performance of internal processes in the enterprise;

- outgoing indicators– a system of indicators that measure correspondence of products, services and internal information produced at the enterprise to requirements and expectations of stakeholders;
- generalizing indicators – indicators that aggregate indicators of the previous groups to signal efficiency (or inefficiency) of the enterprise in implementation of the selected strategy. Deviations in this group of indicators serve as a stimulus for more detailed control over certain areas.

By their content, strategic control indicators are divided into:

- cost-based indicators, which reflect the state and development of the enterprise by means of financial indicators;
- natural indicators, which reflect development of principal activities of the enterprise in natural units (production volume, personnel head count, amount of natural resources);
- labour indicators, which determine qualitative and quantitative aspects of the enterprise's labour potential (labour costs, working time fund, quality of solutions);
- quality indicators – parametric indicators reflecting a system of requirements to certain subjects, processes or phenomena.

Classification of strategic indicators by directions is based upon a system of balanced indicators of enterprise growth. However, in the context of strategic control model formation, these indicators are modified with account for hierarchic nature of strategic measurement. Correspondingly, the following functional classification of strategic indicators is proposed:

- financial indicators, which characterize the enterprise's financial status and financial results. Financial indicators are usually pivotal during the strategic control, as they assess the ratio between costs and results for each tactical measure and each process;
- marketing indicators, which are aimed at determining the influence of internal efforts of the enterprise onto behaviour of end users. The marketing indicators usually use the following indicators: market share per product, price level and dynamics, client count, profitability of distribution channels, etc. By their nature, marketing indicators may be incoming (forming information on external factors) and outgoing (characterizing efficiency of the enterprise in the market);
- production (operational) indicators reflect planned production of goods or services;
- human resources indicators determine quantitative, qualitative, and labour-related characteristics of personnel necessary for achieving the goals.

Depending on features of economic activity and configuration of strategies, the proposed group may include environmental, innovative, investment and international indicators.

As the system of strategic indicators is a derivative of the enterprise structure and corresponding distribution of goals, the process of balancing various separate indicators is related to achieving good coherence between personal and organizational goals.

A key requirement to formation of the strategic control indicator system is balance between indicators forming a common development vector. At that, the total number of indicators at each level shall be sufficient for formation and interpretation of top level indicators. The system shall also provide

for readjustment of the measurement system in case changes are introduced into the strategy, tactics or individual goals.

7. Conclusion

Under conditions of increased uncertainty and turbulence of external environment, the process of strategy development and implementation is further complicated, requiring elaboration of the strategic control system, which will ensure adaptivity of the enterprise's strategic development. At the same time, modern information technologies applied in management, as well as rapid development of digitalization in all the areas of social and economic activity create prerequisites for systematization of information streams, their analysis and development of optimal models of strategic solutions. Efficiency of digital management largely depends on determining goal-oriented indicators of enterprise operation in accordance with the set goals, ensuring their relation and mutual adaptation, implementation of relevant information systems and arranging content supply to data bases.

The performed research resulted in finding approaches to definition and classification of strategic control indicators, which in practice will allow for systematizing development of digital management systems to facilitate movement of enterprises along the chosen strategic development path.

Systemic approach to strategic control in the context of digital management requires formation of automated management systems and responsibility centers for individual aspects of the strategy implementation.

Strategic control indicators are formed at the stage of strategic goal development and depend on their clearness and information support that takes into account cause-and-effect relations.

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