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FORMALIZATION AND ELABORATION OF A COMPANY'S BUSINESS STRATEGY

Abstract

The article deals with issues of formalization and elaboration of business strategies. The authors have formulated a hypothesis that there is no universal strategy ensuring maximum benefit to an enterprise. The choice of a company's strategy is considered from the point of view of a game-theoretical interpretation as a competition component. The process of engineering a company's business strategy is presented in the form of a technological network. The study shows the possibility of automating the selection of a strategy by decision-making support systems. The article outlines the problem of classifying enterprise strategies by general features. The structure of a company's strategy is formalized as a relationship of a set of strategic objectives in the S.M.A.R.T. technique and a set of means to achieve the goals limited by a company's capabilities. The authors examine the indicator structure for achieving strategic goals. A definition is given to the type and form of a strategy based on the pattern concept. The article defines a methodology for assessing the probability of achieving the strategic goal. A new concept of a fluid strategy has been introduced along with several other variations of business strategies that might be encountered.

Keywords business strategy, life cycle, fluid strategy, pattern, strategic goals, game theory

JEL Classification L20, M21

INTRODUCTION

The relevance of the problem of formalization and engineering of business strategies is determined by the following circumstances. Rather than relying solely on financial targets, the company's management should start with the key actions required to implement their strategies and proceed to the metrics providing control over the accomplishment of specific achievements. By tracking progress through metrics, business leaders can maintain the required state to achieve goals for a long time, identifying bottlenecks to eliminate them in the medium term and learning about the effectiveness of key actions before the financial results (Sull et al., 2017).

Traditionally, the determination and development of the company's principal risk-related competencies that have a significant impact on its position in the market take place at the strategic level (Mahmood et al., 2018). In the long term, key competencies should correspond to the values created for consumers, reflected in strategic plans for production of products and services, for which the targets and measures aimed at their achievements are set.

To solve these problems, the study justifies the use and development of methods and tools for ontological engineering. With this approach, the strategic objectives are formalized. Every strategic goal is specified by a set of critical success factors allocated with the use of SWOT analysis (Menga et al., 2015): internal capabilities and limitations (based on the overall analysis of resources and technology) and external threats and favors. Key performance indicators and their boundary values, along with key competencies of an enterprise, which ensure achievement of strategic goals, are formalized based on critical success factors (Prahalad & Hamel, 2000). In the future, these critical success factors are reviewed in the analysis of specific business models.

Monitoring business process execution results in accumulation of empirical statistics, based on which the business model is adjusted to the perspective of selection of specific components. In its turn, controlling the achievement of key performance indicators at the level of a business model (Laursen & Thorlund, 2016) can cause the adjustment of an enterprise strategy. The choice and adaptation of a business model based on the adopted strategy should consider the quality of information on the external environment, as well as the probable nature of assumptions about the optimal solution. Therefore, the hypothesis of this study is that there is no enterprise strategy, which is winning in any situation. The study is aimed at achieving the higher adaptation of a business strategy to the changes in external environment, as well as improving the efficiency of business processes organization.

1. LITERATURE REVIEW

A cybernetic decision-making model is usually used to solve the problems of managing economic systems. The decision-making theory combines operation research methods. In turn, the operation research method includes game theory. The most useful from the point of strategic analysis are cooperative games, as well as games with asymmetric information based on Healy and Palepu (2001), available to the players. Companies primarily require information on the investment climate, the state of the market, the position of competitors, based on which they can assess external risks and make informed decisions. Cooperative games allow to simulate strategic decision-making in the network structures of enterprises with unequal opportunities (Kantemirova et al., 2018).

Strategic decision-making and strategy management is a well-developed sphere located at the intersection of management and business intelligence. This area is developing so actively that it is difficult to delineate the boundaries of the research front. Among the most interesting results obtained recently and related to business strategy management, it is most appropriate to turn to the new concept of "digital strategy", which in this context does not fall within e-marketing, and according to Mithas and Lucas (2010), allows to achieve effective management of information resources, using technologies as a means of obtaining additional competitive advantages and creating key competencies. The use of this category is necessary to form the most complete picture of the internal situation and the external environment. The asymmetry of access to information sources means differences between companies in their search of opportunities and acquisition of data and knowledge. Effective resource management is a tool that allows an enterprise to correct the asymmetry of access to information in a positive way.

The asymmetry of access to strategically important information, on the one hand, and the lack of information, on the other hand, suggest the idea of strategy modeling with the use of hesitant fuzzy sets (HFS). Modeling of decision making mechanism conducted by Lee et al. (2017) contributed to significant success in the field of behavioral studies of modern enterprises from a strategic point of view. Gagné (2018) analyzed the internal mechanism for designing and implementing business strategies, including transformation of strategic objectives into specific activities executed using a limited set of means to achieve the goals. Exposure of strategic goals to transformation is a prerequisite for formalizing the process of creating a strategy as a procedure for designing a framework of objectives and the means of achieving them.

Recently, one of contemporary scientific directions is the cognitive approach to enterprise management. This approach allows to provide insight into the psychology of economic decision-making, which is closely connected with the development of strategic decision support systems that according to Calabrese et al. (2018), to some extent imitate human thinking. According to the cognitive approach, knowledge about the strategy should be represented in the form of a frame, the transformation of which into a usual structure is equivalent to formalizing the strategy.

As a rule, strategies are considered in qualitative terms; in some rare cases a construction is built containing information on the strategy structure. Despite the attempts of Whittle and Myrick (2016) and other authors to formalize a business strategy with the help of language and graphical modeling tools, economic and mathematical models that formalize business strategies from a quantitative point of view are obviously presented inadequately. In any case, such models are little known and, as a consequence, are very rarely used in practice. As a consequence, no intelligent systems are capable of strategic decision-making, which in practice is the most complex.

While Bonczek et al. (2014), Lin and Hsieh (2004) report that software tools have already been put into practice and are capable of complex decision-making, including strategic decision-making, there is still no software tool capable of imitating human strategic thinking.

From a methodological standpoint, it would be more appropriate to consider strategy formalization as one of engineering elements (Hinkelmann et al., 2016). However, despite specific characteristics of the advanced digital technologies, poorly observable behavioral characteristics, and under-explored cognitive aspects, it is quite sufficient to use mathematical apparatus normally used for modeling complete and substantive objects with some amendments to uncertainty, shortage and incomplete information for formalization and engineering of a company's strategy. The problem of strict and complete strategy formalization needs to be solved. Strategy formalization will make the composition of the strategy elements open, and the very procedure for choosing a strategy more explicit.

2. MATERIALS AND METHODS

This study is based on the previously developed methods and tools to create an intelligent decision support system providing a strategic-level solution to the problem of evaluation and selection of key competences of an enterprise, business-operating model and organizational management to achieve strategic goals. When structuring the knowledge base for strategic decision-making, it is necessary to consider the uncertainties of a company's development with fuzzy production rules and the development of algorithms for processing linguistic variables (Liu & Rodríguez, 2014).

The game-theoretical interpretation regards formalization and choice of a strategy as the processes associated with data processing, in which information plays a fundamental role (Chang, 2016). Formalization and engineering of a company's strategy are targeted to deepening the theoretical apparatus necessary to solve practical problems that enterprises face in everyday life. This primarily concerns the justification for decision-making on the choice of a business strategy in a certain area of a company's activity.

Results of the so-called dominated strategies from the game theory appear to be the most balanced in terms of costs and risks (Li, 2017). Therefore, speaking of the optimal strategy, it is advisable to define the requirements as recommended restrictions on the metric values of or the strategy components. For this reason, the search for an optimal strategy is considered from the perspective of game theory as a problem with some approximate solution that cannot be completely verified. Due to the fact that companies are free to join voluntary coalitions against their competitors or pursuing other economic interests, the considerations outlined below are partly substantiated by the main provisions of cooperative game theory.

The asymmetry of access to strategically important information, on the one hand, and the lack, ambiguity and unreliability of this information, on the other hand, require strategy modeling with the use of fuzzy sets. The proposed use of the method of expert estimations in combination with fuzzy sets will allow to optimize solution to the problems under consideration and create new metrics with useful characteristics.

The autonomy of enterprises as economic agents, exchanging information with each other, pursuing both collective and private goals and managing their behavior through decision-making at different levels in terms of risk and uncertainty, generally results in a distributed multi-agent system (Guo et al., 2014). The consideration of a set of issues related to analysis of information flows in multi-agent systems requires the appropriate conceptual apparatus. In return, modeling of engineering strategies formalization also requires a special notation, where the methodology of functional modeling of SADT could not be more relevant.

The concept of "strategy" can be interpreted in different ways; it is very important to achieve a clear understanding of its meaning in this context. Gassmann et al. (2014) interprets "the strategy of supplying products and services to the market" as the "channels used to deliver goods and services to the market", which is quite different from our understanding of the strategy substance.

3. RESULTS

3.1. Analysis of a company's business strategy in terms of the theory of cooperative games

Game theory is the best means for modeling decision-making in the face of uncertainty. Game theory makes it possible to accurately calculate the chances of success or find the optimal solution from the point of view of the double safety-benefit criterion. Instead of presenting the choice of a company's strategy as a lottery (Ewerhart, 2017), our task is to integrate the models of cooperative games and games with asymmetric information.

A player is an enterprise, or its functional part (department, for example). A game is a certain situation. The decision, or a player's move, is the choice of a strategy, when different companies participate in a competition, competing with each other, and the choice of a strategy is one of the most important factors in this struggle if we consider it in the long run. Companies are not interested in publicizing their strategies, which is why a so-called "competitive intelligence" is needed, traditionally used by enterprises for better understanding of their external environment (Foley & Guillemette, 2017).

It is worth noticing that here are no final victories in economy, only efficiency and results. Since there is no "victory", or "finish", there is no final state to which a company should aspire. The state of an enterprise "floats" in a multidimensional phase space, formed by the Cartesian product of axes with all possible quantitative characteristics. At the same time, a company is constantly influenced by external, random or systemic factors creating some chaos in the form of interference or distortion of information. Information plays a key role in the choice of a strategy, thus the level and quality of access to information is important. In particular, we proceed from the fact that different companies have different possibilities of access to the market information (and beyond), depending on which resources they are willing to spend to receive and process this information. Enterprises can discuss their actions, negotiate and exchange information. Furthermore, enterprises can join coalitions, for example, network structures whose participants are integrated within the value chain of common products with different contribution to the outcome. An example of such a network structure is the cluster of information and computer technologies that is part of the Skolkovo fund, which is sometimes called the "Russian Silicon Valley". Thus, in the game-theoretic description of companies' behavior in terms of selection and implementation of a particular strategy in a competitive environment, the cooperative model is most suitable (Elkind & Rothe, 2016).

The strategy design process should be made more formal in order to provide additional possibilities for automating the decision-making procedure to justify the choice of a strategy. Figure 1 shows a diagram of the design process, which includes the analytical stage and the stage of strategy selection, reflecting the author's approach to addressing the problem under consideration.

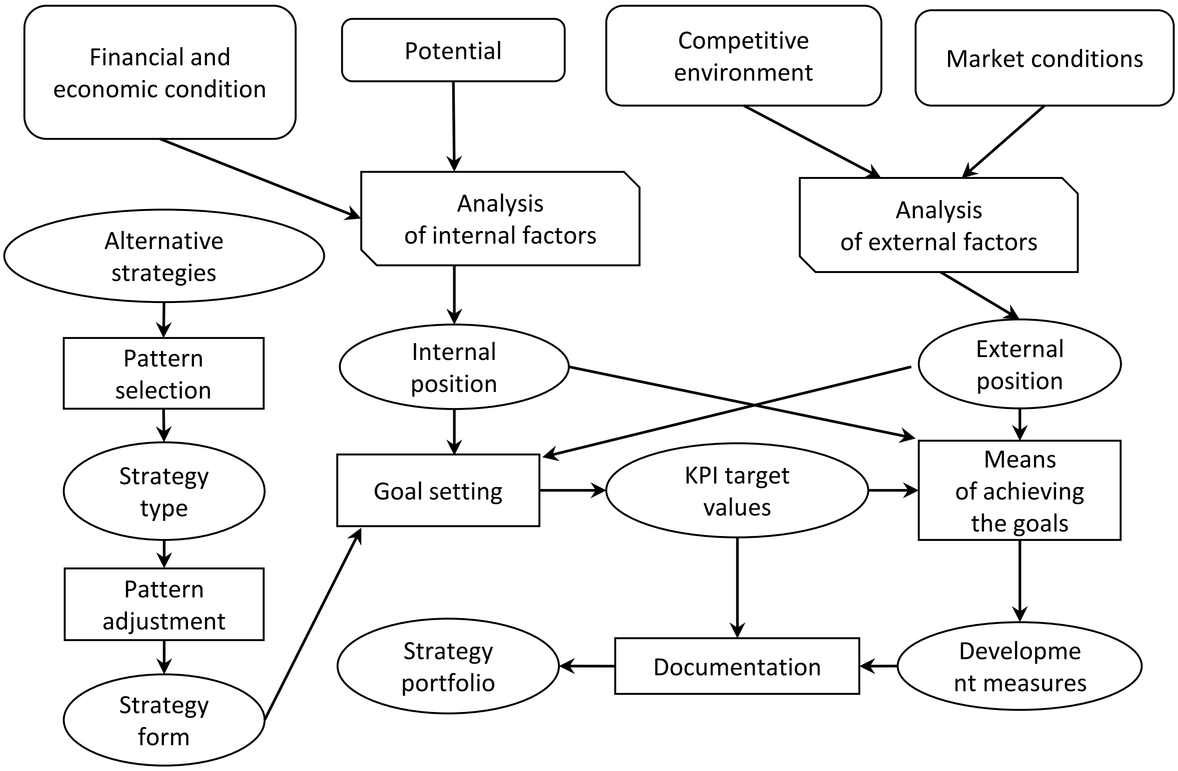

Figure 1. Technological network of enterprise strategy design

Information disturbances occur during the strategy selection and its implementation (Fang et al., 2014). There can be no deliberately winning strategy, since the strategy makes it possible to adapt to the external environment that is subject to dynamic changes. It is therefore hardly possible to fully calculate all the scenarios in strategic analysis. Strategy selection involves risk, uncertainty, lack of information, information interference and noise, so there are no ready-made recipes for sustainable long-term strategies in a dynamic environment (Weber, 2017). This means that a strategy should be selected with the participation of analytical experts.

3.2. Business strategies of enterprises: classification

Object classification is usually based on a set of attributes. Each value of one of the characteristics or all values of the characteristics form classification groupings of objects with common features. In our case, these objects are strategies. When classifying strategies, a multidimensional classification is used (Witten et al., 2016). Multidimensional classification is characterized by independent classification for each attribute. Thus, a particular strategy can refer to different classes (types) of strategies.

Increasing the coherence and integration of procedures for analyzing resources, processes, technologies, organizational structures and other components within the framework of strategic engineering of enterprises requires mastery of patterns. A pattern is a set of characteristics making it possible to split the sets of properties, calculating similarities between objects (Wold, 1976). In this study, we will take the object class pattern as a model of objects of a given type. Patterns allow to identify the characteristic properties of a strategy that are present in its design.

One example of a pattern is a “radical renewal” that takes the meaning of “yes” (present) or “no” (absent). An example of an elementary pattern allows differentiating an innovation strategy, in which the sign of a radical renewal is present, among other strategy items. Other patterns can have several characteristics that can also show both multiple and/or embedded values.

A strategy type is a set of strategies with common features. Respectively, a strategy form is one of the elements of a set of strategies of the same type, which is unique within this type. This does not exclude the possibility that different types of strategies may have a non-empty intersection, that is, the same strategy may belong to different types. Nevertheless, in different approaches to classification, strategies identical in their essence may have different names, that is, designations. The multitude of all possible strategies S is a combination of multitudes formed by the types of strategies of all known types:

$$S = S_\alpha \cup S_\beta \cup \ldots \cup S_\omega, \quad (1)$$

where S is the universe of strategies; S_α, S_β and S_ω – accordingly, the strategies of α, β and ω types; $\cup$ is the unifying operation of multiple strategies. Despite the fact that the partition of the multitude of all existing strategies S on types S_α, S_β, … S_ω relates to the problem of classification; the multitudes containing types of strategies of the same type, in the theory of multitudes do not constitute classes, since, in many cases, they have a non-empty intersection.

Lower order strategies should adapt to the higher order strategies. In particular, corporate strategies depend on state strategies. Contractors' strategies depend on corporate strategies, etc. Strategies play a significant role not only for large enterprises, but also for medium and small enterprises (Bagnoli & Vedovato, 2014). In this case, a business strategy is a fairly general concept, regardless of the size, organizational structure and type of economic activity of an enterprise, to which it is directly related.

It is possible to identify and give brief characteristics to a number of types of non-standard business strategies:

- "Floating", that is, dynamically and frequently changing strategies, as a rule, with a shortened life cycle;
- "Ambivalent", in which direct goals are substituted with the equivalent ones to better counter competitive intelligence;
- "Alternative", when a company's behavior seems irrational due to its desire to gain benefits in other areas of activity;
- "Empty", if a company does not have any strategy at all;
- "Destructive", i.e. initially having bottlenecks, due to which they are impossible to implement properly, etc.

3.3. Formalization of a company's business strategy

Formally, the strategy structure can be written in the form of equality, on the right side of which there is a tuple of two components:

$$s \overset{\text{def}}{=} \langle G, T \rangle, \quad (2)$$

where s is a strategy of an arbitrary form; G is a multitude of a strategy's goals s; T is a multitude of means of achieving goals from the multitude G for the strategy s.

The goal setting implies no more than the desired result that must be achieved, while the problem statement formulates a certain state of affairs that needs to be corrected. Unlike the mission, a goal is more specific and aims to bring benefits to its owner and is generally born in the face of competition or other conflict (Booth, 2015).

According to S.M.A.R.T. goal setting (Bjerke & Renger, 2017), goals must be specific, measurable, achievable, realistic and time-bound. Goals should be set by means of KPI (Berzisa et al., 2015). Each strategic goal g is equipped with a certain set of U critical success factors, CSF:

$$gF\left(U = \{u_i\}\right), \quad (3)$$

where g is s strategy goal; U is the multitude of CSF for g goal; u_i is the i-th CSF for g goal; F is the one-to-many mapping.

CSF $u_i \in U$ is measured by a set of KPI (key performance indicators):

$$uF\left(K = \{k_i\}\right), \quad (4)$$

where u is the CSF for g goal; K is the multitude of KPI for k_j goal; k_i is the *j*-th indicator for u CSF; F is the one-to-many mapping.

KPI $k_j \in K$ is formed by a pair of actual k_{fact} and planned k_{plan} values:

$$k = \left\{ k_{fact}, k_{plan} \right\}, \tag{5}$$

where k is the u CSF for g strategy for *s* goal; k_{fact} is the actual value of k KPI; k_{plan} is the planned value of k KPI.

In some cases, when the desired result cannot be formulated in a numerical form, the planned value k_{plan} may be undefined. Typically, for short-term purposes, it is always possible to choose the planned value. Long-term goals are very often impossible to formulate clearly enough to talk about planned values.

The connection of goals and means of their achievement is carried out on the basis of the CSF goal needs in the means to achieve the goals. Accordingly, the means to achieve goals include methods, methodologies, tools, approaches, principles, criteria, measures, activities, know-how, etc.

Strategic methods for achieving goals can be taken as a whole, irrespective of any particular goal. A set of means to achieve goals is limited to some list of the T multitude. At the same time, the choice of means to achieve strategic goals is limited, on the one hand, by the company's resources and regulatory acts, on the other hand.

The equation (2) shows that formally a strategy can be defined as a tuple of two components with a set of goals and a set of means to achieve goals. This decomposition allows describing the structure of strategies. For instance, "RUSNANO" corporation has developed a strategy aimed at attracting additional investments and improving efficiency of the management system. As a means to achieve these goals, the management of "RUSNANO" decided to change its business model and configuration of the corporate structure. Nevertheless, it is important not only to know the strategy structure, but also to understand quantitative values characterizing this strategy. These values will be called strategy components. Accordingly, each component is defined for a certain type of value and can take a value from this type. Component type can be logical, numeric, interval, transfer, enumeration, linguistic variable, etc.

The form of an innovation strategy can be determined by the values of such components as "leadership" $\left(C_{lead}\right)$ and "aggressiveness" $\left(C_{agr}\right)$. To avoid ambiguity in identifying the components' values of the innovation strategy, it is necessary to conduct additional analysis, by equipping the "leadership" and "aggressiveness" components with confidence factors (CF), ranking them as follows: 0 is the minimal leadership (aggressiveness), 100 is the maximum leadership (aggressiveness) (Kalachikhin & Telnov, 2017). Confidence factors are obtained by means of a table or with the involvement of experts. In fact, the strategy of "revolutionary innovation breakthrough" is extremely aggressive, while the strategy of "acquiring rights to intellectual property" implies maximum leadership.

Thus, the strategy can also be an alternative for (2) in the form of a multitude of components initialized with some values. A strategy pattern with an identical set of components will be referred as the strategy type. Different types of assigning the components of a strategy to various values while preserving the components composition shall be referred as the strategy types. Thus, the strategy contains a certain pattern with specific values as its parameters.

The simplest and most common metric of comparing planned and actual indicators of the CSF strategic is as follows:

$$k_{eff} = \frac{k_{fact}}{k_{plan}}, \tag{6}$$

where k_{eff} is the efficiency indicator; k_{fact} is the factual indicator of achieving the goal; k_{plan} is the planned indicator of achieving the goal, $k_{plan} \neq 0$.

For a strategy with a set of G strategic goals with a set of K_{eff} indicators for their achievement, it is possible to build a Balanced Scorecard, BSC (Gomes & Romão, 2018), calculated as follows:

$$bsc = f\left(k_1^{eff}, k_2^{eff}, \ldots, k_m^{eff}\right), \tag{7}$$

where bsc is the BSC indicator; k_i^{eff} is the *i-th* progress indicator $g \in K$; $m = |K|$; K is the multitude of strategic goals; f is the method of calculating bsc index.

In this case, f calculation method aside from the $K_{eff} = \{k_i^{eff}\}$ set of indicators for achieving the goals, where $k_i \in K$, can also use some other indicators, for example, weight indicators $W = \{w_i\}$, calculated analytically, expertly or obtained in some other way. Thus, the f methodology can include calculating the average weighted, the geometric mean or other aggregation function.

The choice of a company's strategy is based on assessment of its potential and current state of the company's financial and economic activities. Different strategy types depend on different types of potential (Borodin et al., 2015). In addition to the potential, the company's development risks in the appropriate type of strategic direction (Kuzmin, 2017) and the external environment of the enterprise matter. External environment factors are determined by the state of an industry and the investment climate (Kauškale & Geipele, 2015). As a rule, the external environment factors have similar composition, but they manifest themselves with varying degrees of intensity. In turn, the assessment of financial and economic state of an enterprise depends on a number of aggregated coefficients, as well as the amount of surplus or shortage of funds needed to form stocks and costs (Antonovici, 2016).

3.4. Engineering of a company's business strategy

A strategy is often seen as a document that must first be developed and only then adopted, though strategy engineering usually poorly corresponds with the system approach (Wasson, 2015). A key role here is assigned solely to administrative procedures, which can sometimes only be strengthened by various cognitive, including collective analytical methods.

A formal strategy record provides a number of advantages. A strategy with embedded data structures can now be handled with the use of algorithms. Program logic may include the production rules stored in the knowledge base, which is the core of an expert system (Jan, & Contreras, 2016). This provides an opportunity for component-wise strategy "synthesis". Yet, this does not exclude the possibility of experts' participation in some synthesis operations. Evaluation of target values of indicators of achieving goals can be outsourced, that is, calculated by outside teams of competent experts. This allows generating the strategy content and makes the strategy creation a more flexible and safe process.

The choice of a strategy is based on information about the company's state and its external environment, as well as on informal corporate knowledge (Raudeliūnienė et al., 2018). Thus, before the approval of a document with the strategy description, it is necessary to identify the chosen strategy. In the next step, the sets of strategic goals and the means to achieve them are formed.

As the strategy moves to implementation, the goals are converted into tasks, and each task becomes a project, which involves a certain set of risks R. Thus, each goal g can be set with a certain probability P of achieving this goal:

$$P = 1 - R_{\text{ó}} = 1 - \sum_{i=1}^{n} Q_i \cdot Z_i, \qquad (8)$$

where P is the probability of achieving the g goal; $R_{\text{ó}}$ is the integral risk of achieving the g goal; Q_i is the degree (or magnitude of consequences) for the i-th risk, $Q_i \in (0,1]$; Z_i is the potential (or probability of occurrence) of the i-th risk, $Z_i \in [0,1)$.

The proposed strategy model can be used in the development of decision support systems, expert systems or other software tools.

3.5. Fluid business strategies

Deciding on the strategy is carried out in real conditions of uncertainty. In many cases, when deciding on the management of economic systems, one has to face different kinds of contradictions choosing of a better alternative, since in many cases:

(*A*) it is necessary to choose several alternatives that mutually exclude each other;

(*B*) it is impossible to be confident enough that the chosen solution, not the other seemingly right one, is really the best.

A good example of such a situation is the search for an optimal strategy, when, in anticipation of financial crisis, the management is trying to do everything possible to "stay afloat" in the near future, while the strategy adjustment still makes sense.

Rejecting the sole decision-making and moving to the other extreme, it becomes impossible the only right and optimal strategy. In this case, for (*A*) fuzzy sets should be used. A fuzzy set is defined mathematically as a collection of x elements of the X universal multitude and the μ function (Rodrıguez et al., 2014):

$$\mu_x : X \to [0,1]. \quad (9)$$

Suppose that there are *n* strategy types, each of which generates a $\tilde{S}_i$ fuzzy set. In order to generate $\tilde{s}$ strategy, formed by strategies belonging to $\tilde{S}_i$ fuzzy sets, it is necessary to form the following structure:

$$\tilde{s} = \left\{ \left\langle s_i, \mu_{S_i} \right\rangle \right\}, \quad (10)$$

where μ_{S_i} is s strategy membership function in S_i multitude of i-th type strategies.

The $\tilde{s}$ structure cannot be called a linguistic variable, so the strategy $s_i \in S_i$ does not rank in ascending or descending order, while a universal set of strategies S is discrete. Nevertheless, the normalization condition must be observed, that is, the sum of the values of the membership function μ_{S_i} for all types of candidates for the company's strategy should be standardized:

$$\sum_{i=1}^{n} \mu_{S_i}(s) = 1. \quad (11)$$

Thus, for each case, it is possible to find the best strategy with the highest confidence factor or use a "mixed" ("combined") strategy, investing resources proportionally to the value of the membership function μ_{S_i}.

In addition, for (*B*) case it is possible to generate only one strategy, which is set in the form of $\tilde{s} = \left\langle s, \mu_{S_i} \right\rangle$. The value of the membership function $\mu_{S_i}(x)$ indicates credibility and plausibility of strategy choice, when $s \in S_i$. Manipulating the initial data and using different estimates, different strategies with different values of confidence factors will be obtained at the output, which will allow to narrow the scope of decision-making and, in the end, push to the right decision.

4. DISCUSSION

To narrow down and clarify the object of research, it was suggested to use the term "business strategy" specifically for the economic activity of an enterprise. Various reliable sources indicate the existence of innovative (Valitov & Khakimov, 2015), competitive strategies (Morgan, & Strong, 2015), development strategies (Kuznetsov et al., 2015) and other business strategies, the overall classification of which is complicated by the fact that some of them overlap. The variety of business strategies is reduced to a set of basic types of strategies, replenished as the new strategies appear. There are multiple types of business strategies with unique characteristics, but similar within the framework of a common strategy type. Different implementations of the same type of business strategy are very possible due to a different content.

Strategy design has much in common with system design, making it possible to formalize the design process of a company's strategy. Strategy implementation is interpreted as a transformation of strategic objectives into specific actions to achieve goals, implemented through a set of tools.

Thus, the life cycle of a strategy can be divided conditionally into a short phase of strategy design and a long implementation phase. The cycle is closed, and the frequency of its turnover decreases as the size of the enterprise increases, since in relation to strategic management large enterprises have greater inertia than small and medium enterprises, SMEs (Cowling et al., 2015).

CONCLUSION

In the future, it is possible to develop a system for strategic decision-making based on the economic and mathematical model of an enterprise's strategy formalization. In this case, specification of a business strategy will determine the formation of data structures processed by product rules and other algorithms of the intellectual system. A productive feature of the obtained patterns of an enterprise's strategy is its relative simplicity, which allows to convert those patterns into the machine-readable format. Nevertheless, further development of business strategy patterns should be continued to adapt the mechanics of strategic decision-making to the distinctive features of a company's engineering issues. In addition, it would be useful to generalize formalization of a company's strategy to a broader concept of economic strategy, replacing an enterprise with any kind of commercial organization, and then replacing organizations with arbitrary economic agents, including consumers. In particular, the elaboration of formalization and engineering of generalized economic agents' strategy can be used in banking and macroeconomic regulation. Furthermore, a company's strategy needs to be considered in the context of integration of the information space in terms of unequal access to important information for various economic agents and their information confrontation due to competition.

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