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ASSESSMENT OF STRATEGIC OPPORTUNITIES OF THE ENTERPRISE IN CONDITIONS OF UNCERTAINTY

The work contains the development of theoretical and methodological provisions, practical recommendations for the analysis of the strategic capabilities of the enterprise and the evaluation of the effectiveness of the enterprise's strategy in complex conditions of uncertainty. The object of the study is the strategic capabilities of enterprises as a basis for the formation of strategic plans. The problem of evaluating the effectiveness of strategies and strategic capabilities of enterprises forced to function in conditions of uncertainty is solved.

The activity of Ukrainian enterprises in the difficult conditions of the war contributed to the emergence of the need for the formation of new approaches to the development and evaluation of strategies or the adaptation of existing ones to the new conditions of the external environment. If the factors and their characteristics cannot be determined, then the consequences of their impact on the enterprise's activities will be unexpected. And since the uncertainty of the future is often underestimated, this leads to companies choosing those strategies that do not help the company avoid external threats and do not allow to use the opportunities that uncertainty can hide. With the help of economic-mathematical modeling, a model for assessing the company's strategic capabilities was formed, which would make it possible to compare the available resources and possible challenges from the external environment, to investigate the relationship between the company's capabilities and its ability to achieve strategic goals. A methodology for assessing the strategic capabilities of enterprises using the tools of probability theory and the scenario approach is proposed.

The obtained results can be useful for determining when choosing a strategy and its evaluation by Ukrainian enterprises operating in conditions of uncertainty.

Keywords: *strategic analysis, strategy, strategic capabilities of the enterprise, methodical methods of probability theory, scenario method.*

1. Introduction

Ukrainian enterprises not only carry out, but also plan their activities in difficult and dangerous conditions of war, which made it necessary to form new approaches or adapt existing ones to the assessment of new threats of the external environment and situations that may arise. If in previous periods, problems arose due to insufficient awareness of the probability of future events that affect the opportunities of market participants, or events that are difficult to predict, then at the current stage, significant problems arise in enterprises due to the lack of experience in responding to these events and the need to assess one's capabilities under one or another scenario of the development of events.

In economic science, different interpretations of the concept of uncertainty are used. This is both the variability of the market and a certain form of existence of the real surrounding world, which is determined by the objective existence of probability and the incompleteness of the reflection of real events in the human mind [1–5].

Thus, it is possible to generalize «uncertainty» as the objective impossibility of obtaining any information about the functioning of factors of the external environment due to the ambiguity of their parameters.

In the practical activities of enterprises quite often, the uncertainty of the future is simply underestimated. Such a situation leads to the choice of those strategies that do not contribute to the company's avoidance of external threats and do not make it possible to use the opportunities that may be hidden by uncertainty. The traditional approach, which is used by most enterprises and which is based on the use of primarily financial forecasting tools, requires accurate predictions. This leads to their underestimation of uncertainty. Therefore, understanding the essence and nature of uncertainty, researching ways to take it into account when forming and evaluating the strategic capabilities of an enterprise will contribute to both increasing the level of effectiveness of strategic plans and the level of probability of their successful implementation and development of the enterprise, in general [3, 6–8].

When evaluating the strategic capabilities of an enterprise, it should be taken into account that the meaning attached to this concept is not always the same. Most often, this concept denotes the potential of the enterprise in the long-term perspective or to characterize the internal factors of the enterprise. In this case, it is about the availability and efficiency of the use of various types of resources by the enterprise. Along with this, another approach to the interpretation of strategic opportunities is found in the economic literature [4, 5]. This is the presence of favorable environmental factors or the absence of threats. It is also the ability to resist threats from the external environment. Thus, the assessment of the strategic capabilities of enterprises, taking into account the multifaceted nature of this concept, should be aimed at determining both the internal potential and forecasting the development of the external environment, which requires reducing the level of its uncertainty.

Strategic capabilities of enterprises were and are the subject of study by scientists [1–8]. Their attention was mainly focused on the analysis of external industry factors. Therefore, the subject of research in the field of strategic analysis for quite a long time was the relationship between the company's strategy and its external environment. They also formed a resource approach to the formation and selection of the company's strategy. However, the methodological aspects of the analysis of the strategic capabilities of enterprises, which involves a thorough assessment of the enterprise's ability to respond appropriately to the modern challenges of the external environment, require refinement and adaptation to today's conditions.

In view of the above, the conducted scientific research is important and relevant, since the effectiveness of their activities depends on the level of effectiveness of the strategies of enterprises. And how effective the strategy is depending on an objective assessment of the company's capabilities. Such an assessment should be based on reliable information about the internal and external environment of the enterprise in the present time and in the strategic perspective. Analysis of the level of uncertainty of the external environment will enable enterprises to take into account the probability of the occurrence of dangerous (or, conversely, favorable) scenarios of its development in their practical activities and react accordingly.

The aim of the research (in the scientific aspect) is to obtain effective mechanisms for assessing the strategic capabilities of enterprises in conditions of uncertainty in the external environment, to develop methods and tools for applying probability theory methods to reduce the level of this uncertainty. In the practical activity of enterprises, the implementation of the specified goal will make it possible to objectively assess the threats and challenges that may arise with a certain probability in the environment of their functioning, and adequately react to them.

2. Materials and Methods

Research methods were used in the work:
– mathematical modeling to form a model for assessing the company's strategic capabilities;
– scenario analysis for the analysis of the scenarios of the development of the external environment and the assessment of the strategic capabilities of the enterprise depending on the choice of the relevant scenarios;

– two-dimensional model for assessing the uncertainty of the external environment;
– methods of probability theory (in particular, Bernoulli and Bayes formulas).

3. Results and Discussion

Since the external environment is constantly and rapidly changing, it is advisable to direct the study of the company's strategic capabilities to the formation of the appropriate response of the company to these changes, depending on the scenario of the development of events. In this regard, the choice of strategy by an enterprise should, on the one hand, be based on an objective assessment of its capabilities in real time and in a strategic perspective, and on the other hand, focus on the most likely changes in the external environment and their consequences can cause Such a choice requires an assessment and comparison of the company's strategic capabilities with its goals and the necessary resources that will enable effective use of these capabilities. At the same time, methods of minimizing the level of uncertainty of the external environment, as well as contrasting possible threats with the company's potential capabilities to overcome these threats or minimize their impact on the company's activities, are especially important.

Uncertainty is a much broader concept than the risk faced by the enterprise while carrying out its activities, as it characterizes ambiguity, lack of knowledge about factors and the consequences of their influence. Most scientists believe that it is impossible to find means or methods that make it possible to completely get rid of uncertainty. In their opinion, the emergence of uncertainty and, as a result, risk is associated with two groups of factors:
– direct (occur in the internal and external environment of the enterprise and have a direct impact on its functioning, other things being equal);
– indirect (related to the influence of other enterprises on the enterprise's activities).

Taking into account the diversity and ambiguity of the concept of «uncertainty», both fuzzy sets, which involve the construction of a membership function, and the use of parameters characterizing the dispersion of measurement results accepted within the framework of probability theory are used for its assessment [9–12]. The given study is based precisely on the application of the second approach, that is, the interpretation of this concept as a doubt about something. If to take into account the result of measuring the state of the external environment, then «uncertainty» means doubt in the measurement results, since it is always reliably unknown how close the measurement result is to the actual value of the parameter. In the given interpretation, the uncertainty is a random variable, because the ability to disperse is a property of random variables.

Since the level of effectiveness of the chosen strategy depends on the objectivity and reliability of taking into account the conditions in which it will be implemented, the list of factors and their characteristics will not be determined, and accordingly, the consequences of their impact on the enterprise's activities will be unexpected. Depending on these conditions, which are presented in the research in the form of events that mean the occurrence of the influence of certain factors, the formation and selection of a strategy is carried out.

In the conditions of uncertainty of the external environment, it is advisable to use generalized data characterizing the factors of the external environment for the development of the company's development strategy. Let's choose the two-dimensional model of assessment of the external environment by R. Duncan as the basis of the research. According to this model, there are four types of uncertainty: low, moderately low, moderately high, and high uncertainty. Belonging to a certain type is determined by the corresponding characteristics of the environment: simple-complex, static-dynamic. Accordingly, the more complex and dynamic the nature of the factors of the external environment, the higher the level of its uncertainty. Let:

– A – an event characterized by the presence of a small number of factors;
– B – an event characterized by a slow change of factors over time;
– N – an event characterized by the presence of a large number of factors;
– M – an event characterized by rapid changes in factors over time.

Then the values of the probabilities of these events will be significant (Table 1).

Table 1

Determination of the type of uncertainty of the external environment by the probability of occurrence of relevant events

Types of uncertainty	Number of factors	Event probability	The rate of change of factors over time	Event probability
Low	insignificant	$P(A)$	slow	$P(B)$
Moderately low	significant	$P(N)=1-P(A)$	slow	$P(B)$
Moderately high	insignificant	$P(A)$	quick	$P(M)=1-P(B)$
High	significant	$P(N)=1-P(A)$	quick	$P(M)=1-P(B)$

Let's consider the probability space (S, F, P), in which:
– S – an arbitrary set, the elements of which are elementary events (a finite set of elementary events), $S=(S_1, S_2, S_3, \ldots, S_n)$;
– F – the sigma-algebra of subsets S of random events, closed with respect to operations of counted union;
– P – a probability measure or the probability of an elementary event (sigma-additive finite measure $P(S)=1$).
Then the space of elementary events S consists of events S_1, S_2, S_3, S_4, i. e. $S_i \bigcap S_j$, if $i \neq j$ (Fig. 1).

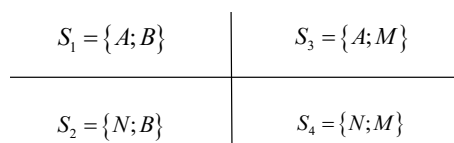|	
$S_1 = \{A; B\}$	$S_3 = \{A; M\}$
$S_2 = \{N; B\}$	$S_4 = \{N; M\}$

Fig. 1. Space of elementary events according to uncertainty types

The specified elementary events are equally possible, since there is no objective reason to claim that the possibility of one of them occurring is different from the possibility of another event. At the same time, the sum of the probabilities of all elementary events is equal to one: $\sum_1^n P(S_i)=1$. Accordingly, event S_4 is opposite to event S_1, these events are not compatible, since they do not have elementary events that were simultaneously favorable for

both event S_1 and event S_4. Events S_1 and S_2, S_1 and S_3, S_2 and S_4, S_3 and S_4 are pairwise compatible because there are elemental events that are favorable to both of them. Therefore, events S_1 and S_4 constitute a complete group of incompatible random events. In addition, the event S is a consequence of the corresponding events (A, B, N, M) if all the elementary events that are favorable to the event A (B, N, or M) are also favorable to the event S.

Thus, when analyzing the number of factors of the enterprise's external environment and the speed of their changes, one should take into account the nature of their occurrence, which may be random, or may be completely natural, when one event contributes to the occurrence of another. In addition, events that may initially be perceived as favorable, that is, as potential opportunities, under certain conditions can turn into their opposite – threats. In particular, favorable events (opportunities) used by competitors can be such threats.

The company's potential opportunities can be manifested in the following ways: attracting new customers, entering new markets or new market segments, expanding the range of products, increasing competitiveness, developing and improving performance and efficiency indicators, effective use of resources, etc. The given list of possibilities clearly characterizes the belonging of one part of them to the external environment, and the other to the internal environment. In part, they can be considered external and internal reserves that can be used by the enterprise.

Sometimes in the external environment of the enterprise there is a scenario in which the factors of this environment fully contribute to the realization of the potential opportunities of the enterprise, but the enterprise does not have the necessary resources or other components of the internal environment to take advantage of these opportunities.

Let's denote the possibility of achieving the appropriate level of strategy effectiveness (profitability or profitability of activity) as the occurrence of event R. Then the possibility of achieving a certain level of strategy cost (a parameter characterizing the costs of providing the enterprise with the necessary resources that are necessary for the implementation of its chosen strategy) will mean event C, and the level of strategy feasibility (parameter indicating the level of achievement of the strategic goal) – event D and other parameters. In particular, these can be events that mean the achievement of appropriate levels of adaptability, competitiveness, dynamism, reliability, reality, etc. Thus, let's get a new probability space (E, F, P). This space, formed by the specified elementary events, will reflect the internal capabilities of the enterprise to take advantage of the corresponding scenarios that have developed as a result of the occurrence of certain events in the external environment. For simplification, let's choose only eight from a large number of possible events, each of which characterizes the probability of the enterprise achieving the appropriate level of the specified parameter in the strategic perspective. Then $P(E)$ is the probability that all of the above events will occur, that is, the company will reach the strategically necessary level of values of the selected parameters. Under these conditions, it is possible to determine $P(E)$ by the rule of the product of the corresponding probabilities of elementary events R, C, D and others that form it: $P(E)=P(E_1)P(E_2) \ldots P(E_n)$.

Let's introduce the notation: m is the number of parameters characterizing the potential strategic capabilities of the enterprise, and n is the number of parameters for

which there is a probability of obtaining a low level of their importance in the strategic perspective.

Since the mentioned events characterize the formation of strategic capabilities of the enterprise in sufficiently different aspects of its activity, they can be considered as a set of eight relatively independent events. If the probability (p) that one of the parameters will reach the required strategic level is assumed to be 0.8, then the probability (k) that the corresponding strategic level will not be reached by the parameter will be 0.2 (as the probability of the opposite event, $k=1-p$). Then, according to Bernoulli's formula (1), the probability that half of the specified parameters will not reach the strategic level can be calculated as (2):

$$P = P_m(n) = C_m^n p^n q^{m-n},\qquad(1)$$

$$P = P_8(4) = C_8^4 p^4 q^{8-4} = \frac{8!}{4!(8-4)!}\cdot(0.8)^4\cdot(0.2)^4 = 0.046.\quad(2)$$

As it is possible to see, the probability that half of the specified parameters will not reach the strategic level is less than 5 %, which indicates a rather low probability of such an event.

In order to establish a connection between the strategic opportunities of the enterprise, which may arise in the external environment as a result of the occurrence of certain events, and the ability to use these opportunities (in the form of a strategy that contains a prospective plan of events with the corresponding probabilities of their occurrence), let's apply the Bayesian formula (3):

$$P = \frac{P(E\,|\,S_i)\cdot P(S_i)}{P(E)}.\qquad(3)$$

Events of the external environment (probability space (S, F, P)) can be sufficiently predictable and simple (as in the case of event S_1) or correspond to a high level of uncertainty (as in the case of event S_4). Whereas the events of the internal environment (probability space (E, F, P), E – a set of elementary events R, C, D and others) characterize the possibility (probability) of enterprises achieving the corresponding planned level of a strategic parameter in the long term. These parameters provide and characterize a generalized assessment of the effectiveness of the company's strategy.

Let's assume that the total probability of the enterprise achieving the appropriate level of strategy effectiveness $P(E)=0.07$, and the probability of occurrence of event S_4, which corresponds to a high level of uncertainty of the external environment and is defined as the product of elementary events $P(N)$ and $P(M)$: $P(S_4)=0.05$. Conditional probability characterizing the probability of an event (probability of reaching the appropriate level of all strategic parameters) $P(E\,|\,S_i)=0.09$. Then, substituting the values of the probabilities of the specified events into the Bayes formula, let's obtain:

$$P = \frac{0.09\cdot 0.05}{0.07} = 0.06.$$

Thus, the probability that the enterprise will achieve the planned level of strategy effectiveness (that is, all (eight according to the conditions of the study) strategic opportunities of the enterprise will be realized) before the end of the strategic planning period in the presence of a high level of uncertainty in its external environment is equal to 6 %.

The proposed technique will make it possible to investigate the probability of the enterprise realizing its capabilities under various types of uncertainty in the external environment. In addition, this technique will make it possible to analyze the existence of a gap between the company's goals and its capabilities, if such a gap exists, and also to identify directions for reducing this gap in the long-term perspective.

The technology of applying the method of assessing the strategic capabilities of the enterprise according to the proposed method involves the implementation of the following sequence of stages:

– determination of the main parameters, the level of achievement of which interests the company from the standpoint of achieving its long-term goals;

– determination of the overall probability of the enterprise achieving the appropriate level of strategy effectiveness in the strategic perspective;

– determination of the main characteristics of the external environment (the number of factors, the speed of their change and other features of their impact on the enterprise's activities);

– determination of the uncertainty type of the external environment in a strategic perspective;

– establishing the difference between the indicators of the strategic plan and the opportunities dictated by the actual state of the enterprise and the existing growth trends of the enterprise;

– determination of the probability of the enterprise achieving the appropriate level of strategy effectiveness (which will correspond to the full use of its strategic capabilities) in the conditions of existence of a certain type of uncertainty of the external environment during the strategic planning period;

– development of measures to increase the probability of full use of the company's strategic capabilities.

The list of specified measures can include, for example, measures to redistribute resources from unpromising or low-promising areas of the enterprise, measures to increase the level of its competitiveness or effectiveness, updating or expanding the product range, promotion to new markets or the development of new market segments, a more active innovation policy, reformatting or closing certain types of activities or divisions, etc.

Therefore, it can be argued that such characteristics of the external environment as the level of predictability and stability need to be used in the analysis of the strategic capabilities of enterprises, assessment of the factors of the external environment of the enterprise and its development prospects, scenarios of its possible states, as well as factors that may represent threats to the enterprise or constitute reserves improving its performance. In addition, in order to obtain an objective and reliable assessment of the internal capabilities of the enterprise, it is advisable to analyze the necessary reactions of the enterprise to the threats and opportunities of the external environment, the peculiarities and the nature of the influence of the factors of the internal environment of the enterprise. It will also be appropriate to form a forecast of the company's development prospects, taking into account the assessment of its resources and the efficiency of their use, and to evaluate the ratio between their actual

and required (strategic) value from the point of view of the probability of avoiding a threat or using advantages.

The proposed methodology will make it possible to determine the strategic opportunities and strategic orientations of the company's activity in view of the possible scenarios of the development of the external environment in conditions of its uncertainty and instability.

The results obtained during the research can be applied in the practical activities of enterprises during the development of strategies and evaluation of their effectiveness according to the parameters of effectiveness, cost, dynamism, adaptability, etc. In today's conditions, most Ukrainian enterprises are forced to plan their activities in conditions of complete uncertainty. Given this, having tools to reduce this uncertainty will help them make the process of selecting and evaluating strategies more informed and rational. Research and comparison of the opportunities that enterprises receive as a result of the influence of internal and external environmental factors will make it possible to choose the most competitive and optimal strategy, taking into account the complex and unpredictable conditions of today.

The proposed methodology is being tested in the practical activities of a number of Ukrainian enterprises in the western region. Since this process requires time to adapt the methodology to the specifics of activity and strategic planning of these enterprises, as well as measurement and generalization of indicators, the obtained results will be presented in subsequent studies.

The revision concerns the selection of a list of parameters characterizing the external environment of enterprises in wartime conditions. The limitations imposed by these conditions require further study and systematization. Further research will be conducted in this direction and will relate to a more thorough analysis of the features of the strategic planning of enterprises during the war.

4. Conclusions

The application of the proposed methodology in the practical activities of enterprises when forming their strategic plans and determining their effectiveness will contribute to the study of probable changes in the external environment, the assessment of opportunities for obtaining competitive advantages, as well as the need for the necessary resources and costs. The study of the strategic possibilities of the enterprises will make it possible to evaluate the possible scenarios of the development of the external environment and to choose adequate strategies for the development of the enterprise. They can be useful for assessing existing resources, as well as forecasts for their more effective use in the future, researching the strategic gap between these indicators.

Analysis and assessment of existing resources and their comparison with the company's capabilities, taking into account the identified scenarios of environmental development, will make it possible to form optimal competitive advantages in the long term.

The possibility of simultaneous assessment of a large number of criteria characterizing the situation that will occur with a certain level of probability in the future, makes it possible to choose an effective strategy of the enterprise's activity, to predict the results of this activity. Therefore, it is advisable to carry out further research in the field of evaluating the effectiveness of enterprise strategies in the direction of a more detailed analysis of the factors of the internal environment in order to obtain an assessment of the nature of the emergence of its internal opportunities and factors of the external environment that form the level of its certainty and stability.

Conflict of interest

The author declares that she has no conflict of interest in relation to this research, whether financial, personal, authorship or otherwise, that could affect the research and its results presented in this paper.

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Use of artificial intelligence

The author confirms that she did not use artificial intelligence technologies when creating the current work.

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