

MANAGEMENT OF MARKETING RISKS OF INNOVATIVE ACTIVITY

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Abstract. The article discusses the essence of innovative risks, in particular, one of their most important components - marketing risks. It is noted that marketing risks are multifactorial in nature. As a method of analyzing the marketing risks of innovation, a taxonomic approach is proposed. It allows to evaluate the degree of conformity of the characteristics of multidimensional objects to a reference sample. The proposed approach allows you to scientifically substantiate the optimality of management decisions regarding the implementation of innovative projects in terms of minimizing marketing risks. The aim of the article is to substantiate the possibility of applying the method of taxonomic analysis to assess the marketing risks of innovation and substantiate management decisions on this basis.

Keywords: innovation, risk, marketing risk, multidimensional objects, taxonomic analysis.

Introduction

The current stage of development of market relations is characterized by increased innovative activity of enterprises. Innovation today is a factor in ensuring the high reputation of the enterprise and a means of maintaining its competitive advantages in the market.

A natural process of development of the market environment in conditions of innovative activity is a high degree of uncertainty, a rapid change in consumer preferences, sharp fluctuations in demand, the transience of fashion trends, and the acceleration of the moral aging of marketable products. The key to the commercial success of enterprises in such conditions is the constant generation of ideas, the introduction of innovative solutions, updating the technical and technological component of the production process and the activation of innovative activities of the enterprise as a whole.

The process of introducing innovations is characterized by a high degree of uncertainty and is always accompanied by the action of risk factors that the producer has to face. In market conditions, marketing risks are most often indicated among the influencing factors. The result of innovative activity largely depends on the reliability of the producer's forecasts regarding the main market trends, on the correct definition of their market niche, on modeling the actions of real and potential competitors, on taking into account the influence of other marketing factors. Therefore, the theoretical and practical issues of managing innovative activities of enterprises under the influence of marketing risk factors are becoming especially relevant.

The problems of risk management of innovation and, in particular, marketing risks were studied by such domestic and foreign scientists as Gracheva M.V. [9], P. Kovalev [13], T.Oklander [20], R.G. Eccles, S.C.Newquist, R.Schatz [7], M.Korobko [14], E.I.Laburtseva [15]. Most often, the

publications pay attention to the consideration of the essence of innovative risks, their classification, and sources of occurrence. Significantly fewer publications are devoted to the regulation of marketing risks. This led to the relevance of further research in this direction. Based on the foregoing, the aim of the article is to develop approaches to risk management of innovative activities based on the analysis of the influence of factors of the marketing environment in the formation of a portfolio of projects and the selection of projects that are subject to minimal exposure to risk-generating factors.

I. Literature Review.

The founder of the economic theory of development, which is based on the introduction of progressive thought, is rightfully considered the Austrian and American economist Joseph Schumpeter. According to his theory, it is innovations that influence economic processes and are the driving force of economic growth [1]. Among the followers of J. Schumpeter, who emphasize the dependence of the efficiency of enterprises in competitive conditions on their innovative activity, may be mentioned G. Bonanno [3], Brander and Eaton [4], Schmalensee [23], Banbury and Mitchell [2] Cefis and Marsili [5].

The article [21] focuses on the analysis of success factors of innovative projects, and also notes that innovative activity is associated with significant risks, which should already be taken into account at the design stage. The issue of the importance of the innovation management process in order to reduce the risk factors is mentioned by the authors of the works [18; 10; 22]. The manuscript [16] emphasizes that the results of innovative activities of companies are largely determined by the parameters of market demand, while indicating the presence and necessity of taking into account marketing risks.

The problems of marketing safety of innovative activities are reflected in the scientific works of E. I. Laburtseva [15], which emphasizes that the effective management of marketing risks of innovations should be based on the ratio of expected profit and risk. Optimization of this ratio should be based on the collection and analysis of information, as well as on the basis of additional marketing research.

II. Theoretical Foundations of Marketing Risk Management of Innovation Activities of an Enterprise.

Today, a new philosophy is being put into understanding of the movement of enterprises along the innovative path, based on activity and development dynamics, which carries a number of positive factors, as well as dangers and threats [6].

Innovations in the form of introducing developments in the production or management processes in the form of a new product, production technologies, marketing mechanisms, management principles, etc., contribute to increasing the efficiency of the enterprise, increasing the degree of satisfaction of consumer needs. On the other hand, the introduction of intellectual property into

production and the development of new products based on them significantly activate the obsolescence of existing products; the emergence of new needs from customers; changing tastes and preferences of consumers; shortening the life cycle of goods; increased competition [11].

Thus, being a complex of additional opportunities for market entities, innovative activity requires maximum attention to a number of additional conditions that significantly complicate it. A list of the main factors accompanying innovation processes is given in table 1.

Table 1. The impact of innovation on the activities of economic entities

Positive	Conditionally negative
1. Allow the company to improve or bring to a whole new level all the functional components of the activity	1. They cause a reduction in the life cycle of goods and, as a result, accelerate the moral aging of products
2. Allow you to gain competitive advantage by releasing new products or products of improved quality	2. Form increased consumer requirements for the quality and range of products and services
3. They are the source of the potential of the enterprise	3. They are a factor in economic growth and strengthening the market position of competitors
4. Stimulate the creative activity of employees	4. Are the subject of fraudulent activities by competitors
5. Form the image of the enterprise	5. Increase risk of financial losses of the business
6. Stimulate scientific and technological progress	6. Require additional marketing costs

Source: Own elaboration

The list of factors given in table. 1, can not be called complete, but it allows to draw conclusions about the ambiguity of the impact of innovation on business results. Moreover, as S. Lobunskaya correctly notes, “the lack of innovation in the enterprise’s activity itself is a factor of outstanding risk and threats to the enterprise” [17].

In this context, the innovative security of the enterprise is ensured by the search for the optimal balance between the feasibility of innovation and the level of risk from its implementation. Based on this, the management of innovative activities of an enterprise today should be considered in terms of finding a balance between the predicted effectiveness of an innovative project and the risk associated with scientific and technological developments and their implementation [12].

Researchers identify several types of risks that are most characteristic of modern conditions of innovation, a separate group of which are marketing risks. Marketing risk is characterized by the unpredictable possibility of deviation of the financial and production performance of the company from the predicted results as a result of the influence of market factors (the degree of readiness of the market environment to accept innovation, reduced demand, price fluctuations, increased competition, miscalculations in the marketing strategy, etc.). An insufficient level of professionalism of the marketing services of the enterprise, as well as the volatility of the market environment, may come as

a source of such a risk. Thus, the protection of the enterprise from marketing risks can be considered in terms of minimizing the consequences of an inefficiently selected model of market behavior by avoiding errors in the product, marketing, communication or pricing policies.

Marketing risks are multifactorial in nature, therefore, their management should be based on identifying a complex of risk-generating factors and neutralizing the possible impact of the most significant of them. The procedure for optimizing the portfolio of innovative projects in order to minimize the risks of their implementation is characterized by the block diagram shown in Fig. 1.

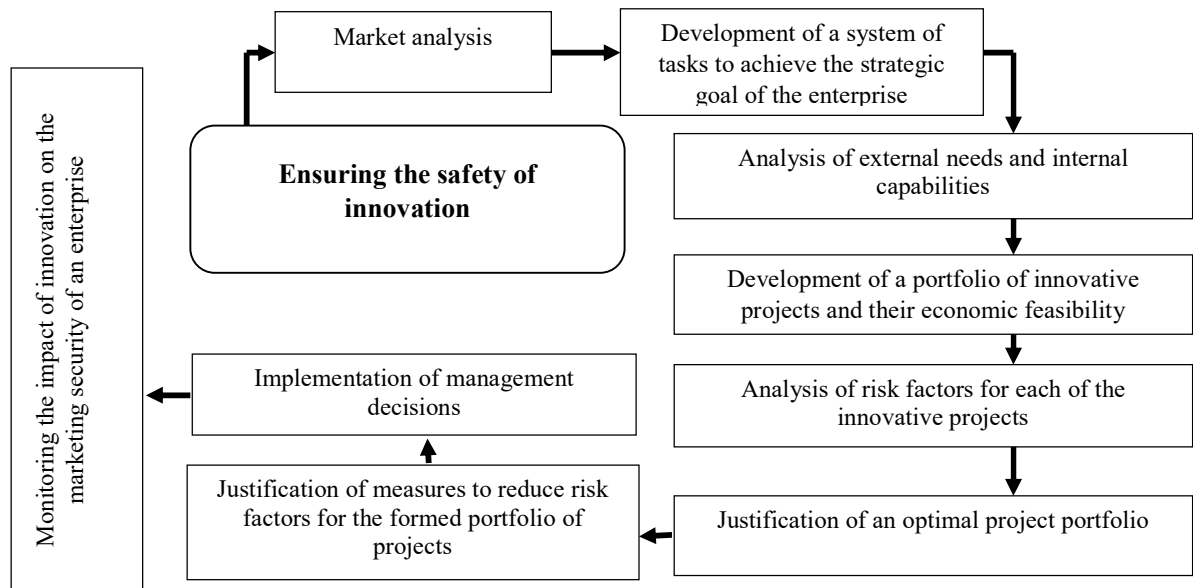


Fig 1. Innovation Marketing Risk Management

Source: Own elaboration

One cannot disagree with the statement of V.M.Molokanova that “portfolio management requires holistic thinking from managers in order to capture the complexity of problems and the sources of their occurrence, to correctly understand the relationships and interactions between phenomena and processes that are related to different levels of project management” [19].

III. Methodological approach to managing marketing risks of innovative projects

The procedure for the formation of an optimal portfolio of innovative projects is a multi-criteria choice, when from the set of proposed projects $P = \{P_i\}$ with $\{i = 1 \dots n\}$ it is necessary to choose projects that have minimal risks of their implementation.

It is proposed to put the method of taxonomic analysis as the basis for solving the problem of forming an optimal project portfolio. Among the advantages of this method can be noted [8]:

- the ability to compare the objects of study, which are characterized by many disparate parameters;
- the ability to streamline multidimensional statistical values into a single quantitative characteristic;
- the ability to build a generalized assessment of a complex object or process;
- the ability to assess achieved at a certain point or for a certain period, the "average" level of the value of the signs that characterize the phenomenon under study;
- the ability to combine the values of several factors that characterize group indicators, and reduce them to an integral assessment.

Due to the fact that taxonometry allows to determine the degree of influence of each of the analyzed indicators on the final result, this technique makes it possible to expand the scope of methods for assessing the marketing safety of an enterprise and outline ways to increase it.

The purpose of taxonomic analysis in this aspect is to compare enterprise projects as multidimensional units, select those projects that are as close as possible to the "ideal model" in terms of marketing risk indicators, as well as determine the degree to which the obtained results deviate from ideal ones.

The procedure for solving the problem of choosing the most risk-free projects includes three stages.

1. Formation of an ideal multidimensional object in terms of marketing security. For this, from the composition of real-life projects, characteristics are selected that correspond to the best values in terms of ensuring marketing security. These values are attributed to the ideal (not really existing) multidimensional point with the most desirable really existing values of the attributes.

2. Determination of the distance (d) of each real point (B_i) to the ideal point (I_{id}).

3. Ordering of all multidimensional points by the degree of their proximity to the ideal point and choosing the best according to the criterion of the minimum distance to the standard.

The list of risk factors that affect the results of the implementation of innovative projects and, accordingly, the marketing security of the enterprise, is individual for each specific case and should be formed depending on the specifics of the market entity and the objectives of the assessment.

A general list of marketing risk factors may include:

- capacity of the target market;
- the predicted level of product competitiveness;
- the degree of uniqueness of the goods;

- the possibility of price maneuvering;
- customer loyalty to the brand;
- the willingness of consumers to perceive the product;
- the degree of competitive rivalry in the market.

Multidimensional points that characterize the security of the implementation of an innovative project in this configuration will have different dimensions. Therefore, a prerequisite for comparing them is standardization - the calculation of normalized dimensionless values with the subsequent calculation of the distance from each point to the standard, the average of the obtained values and the mean square deviation of the found distances. In this case, the closer the unit in the aggregate will be to the reference point, the smaller the calculated value will be.

Thus, the value of the indicator of marketing safety of innovative activities of the enterprise will be in the range from 0 to 1. The closer to 1 the calculated value, the lower the risk level of project implementation. Projects that have received minimal taxonomic assessments are characterized by the maximum level of risk of their implementation, and therefore require special attention to the analysis of risk factors and caution in deciding on their implementation.

IV. The practical application of the method of taxonomic analysis in the management of marketing risks of innovative projects.

The company is faced with the task of selecting projects whose investment will be accompanied by minimal marketing risks. To evaluate the indicators that are involved in the calculation, additional marketing research is necessary. In particular:

- the predicted level of product competitiveness is an integral value calculated on the basis of applying the most suitable methodology for evaluating a given product;
- - consumer loyalty to the brand can be assessed by studying public opinion and brand perception using methods of semantic analysis;
- the degree of competitive rivalry in the market is estimated as the weighted average forecast for the development of competitive forces in the market.

Based on the fact that the value of consumer loyalty to the brand for the products of this enterprise will be the same for all projects, it is logical to replace this indicator with an indicator of consumer willingness to perceive the product.

Table 2. Values of indicators of marketing security of innovative projects

Project marketing safety indicators	Project 1	Project 2	Project 3	Project 4
1. The capacity of the target market (mln. UAH).	300	270	170	330
2. Projected level of product competitiveness	3,8	3,12	3,44	2,97
3. The degree of uniqueness of the product (points)	4	4	5	3
4. The possibility of price maneuvering (%)	12,4	13,2	17,1	9,8
5. The willingness of consumers to perceive the product (points)	8,13	7,43	8,76	7,71
6. The degree of competition in the market	0,76	0,63	0,58	0,82

Source: Own calculations

Table 3 is a matrix of initial values, where m_j is the average value of the indicator i , σ_j is the estimate of the mean square deviation for each indicator:

Table 3 - Matrix of initial values (Xi)

Projects	Project Safety Indicators					
	1	2	3	4	5	6
1	300	3,8	4	12,4	8,13	0,76
2	270	3,12	4	13,2	7,43	0,63
3	170	3,44	5	17,1	8,76	0,58
4	330	2,97	3	9,8	7,71	0,82
Factor type	+	+	+	+	+	-
m_j	267,5	3,3325	4	13,125	8,0075	0,6975
σ_j	60,15605	0,318855	0,707107	2,616653	0,500818	0,096534

Source: Own calculations

In terms of the effect on the overall result, all factors are divided into stimulants and destimulants. In this particular case, factors 1 to 5 are stimulants (+), factor number 6 is a destimulant (-).

Table 4 is a matrix of standardized values obtained by normalizing the initial index.

Table 4. Matrix of standardized values of safety characteristics (Zi)

Projects	Project Safety Indicators					
	1	2	3	4	5	6
1	0,540262	1,466182	0	-0,27707	0,2446	0,647442
2	0,041559	-0,66645	0	0,028663	-1,15311	-0,69924
3	-1,62078	0,337143	1,414214	1,519116	1,502542	-1,21719
4	1,038965	-1,13688	-1,41421	-1,27071	-0,59403	1,268987
M=	0	0	0	0	-4,2E-16	0
S=	1	1	1	1	1	1
	+	+	+	+	+	-
Zo=	1,038965	1,466182	1,414214	1,519116	1,502542	-1,21719

Source: Own calculations

At the next stage, the distances of each point to the reference point, the average value and the standard deviation of the found distances, as well as the maximum statistical distance, the intermediate and final indicator of the marketing safety of the projects are calculated. The calculation of the values is presented in table. 5

Table 5 - Calculation of taxonomic distances in the coordinate space

Projects	Distance to point Z			Rank
	Dio	Ci*	Ci	
1	1,3282895	0,3930693	0,606931	1
2	2,0504193	0,6067629	0,393237	3
3	1,4447313	0,4275269	0,572473	2
4	2,5958931	0,7681803	0,23182	4

Source: Own calculations

The closer to the value 1 is the calculated value, the more the characteristics of the object of study correspond to the maximum level of security implementation. Thus, according to the results of the calculations, Project 1 has a minimal level of marketing risk of implementation. The calculated result of Project 4 is maximally distant from the ideal point and cannot be considered appropriate for implementation according to the result.

Conclusions

Based on the study, the following conclusions can be made.

1. Innovation activity, as a prerequisite for successful existence of enterprises in market conditions, is associated with the action of a large number of risk factors.
2. Marketing risks having a multifactorial nature have a great influence on the results of innovation activity.
3. The method of taxonomic analysis allows you to compare multivariate values, such as marketing risks, expand the scope of methods for assessing the marketing security of enterprises and the projects they implement, optimizing the management of their innovative activities.

Further research will be aimed at optimizing the calculation of the values of the marketing safety factors of the projects implemented by the enterprise.

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