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**Angela B Olkhovska**  
PhD in Pharmacy, Associate  
Professor, Associate Professor of  
the Department of  
Pharmaceutical Marketing and  
Management, National  
University of Pharmacy,  
Valentynivska St, 4, Kharkiv,  
Ukraine

**Volodymyr V Malyi**  
D.S. in Pharmacy, Professor,  
Head of the Department of  
Pharmaceutical Marketing and  
Management, National  
University of Pharmacy,  
Valentynivska St, 4, Kharkiv,  
Ukraine

## Risk factors systematization and assessment in the marketing communication activities of pharmaceutical enterprises

Angela B Olkhovska and Volodymyr V Malyi

### Abstract

**The aim of this paper:** systematization of risk factors in the marketing communication activities of pharmaceutical enterprises in promoting new medicines in the market and justifying the negative effects of these factors, their impacts on the company's objectives.

**Materials and Methods:** The research has been based on the scientific publications in the professional and economical field, the results of interviews with experts involved in the pharmaceutical sector of the health industry, including the Directorate of Pharmaceutical Manufacturers, wholesale intermediary enterprises, pharmacy managers, regional medical (pharmaceutical) representatives of foreign pharmaceutical companies. For the implementation of the above tasks of the study, the methods of content analysis, logical analysis, grouping and generalization, structural analysis, hierarchical classification, "tree of objectives" have been applied, with due regard to the SMART requirements. To estimate the degree of consistency of expert opinions, the concordance ratio has been calculated.

**Results and Discussions:** A register of risk factors in the marketing communication activities of pharmaceutical enterprises that can critically affect the outcome of the promotion of new medicines in the market has been compiled, and such risk factors have been ranked. It is reasonable for the entities involved in the pharmaceutical market to approve the formation of the objects of their activities and use the concept of management of such objectives with application of the SMART methodology. The indicative purposes of the marketing communication activity of the pharmaceutical manufacturing company have been demonstrated on the example with consideration of the SMART requirements, using the "tree of objectives" method. Possible conditions, negative consequences and impacts of risk factors on the purposes of the pharmaceutical enterprises in the marketing communication activity have been substantiated.

**Conclusions:** Detection of marketing risks in the marketing communication activities of pharmaceutical enterprises, their timely identification and assessment will contribute to ensuring the competitive advantages of the company in the domestic and foreign markets. Substantiated risk management will provide an opportunity for pharmaceutical companies to minimize investment costs in achieving the goals of a campaign promoting the use of new medicines through a variety of marketing communications tools. The compiled register of risk factors forms the basis of our mathematical analysis and risk assessment model in the marketing communication activity of pharmaceutical enterprises during the promotion of a new medicinal product in the market in terms of limiting and/or saving investment funds on marketing communications. The proposed model allows the senior management of the company to make informed decisions and to choose the best possible strategy of risk management in the marketing communication activities of pharmaceutical enterprises.

**Keywords:** Pharmaceutical enterprises; marketing communication activities; medicine; risk factors

### 1. Introduction

The modern marketing environment generates additional elements of uncertainty, expands the areas of risk situations. Under these conditions, there appear uncertainty and confusion in obtaining the expected result, and consequently, the degree of risk in the activity of all market actors is increasing <sup>[1]</sup>.

Functioning of pharmaceutical enterprises while forming modern Ukrainian economy necessitates their adjustment to possible risk situations in the external and internal environment. Marketing communications play an important role in providing timely responses and making sound decisions about choosing a risk management strategy.

Scientists consider an issue of risk factors systematization essential in the marketing communication activity of pharmaceutical enterprises while promoting new medicines to the market.

### Correspondence

**Angela B Olkhovska**  
PhD in Pharmacy, Associate  
Professor, Associate Professor of  
the Department of  
Pharmaceutical Marketing and  
Management, National  
University of Pharmacy,  
Valentynivska St, 4, Kharkiv,  
Ukraine

Scientists, if any, have already dealt with the problem of risks in the activities of pharmaceutical organizations. In particular, the paper [2] presents a research aimed at studying and assessing the risks accompanying the emergence and promotion of drugs to the market. The authors suggest an algorithm for the process of promotion of a new drug taking into account risks and an option of economic efficiency of the enterprise's communication policy, which allows to determine the losses and amount of the lost profit caused by the following risks, namely: the risk of improper arrangement and inadequate marketing research results, the risk of an incorrect choice of a sales strategy, risk of ineffective communicative policies, the risk of incorrect pricing.

The work [3] is devoted to the management of the risks associated with innovation in pharmacy and with the issues related to the quality of medicines. The scientists also highlight some approaches to the formation of the risk management system at different stages of development of the innovative medicine product.

In the paper [4], the author classifies the factors influencing the level of investment risks in the pharmaceutical sector. Based on the results of the questionnaire, the researcher estimates significance of each factor using the coefficients of concordance and the Pearson criterion. This made it possible to determine the factors that have the most significant impact on the level of investment risk in the domestic pharmaceutical sector.

The paper [5] contains the structure of internal risk-oriented audits of the pharmaceutical quality system. The author has proved the urgency of the improved effectiveness of internal audits of pharmaceutical quality systems of domestic manufacturers of medicines. It is suggested paying attention to the planning of audits and the formation of audit programs taking into account the risks to quality, inherent in one or another audit object. The author suggests making scope and frequency of audits of each individual process and operations within the process of the pharmaceutical quality system dependent on the degree of risk to quality.

However, the results of the analysis of achievements and developments of domestic pharmacists indicate insufficient attention to the risks in marketing communication activities of pharmaceutical organizations, which caused the relevance of the direction of research, as well as its theoretical and practical value.

**The aim** of this paper is to systematize and assess the risk factors in the marketing communication activity of pharmaceutical enterprises in promoting new medicines to the market, as well as to substantiate the negative effects of the manifestation of the factors mentioned and their impact on the organization's goals.

**2. Materials and Methods of the Research**

The research is based on scientific papers of professional and

economic character, as well as the results of interviewing of 88 experts of the pharmaceutical sector in the field of health care, including the Directorate of Pharmaceutical Manufacturers of Medicines, wholesale and intermediary companies, pharmacy managers, regional medical (pharmaceutical) representatives of overseas pharmaceutical companies. To accomplish the above tasks, we have used methods of content analysis, logical analysis, grouping and generalization, structural analysis, expert estimation, rank correlation, hierarchical classification, "objectives-tree", taking into account the requirements of SMART. To assess the degree of consistency of the experts' opinions, the coefficient of concordance (W) is calculated according to the formula:

$$W = \frac{12 \times S}{m^2 \times (n^3 - n)},$$

where *n* – is the number of factors;

*m* – is the number of experts;

*S* – is the sum of the squares of the deviation of the sum of the assessment ratings for all subjects to the survey from the average values.

The value of the coefficient of concordance is within 0 ≤ W ≤ 1. If the opinions of the experts on the influence of risk factors in the marketing communication activities of pharmaceutical enterprises on the process of promotion of new drugs to the domestic market completely coincide, then W=1, and otherwise – the coefficient of concordance is equal to 0 (complete inconsistency of expert opinions).

The closer the value of the coefficient of concordance to 0, the lower the opinion of the experts. If the value of this coefficient is less than 0.3, experts' opinions are considered inconsistent. When the value of the coefficient ranges from 0.3 to 0.7, the consistency is considered average. For a value which exceeds 0.7, consistency is assumed to be high [6, 7, 8].

In order to evaluate the significance of concordance coefficients with the purpose of substantiating their further application, we have calculated the Pearson's consistency criterion (χ<sup>2</sup>):

$$\chi_p^2 = m \times (n - 1) \times W.$$

The calculated χ<sub>p</sub><sup>2</sup> is compared with the table value for the number of degrees of freedom *K* = *n* - 1 = 18 - 1 = 17, and at a nominal level of significance α = 0.05. If the calculated value χ<sub>p</sub><sup>2</sup> exceeds the table one for the corresponding amount of freedom, then, at a given level of significance, it can be argued that the non-random consistency of the experts' opinions is determined.

Table 1 presents the results of the assessment of the consistency degree of the interviewed experts' opinions.

**Table 1:** Assessment of the degree of consistency of experts' opinions

Experts of the pharmaceutical sector in the field of health care	The number of experts		Concordance factor (W)	Pearson's consistency criterion, χ <sub>p</sub> <sup>2</sup>
	absolute, person	%		
Directorate of Pharmaceutical Manufacturers of Medicines	12	13,64	0,71	144,81
Directorate of Wholesale Intermediary Pharmaceutical Enterprises	19	21,59	0,75	242,81
Pharmacy managers	35	39,77	0,71	434,42
Regional medical (pharmaceutical) representatives of foreign pharmaceutical enterprises	22	25,00	0,72	270,50
Всего:	88	100,0		

The calculations of concordance coefficients testify to the high consistency of experts' opinions, since  $W > 0.7$ . The Pearson consistency criterion  $\chi^2_P$  for all segments of the experts polled exceeds the table value of  $\chi^2_{табл.} = 27.58711$  with a significance level of  $\alpha = 0.05$  and degrees of freedom  $K = 17$ .

With a probability of 95% it can be affirmed that consistency of experts' opinions is not accidental. Therefore, the results obtained are meaningful and can be used in further research.

**3. Results and Discussion**

Risk management is an integral part of effective management of any organization. Risk is inherent in pharmaceutical enterprises in all spheres of their activity, namely: manufacturing, financial, marketing, etc. The problem of the formation of competitive assortment, pricing, marketing and promotion of medicines is closely connected with marketing risks, which is exacerbated by uncertainty, complexity, and the speed of mobility of the factors of the external environment of the pharmaceutical enterprise.

Marketing risks are a set of risks inherent in the marketing sphere of the organization, characterized by the probable occurrence of certain events and their consequences, which impede or make it impossible to achieve goals at individual stages of marketing activity, or entirely in the field of marketing. Each stage of marketing activity has its goals, the

achievement of which is hampered by certain risks [9]. Marketing communications are essential for the pharmaceutical market promotion of new medicine products. They are used by enterprises to inform, persuade, remind and shape the attitude of the target audience to the product and image of the organization, etc.

We have compiled a list of risk factors (table 2) in the marketing communication activities of pharmaceutical enterprises which can critically affect the outcome of the market promotion of new medicine products, their sales volumes and a significant excess of marketing communications budget. We have systematized the risk factors by means of a hierarchical classification method based on sources of scientific literature [2, 10, 11, 12, 13] and interviewing 88 experts of the pharmaceutical sector in the field of health care in September 2016. External and internal factors have been distinguished as the basis of the hierarchical classification of risks in marketing communication activities.

The systematization of external factors is predetermined by the influence of political and economic processes, the level of competition in the pharmaceutical market, consumer behavior, etc. As a classification of internal factors we have used components of the internal environment of the organization, namely, marketing, finance, labor resources, the image of the organization.

**Table 2:** List of risk factors in marketing communication activities of pharmaceutical enterprises in the market promotion of new medicines, according to experts' opinions

<b>External factors</b>	
x1	Changing the legislative framework and legal regulation of circulation and promotion of medicines within the scope of the application of various elements of marketing communications.
x2	Changing (instability) of exchange rates.
x3	The introduction of new pharmaceutical products into the market (cheaper ones).
x4	Distribution of counterfeit medicines.
x5	Inconsistency of consumer properties of medicines with the expectation of the target audience.
x6	Violation by distributors and pharmacy networks of the manufacturer's marketing communication policy.
x7	False selection of target segment of the consumer market.
x8	Loss of control over promotional activities of wholesale and retail segments.
x9	Incorrect choice of a positioning strategy (consumer preferences).
x10	Competitor actions with regard to formation of a negative image and reputation of the pharmaceutical enterprise in the market.
<b>Internal factors</b>	
x11	Lack of experience of the own marketing service of a pharmaceutical enterprise in technology of the market promotion of medicines by means of using various elements of marketing communications.
x12	Incorrect budget for marketing communications, including shortage of funds.
x13	False definition of the purpose of the communicative policy of the enterprise.
x14	Incorrect selection of channels and marketing communications tools.
x15	Production of low-quality promotional products.
x16	Failure to adhere to the corporate style of advertising campaign.
x17	Failure to reach the target volume of sales of medicines.
x18	Marketing communications cost overrun over profit.

**Source:** compiled by the authors.

Graphical representation of external and internal risk factors in the marketing communication activities of pharmaceutical enterprises influencing the process of market promotion of the

new medicine products, based on the experts' opinion, is presented in the Figures 1 and Figures 2.

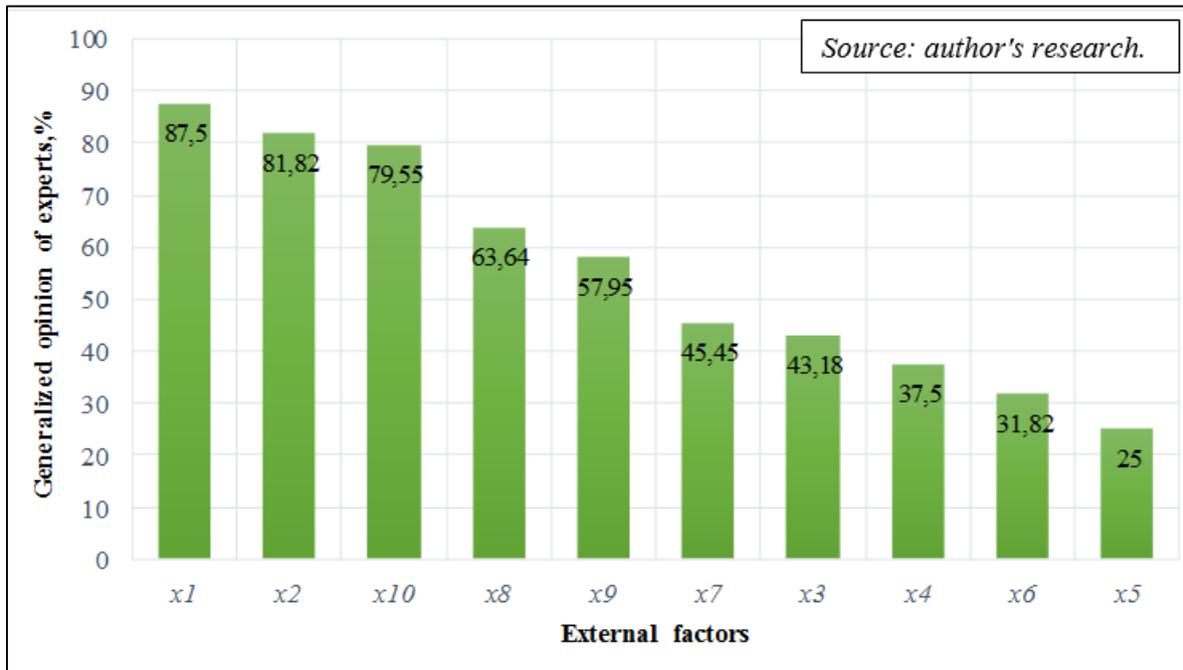


Fig 1: The external risk factors in marketing communication activities of pharmaceutical enterprises.

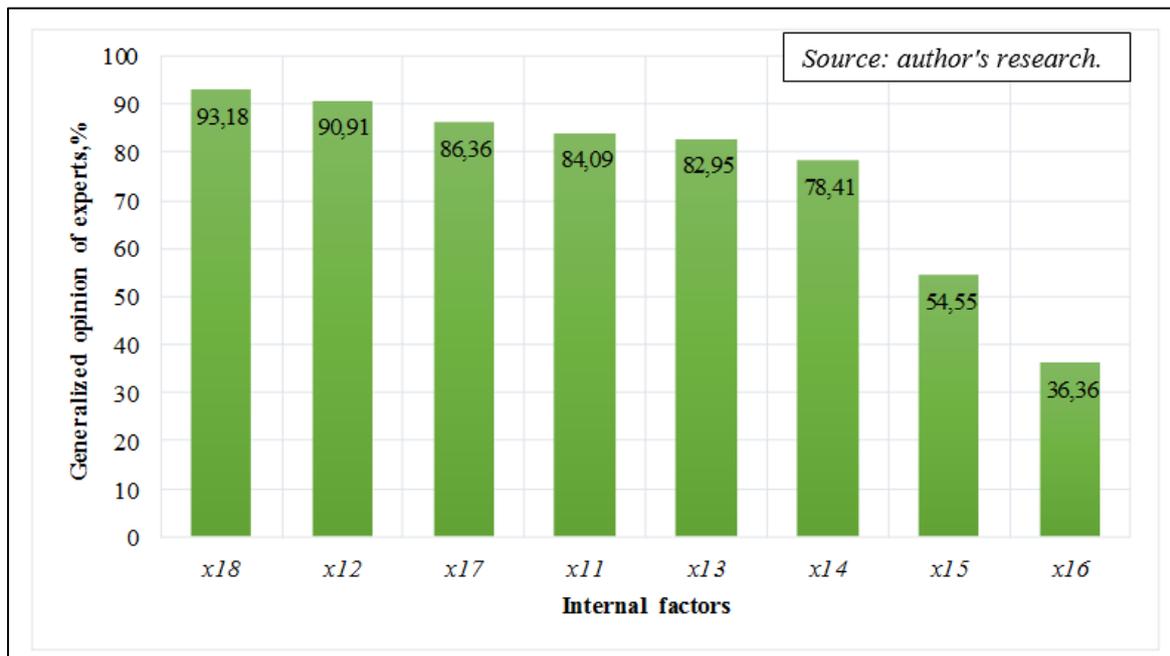


Fig 2: The internal risk factors in marketing communication activities of pharmaceutical enterprises.

The main external risk factors are the change in the legislative framework and regulation of medicine products sales and promotion through applying various elements of marketing communications (87.50%), exchange rate change (volatility) (81.82%), and the competitors actions to form negative image and reputation of the pharmaceutical enterprise in the market (79.55%).

The internal risk factors of the greatest importance, according to experts, are the excess of marketing communications costs over the revenues (93.18%), mistakes in budgeting for marketing communications, including scarcity of funds (90.91%) and failure to reach the medicines sales targets (86.36%).

Also, a significant part of the surveyed experts (82.95%) consider a falsely determination of the enterprise communication policy to be a very important risk factor.

In this regard, we propose pharmaceutical enterprises to thoroughly form the objectives of their activities. To this end, it is advisable to apply the management by objectives concept using the SMART methodology, which is named after the initial letters of the English words *specific, measurable, achievable, relevant, and time-bound*.

The management by objectives concept, where the SMART technique emerged, is based on the organization's top management ability to set "smart" goals for all levels of the organization management with a view to their consolidated cooperation.

According to the SMART methodology, the objectives of the pharmaceutical enterprise at all levels should be specific and clear. For example, to increase the medicines sales by 30%, to increase market share to 20%, to attract 15% of new clients from the central region of the country etc.

The result should be measurable. It is important not to forget about the adequacy of the objectives and to be sure that they are achievable. It should be noted that too high and very light goals lose their value to the employees and they will neglect them.

One of the key instruments to implement an organization's mission is the validity of goals that should always be relevant and not contradict other goals and priorities of the organization. A key component in setting the goals is their terms, which is determined by a specific date or period [14].

The examples of the marketing communication activity objectives of the pharmaceutical manufacturing enterprise, regarding the requirements of SMART and the objectives-tree method, is presented in Figure 3.

The objectives-tree is a structured, hierarchical (distributed by the levels) set of objectives of the economic system, program, plan, with the general objective and subordinate sub-objectives of different levels [14, 15].

The first step in formulating the goals of a marketing communications program to promote a new medicine product should be the business goals of the pharmaceutical manufacturing enterprise, which are to be the basis for setting the lower marketing objectives. Business objectives are directly related to the mission of the pharmaceutical enterprise and determine the long-term vector of organization development in the market as a whole.

At the second level, the strategic marketing goals should be formed allowing to get the answers to the question: "How should the target audience and its behavior be changed to achieve the organization's business objectives?"

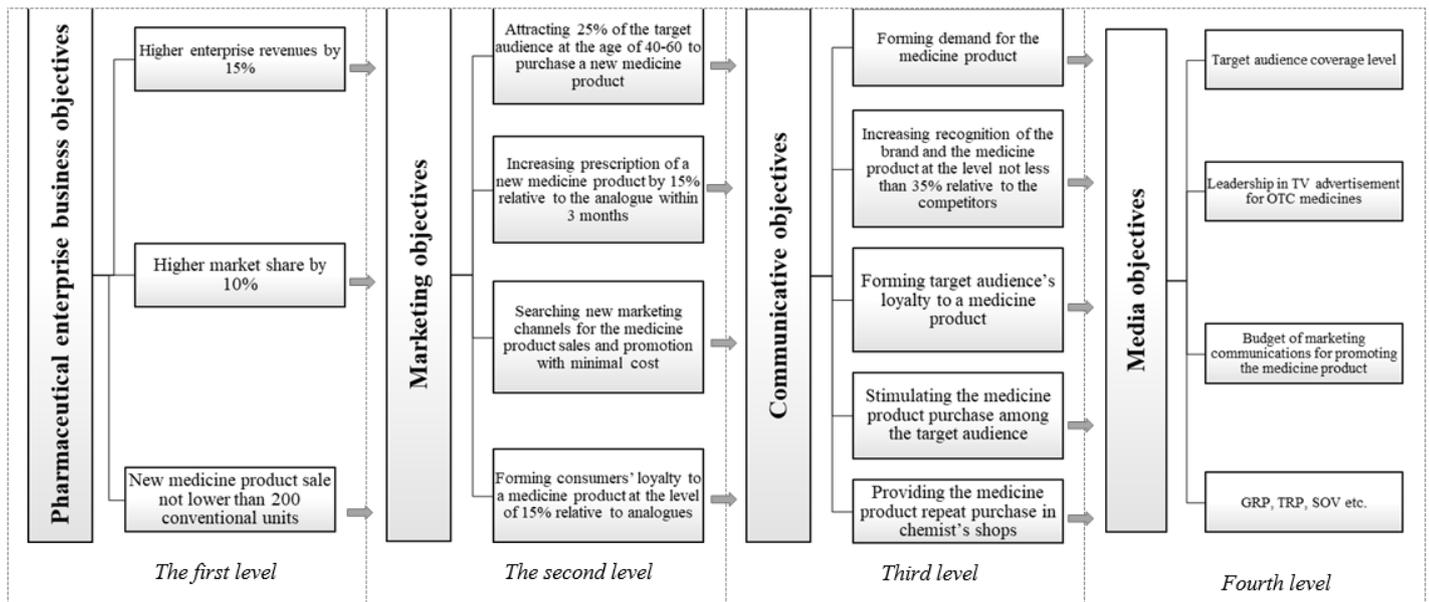
At the third level, the communicative goals of the pharmaceutical manufacturing enterprise should be formed, clarifying the question: "How should a consumer act after contacting an advertisement?"

Further, on the basis of communicative goals, media goals for various elements of marketing communications are developed: advertising campaigns, programs stimulating the medicine products sales, promoting pharmaceutical products through medical (pharmaceutical) representatives, etc.

The media objectives are mainly expressed in the format of key media indicators - GRP, TRP, Reach/Cover%, OTS, Average Frequency, SOV etc., the volume of the marketing communications budget for a medicine product promotion, and other parameters.

Therefore, only when the pharmaceutical enterprise objectives meet all the requirements of SMART, they begin to work as a management instrument, including risk management in communicative marketing activities.

Possible conditions, negative consequences and influence of risk factors in marketing communication activities on the pharmaceutical enterprise objectives are given in the Table 3.



Source: Created by authors.

Fig 3: The marketing communication objectives-tree of pharmaceutic enterprise activity

Table 3: Possible triggering events, negative effects and influence of risk factors in marketing communication activity on pharmaceutical enterprise objectives (fragment of research)

Risk factors	Symbol	Possible triggering events	Negative effects	Influence on pharmaceutical enterprise objectives
Changing the legislative framework and regulation of the medicine products sales and promotion through applying various elements of marketing communications.	x <sub>1</sub>	Enacting the laws, acts, instructions etc. on regulating the medicine products sales and promotion in the pharmaceutical market	The need to adjust to the environment variability, improvements and search for the best instruments of marketing communications	Increased investment funds for a new medicine product marketing communications
Exchange rate change (volatility)	x <sub>2</sub>	Instability of hryvnia to foreign currency	Possible changes in the pharmaceutical enterprise pricing policy, change of the medicine product price at all marketing channels levels, changes in advertising prices. A higher price of medicines	Increased investment funds for marketing communications of a new medicine product, reduced sales volumes

			may contribute to the target audience negative attitude to the pharmaceutical enterprise trademark.	
The emergence of new medicine products in the pharmaceutical market (cheaper ones)	x <sub>3</sub>	Introduction of new medicine products of similar pharmacological effect to the pharmaceutical market	Strengthening the level of competition among pharmaceutical enterprises for target consumer segments	Lower medicine product sales, loss of profit
Inconsistency of medicines consumer properties with the target audience expectations	x <sub>5</sub>	Additional pressure from the competitors, target audience negative feedback after medicine product consumption	Reduced brand image of the pharmaceutical manufacturer, target audience's insufficient confidence to the medicine product	Reduced medicine product sales, increased investment funds for marketing communications aimed at creating a positive image of the pharmaceutical enterprise and eliminating negative effects. Failure to achieve the marketing communicative activity objectives
Competitors actions to form a negative image and reputation of a pharmaceutical enterprise in the market	x <sub>10</sub>	Espionage, competitors jealousy, failure of the pharmaceutical market subjects to comply with the requirements of the Law of Ukraine "On Protection against Unfair Competition".	Reduced image and reputation of the pharmaceutical manufacturer trademark, target audience's insufficient confidence to the medicine product	Increased investment funds for marketing communications, aimed at creating a positive image of the pharmaceutical enterprise and eliminating negative effects. Failure to achieve the marketing communicative activity objectives
Marketing communications cost overrun over revenues	x <sub>18</sub>	Mistakes in budgeting for marketing communications and its distribution	The need for adjusting actions aimed at saving investment funds for the promotion program	Loss of profit

**Source:** compiled by the authors

#### 4. Conclusions

Thus, a sound risk management will enable pharmaceutical enterprises to minimize investment costs while achieving the program goals for promoting new medicine products using a variety of marketing communications instruments.

The risk factors systematization will be useful for the pharmaceutical market subjects when choosing and ranking the factors that can negatively affect not only the objectives of the enterprise marketing communicative activities, but also business objectives in general.

The compiled register of risk factors forms the basis of our mathematical model of risks analysis and assessment in the marketing communication activity of pharmaceutical enterprises in promoting the new medicine product in the market under limiting and/or saving investment funds in marketing communications, which allows the top management to take reasoned decisions and to choose the optimal risk management strategy in marketing communication activities of pharmaceutical enterprise: risk avoidance, risk transfer, risk reduction, risk taking. The methodology of model development and its practical testing is presented in separate scientific publications.

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