

SIMULATION OF INTERNATIONAL BUSINESS SECURITY SPACE

Problem statement. The modern system of marketing international business security in general mechanism of international business entity operation, is both coordinating and controlling, that is the one that provides system efficient existence and operation in general marketing complex, separately for each country, on the territories where its target markets are situated.

Management process of marketing international business security should be regarded as a complex system, in establishment of which it is necessary to ensure the maximum coordination and cooperation of all structural subdivisions and subsystems, which in addition must maximally keep track of all processes and phenomena that occur in the external environment and consider them to ensure maximally dynamic and organic operation in the world economic system international space.

Analysis of recent researches and publications, that reveal most of the approaches and methods for estimation of business activity economic security, indicates an interest of scientific circles in such problems, namely the works of such scholars as: V. Senchagov, Z. Herasymchuk, V. Klymenko, A. Sukhorukova, V. Shlemko, I. Binko, M. Yermoshenko, M.E. Porter [1-7].

There is a need to form part of space of international business activity, where the product of international business process entity will be sold with ensuring maximum profitability for an enterprise and consumers satisfaction, while maintaining an optimal level of marketing security.

Statement of the problem. Formation a model of the space of international marketing business security.

Summary of basic material investigations. To conduct objective simulation, first of all it is necessary to establish efficient management criteria. The following parameters are topical for establishment of international marketing business security space:

- competitive security indicator;
- competitive-qualitative condition of a product offered by an international business process entity;
- innovation level;
- prestige degree of the international business entity brand in the target market of a certain national economy;
- support service level;
- indicator of price security;
- indicator which reflects the level of ensuring consumer's security (in our case it is an indicator of flights security).

Therefore, through the use of mathematical and economic methods we will create the model of marketing international business security space (Fig. 1).

Therefore, at this stage of research we have a certain space, which is limited by four planes, where:

- ABD plane is parallel to KP coordinate plane;
- DBC plane is parallel to SP coordinate plane;
- ABC plane is parallel to CB coordinate plane;
- ASD plane is angled to the coordinate system.

Thus, to determine the position in the competitive-price space of international business entity within the marketing international business security concept it is necessary to determine a point X with coordinates (B, I, P) in field market three-dimensional space of a given national economy, so we have:

$$U(P; C; S) \rightarrow \text{optimum} \quad (1)$$

where P is the selling price;

C – competitive security, which should represent a complex indicator, consisting of competitive-qualitative condition of product offered by an international business process entity; innovation level, which should be understood as the product novelty level, which differentiates it from competitors that to the considerable degree more satisfies the consumers requirements of the target market of a certain country and makes it more attractive; a brand prestige degree of an international business entity in the target market of a given national economy; level of service support that promotes empowerment and increases a degree of needs complex satisfaction of the target consumer;

S – indicator which reflects the level of ensuring consumer's security (in our case it is an indicator of flights security).

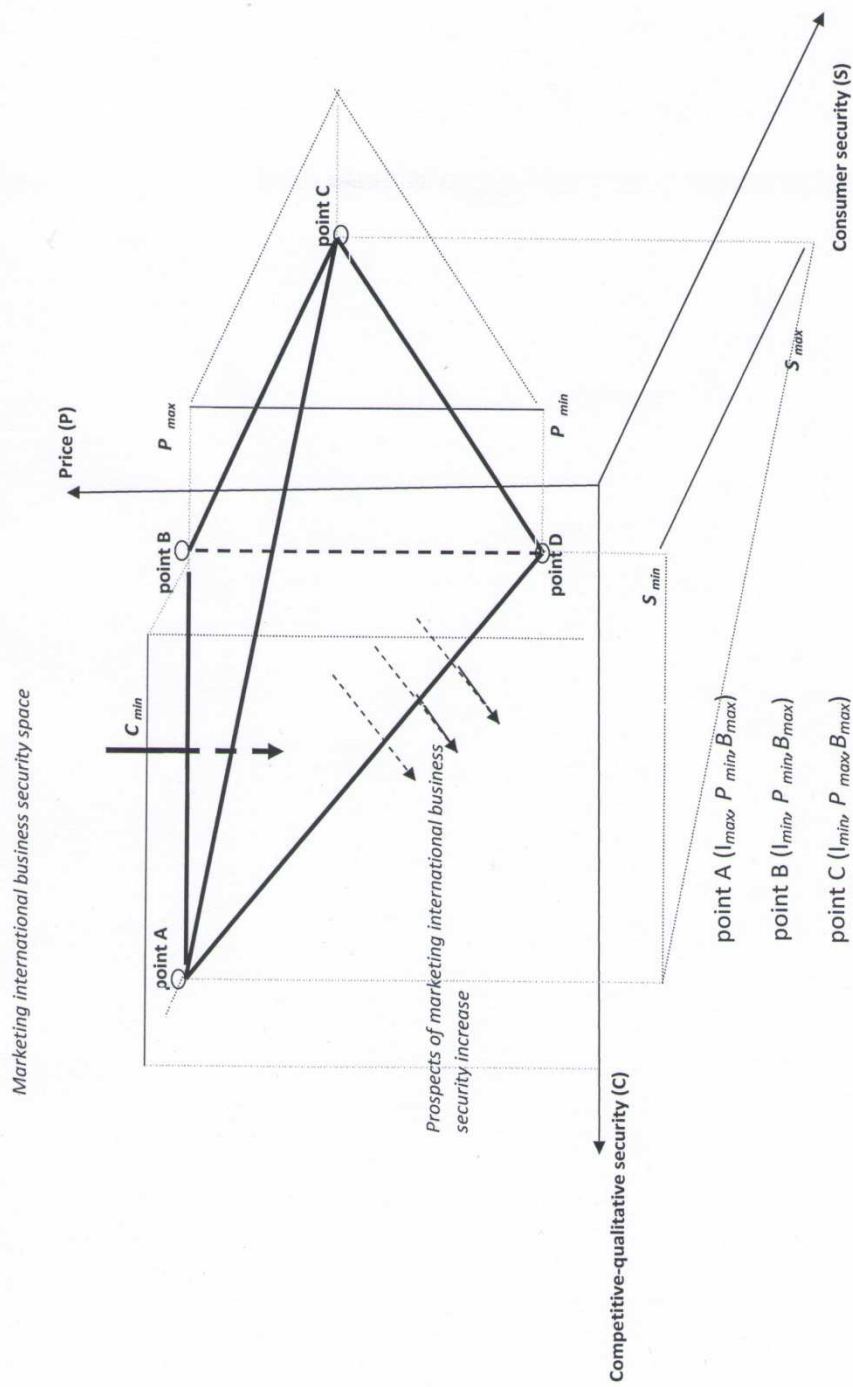


Fig. 1. Model of marketing international business security space

Source: author's elaboration

Thus, we will obtain a three-dimensional space to characterize which it is necessary to limit its boundary points and to describe their coordinates (Tab. 1).

Table 1

Characteristics of parameters boundary values that establish the international business entity marketing international business security space

No.	Parameters	Parameter Content Characteristics
1	Minimum price level (P_{min})	Minimum possible price in the given field market, when determining below which in conditions of the manufacturing country, manufacture of a product becomes unprofitable at this stage of technical and technological development of the world economic system and economic system of certain national economy, where a manufacturing company is located, or provides anti-dumping restrictions of the country, where a product sales market is located.
2	Maximum price level (P_{max})	Characterizes the price threshold, when determining under which a product becomes uncompetitive and ceases to satisfy target consumers, and hence their interests, that is, in this case it is more useful for consumers to use goods-substitutes (if it is a monopoly market) and or this is the price level, which is established by the field leader in the target market of a certain country (if it is a market of monopolistic or oligopolistic competition)
3	Minimum level of competitive security (C_{min})	Minimum possible level of qualitative-innovative product condition, at which there is a minimal degree of needs complex satisfaction of of a target consumer, that a consumer refuses to consume such product and the product may not be used according to its intended purpose;
4	Maximum level of competitive security (C_{max})	Maximum possible level of qualitative-innovative product condition, at which there is a maximum degree of needs complex satisfaction of a target consumer, increasing of which is impossible due to the limited scientific and technical level of consumer's preparation; with even greater increase in qualitative-innovative product level, the consumer will refuse to consume it due to unreadiness to its technical level.
5	Maximum level of consumer's security (S_{max})	Minimum possible level of consumer's risk, at which a consumer has no risk related to product consumption, that is the consumer is in complete safety
6	Minimum level of consumer's security (S_{min})	Maximum possible level of consumer's risk, at which a consumer's risk related to product consumption is so high, that it is easier for him to refuse to consume product than to expose himself to an unjustifiable risk

Source: author's elaboration

At this stage of simulation we will mathematically characterize the shaped areas that limit the marketing international economic security space by using mathematical approaches of building the equation of plane, passing through the three main points [8, p. 244]. Thus we have three planes:

$$ABC: \det \begin{bmatrix} C - C_{max} & S - S_{min} & P - P_{max} \\ C_{min} - C_{max} & S_{max} - S_{min} & P_{max} - P_{max} \\ C_{min} - C_{max} & S_{max} - S_{min} & P_{max} - P_{max} \end{bmatrix} = 0 \quad (2)$$

$$ABD: \det \begin{bmatrix} C - C_{max} & S - S_{min} & P - P_{max} \\ C_{min} - C_{max} & S_{min} - S_{min} & P_{max} - P_{max} \\ C_{min} - C_{max} & S_{min} - S_{min} & P_{min} - P_{max} \end{bmatrix} = 0 \quad (3)$$

$$BCD: \det \begin{bmatrix} C - C_{max} & S - S_{min} & P - P_{max} \\ C_{min} - C_{max} & S_{max} - S_{min} & P_{max} - P_{max} \\ C_{min} - C_{min} & S_{min} - S_{min} & P_{min} - P_{max} \end{bmatrix} = 0 \quad (4)$$

$$ACD: \det \begin{bmatrix} C - C_{max} & S - S_{min} & P - P_{max} \\ C_{min} - C_{max} & S_{max} - S_{min} & P_{max} - P_{max} \\ C_{max} - C_{min} & S_{min} - S_{min} & P_{min} - P_{max} \end{bmatrix} = 0 \quad (5)$$

Thus, having written each equation in the linear form we have the following:

$$ABC: (C-C_{max})(S_{max}-S_{min})(P_{max}-P_{max})-(P-P_{max})(S_{max}-S_{min})(C_{min}-C_{max})-(S-S_{min})(C_{min}-C_{max})(P_{max}-P_{max})=0 \quad (6)$$

$$ABD: (C-C_{max})(S_{min}-S_{min})(P_{min}-P_{max})-(P-P_{max})(S_{min}-S_{min})(C_{min}-C_{max})-(S-S_{min})(C_{min}-C_{max})(P_{min}-P_{max})=0 \quad (7)$$

$$BCD: (C-C_{max})(S_{max}-S_{min})(P_{min}-P_{max})-(P-P_{max})(S_{max}-S_{min})(C_{min}-C_{min})-(S-S_{min})(C_{min}-C_{min})(P_{min}-P_{max})=0 \quad (8)$$

$$ACD: (C-C_{max})(S_{max}-S_{min})(P_{min}-P_{max})-(P-P_{max})(S_{max}-S_{min})(C_{max}-C_{min})-(S-S_{min})(C_{max}-C_{min})(P_{min}-P_{max})=0 \quad (9)$$

Thus, as a result we have a situation, where only one equation which characterizes ACD plane, has an adequate solution, because when opening equations, which characterize ABC, ABD, BCD planes, results $(P=P_{max})$, $(S=S_{min})$, $(C=C_{max})$ correspondingly were received.

Conclusion. Thus, based on the conducted research there formed a model of international marketing business security space, which is understood as a part of international business activity space, where a product of international business process entity will be sold with ensuring maximum profitability for an enterprise and satisfaction of consumers, and the main shaped areas, which limit the space of marketing international economic security were characterized through the use of mathematical approaches of building equation of plane.

References

1. Senchagova, V.K. (2005), *Ekonomicheskaya bezopasnost Rossii: obshchiy kurs* [Economic security of Russia: General Course], textbook, Delo, Moscow, Russia, 896 p.
2. Herasymchuk, Z.V. and Vavdiuk, N.S. (2006), *Ekonomichna bezpeka rehionu* [Economic security of the region], monograph. Lutsk: Nadstyria, 2006. – 244 p.
3. Klymenko, V.V. (2003), "Ensuring the competitiveness of Ukraine's stock market as the main prerequisite for financial security of the country", *Aktual problems of economics*, no. 10 (28). – pp. 18-24.
4. Sukhorukov, A.H. (2003), *Rekomendatsii shchodo otsinky rivnya ekonomichnoi bezpeky Ukrainy* [Recommendations for evaluation of level of economic security of Ukraine], National Institute of International Security Problems, Kyiv, Ukraine, 64 p.
5. Shlemko, V.T. and Binko, I.F. (1997), *Ekonomichna bezpeka Ukrainy: sutnist i napryamy zabezpechennya* [Economic security of Ukraine: nature and directions of ensuring], National Institute for Strategic Studies, Kyiv, Ukraine, 143 p.
6. Yermoshenko, M. (2005), "Strategic information in ensuring financial security of the country", *Aktual problems of economics*, no. 2, pp. 105-110.
7. Porter, M. (2005), *Konkurentnaya strategiya: Metodyka analiza otrasley y konkurentov* [Competitive Strategy: Techniques for Analyzing Industries and Competitors], translation from English, Alpyna Biznes Buks, Moscow, Russia, 454 p.
8. Zamkov, O.O. (2001), *Matematycheskiye metody v ekonomyye* [Mathematical methods in the economics] textbook, Delo i Servis, Moscow, Russia, 368 p.

Iliencko O.V. SIMULATION OF INTERNATIONAL BUSINESS SECURITY SPACE

Purpose. Establishes the model of international marketing business security space and describes boundary values of parameters that shape marketing international business security space of international business entity.

Methodology of research. During the formation of model of marketing international business security need to use methods of optimization and deterministic economic models and the most obvious and effective is to use the theory of convex sets.

Mathematical characterized a dimensional space, formed square that limit space marketing international economic security, through the use of mathematical approaches to building the plane's equation, which passes through three main points.

Findings. Based on the conducted research there formed a model of international marketing business security space, which is understood as a part of international business activity space, where a product of international business process entity will be sold with ensuring maximum profitability for an enterprise and satisfaction of consumers

Originalit. Formed model of marketing international business security space. Disclosed Characteristics of parameters boundary values that establish the international business entity marketing international business security space.

Practical value. There is a need to form part of space of international business activity, where the product of international business process entity will be sold with ensuring maximum profitability for an enterprise and consumers satisfaction, while maintaining an optimal level of marketing security.

Key words: model; space; marketing international business security.