# Content, methodology and results of the study on the formation of readiness to future border guard officers to apply risk analysis methods

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**Abstract.** *The article reveals the content, methods and results of the study of the formation of readiness to future border guard officers to apply risk analysis methods. The essence of readiness for application of methods of risk analysis in operational and service activity, criteria and indicators are defined, levels and state of the formation are characterized. For effective formation of readiness of future frontier officers to apply risk analysis methods, pedagogical conditions have been substantiated and tested experimentally. Based on the research results, methodological recommendations have been developed for cadets, scientific and pedagogical staff.*

**Keywords:** *readiness, risk analysis methods, border guard officer, pedagogical conditions.*

**1. Introduction.** The development of the State Border Guard Service of Ukraine (SBGSU) as a special-purpose law enforcement agency envisages the development of joint personnel training programs, the implementation of an integrated education system involving teachers and instructors from NATO and EU member states, and the formation of a new security culture based on expert assessment of risks and potential threats. This actualizes the need for training of highly qualified officers who know the features of information and analytical support of operational and service activities, risk analysis methodology in the State Border Guard Service of Ukraine, the order of identification of risks and threats, are able to carry out risk analysis in the field of state border protection, apply risk management systems in the State Border Guard Service and on the basis of this to make reasonable and effective managerial and professional decisions to protect the state border. Therefore, the border guard officer must have special knowledge, skills and professionally important

qualities that make up the content of professional readiness to apply risk analysis methods in operational and service activities.

**2. Analysis of the last research and publications**. The problem of training future border guard officers for professional activities, including informational and analytical work, is the subject of interest of many scientists. The works of A. Halimov, D. Ishchenko, V. Miroshnichenko, B. Alekseenko, A. Stavytsky discuss various aspects of the formation and development of professionally important qualities and professional competence of officers. The problem of risk and its calculations in the border control system were studied by O. Androshchuk, V. Horodnov, S. Kashtelan, A. Kurashkevych, A. Maltsev, A. Makhniuk and others.
O. Didenko, A. Balendr, A. Bilorus, A. Zabolotna and others are studying the problem of organizing the educational process in a higher military educational institution and the peculiarities of forming the readiness to future border officers for professional activity. Certain aspects of the theory and practice of using risk analysis methods are as well presented in the works of foreign scientists (J. Johnstone, D. McDowell, H. Mueller, D. Navrotsky, K. Skazhynska, M. Janicki).

However, there is still no complex research on the problem of formation of professional readiness to future border officers to apply risk analysis methods in operational and service activities for today.
**The aim of the article is** to reveal the content, methodology and results of the study of the formation of readiness to future border guard officers to apply risk analysis methods.

**3. Materials and methods.** Theoretical, empirical and mathematical methods were applied in the process of the scientific research. Theoretical (retrospective and comparative analysis, synthesis, generalization, systematization of program and normative documents, scientific literature, educational and methodical documentation and professional training experience) are used to find out the state of the development of the research problem in pedagogical theory and practice, as well as to determine the content and structure of the basic concepts of the research and justification of pedagogical conditions for the formation of readiness to future border guard officers to use methods of risk analysis. Empirical methods (questionnaires, testing, interviews, conversations, pedagogical observation, and analysis of the results of training activities of officers) are used to specify the criteria, indicators and levels of formation of the above-mentioned readiness. The method of expert assessments is used to diagnose the state of formation of the specified readiness, to identify deficiencies in the learning process. The pedagogical experiment was used to test the hypothesis and effectiveness of pedagogical conditions for forming the readiness to future border guard officers to apply risk analysis methods in operational and service activities. Methods of mathematical statistics (Kolmogorov-Smirnov's criterion and Pearson's criterion) are used for the analysis of the received data and for the establishment of quantitative dependences between the studied phenomena, processes and interpretation of the results of introduction of pedagogical conditions and methods of formation of readiness to future border guard officers for the application of methods of risk analysis in operational and service activity.

**4. The results and their discussion.** According to the results of the analysis of scientific works on the research problem, it was found that they can be divided into several groups. First of all, these are studies where the methods of risk analysis are mathematically justified (B. Pascal, P. Fermat, G. Leibniz, J. Bernoulli, F. Galton, etc.); economic theories of risk are developed (A. Smith, J. Mill,

N. Senior, A. Marshall, A. Pigue, etc.), as well as works in which general provisions of risk gnoseology are disclosed.

The second group of studies is the works of scientists where there are considered the issues of risk and its calculation in the system of management and risk-management (A. Fayol, M. McCarthy, T. Flynn, T. Bedford, R. Cook, etc.), of customs (S. Galko, P. Pashko, G. Kulik, B. Litovchenko, O. Vakulchyk, O. Komarov, E. Knyshek, etc.) and of border control (O. Androshchuk, V. Gorodnov, S. Kastelian, A. Kurashkevich, A. Maltsev, A. Makhniuk, O. Stavytsky, etc.).

The third group includes works in which the issues of risk analysis readiness are considered in the context of the general training of the border guard officer for the professional activities (L. Balahur, Y. Demianuk, O. Safin, V. Ulich, Y. Tsarev, N. Chornousenko, etc.), as well as the formation of professional competence (A. Bilorus, O. Didenko, I. Novak, O. Torichny, etc.).

It has been established that in modern conditions it is impossible for the personnel of state border protection bodies to perform border protection tasks without proper analytical activities and readiness to apply risk analysis methods (Instruction, 2010). Taking into account the scientific views on the category of readiness (Balendr, 2011, Diachenko, 1979, Storozhuk, 2010) and the specifics of operational and service activities of the border guard officers, their readiness for the use of methods of risk analysis in operational and service activities can be defined as a professionally important personal quality, which provides an appropriate level of application of methods of risk analysis in operational and service activities, covers the awareness of future specialists of the importance and role of this readiness for the effective solution of problems in operational and service activities, the system of knowledge, as well as the ability and skills to properly apply the risk analysis method in operational and service activities.

Structurally, the readiness of future border guard officers to apply risk analysis methods in operational and service activities contains motivational-personal, cognitive-educational and operational-resulting components. The motivational-personal component characterizes the incentive aspect of readiness to apply risk analysis methods in operational and service activities. The cognitive-educational component covers the system of knowledge about the features of information and analytical support of operational and service activities of state border protection agencies. The operational-resulting component is revealed in the aggregate of skills for the proper application of risk analysis methods, which perfectly ensure the effective performance of state border protection tasks.

Taking into account the results of studies performed by A. Balendr (2011), M. Karpushyna (2017), A. Mykhailyshyna (2002), A. Marchenko (2007) and others, it was found that the formation of future border guard officers' readiness to use risk analysis methods can be assessed by three criteria and corresponding indicators, in particular, motivation, cognitive and activity (ability to generate ideas; ability to think critically; independence in solving complex problems; creative approach to solving complex problems of informational and analytical activity). The use of these criteria allows us to identify three levels of readiness for future border guards to be prepared to apply risk analysis methods (low, medium and optimal).

With the use of this diagnostic apparatus in the period from February 2016 to September 2017 on the basis of Bohdan Khmelnytskyi National Academy of the State Border Guard Service of Ukraine (NASBGSU) there was conducted the ascertaining stage of the experiment. The results of the survey, observation, questionnaires, conversations with students and teachers, as well as the performance of

special tasks showed that future border guard officers are not sufficiently prepared to apply risks: only 17.20 % of cadets have an optimal level of readiness to use risk analysis methods. The majority of cadets are at an average level of 47.85 % and a low level of 34.95 %. This can be explained by the fact that the cadets are not sufficiently motivated to study risk issues; they do not always know how to develop a clear plan of action in a difficult or unusual situation, do not always know how to generate ideas and think quickly in the process of analytical activities on risk profiling. It is difficult for them to solve complex tasks on their own, to make decisions and predict the development of situations on the analysis of risks, to apply a creative approach to solving complex problems of information and analytical activities. This state of affairs has confirmed the need to organize the systematic work on the formation of risk readiness to future border guard officers.

Taking into account the results of the analysis of scientific and pedagogical literature, in particular the provisions on the importance of motivation for the development of a person's ability for creative analytical activity, the importance of knowledge as the basis for all the components of readiness, the presence of a problem situation as a condition for the emergence of creative thinking, as well as the importance of analytical thinking and creative approach to all the tasks, it has been established that the main pedagogical conditions for the formation of readiness for the use of methods of risk analysis in operational and service activities are the following: increasing the motivation to study and analyse border security risks; introduction of a special thematic course for in-depth study of the essence of an integrated risk analysis model; application of innovative forms and methods of training for mastering the skills and abilities of analytical and creative activity in making managerial decisions on the organization of state border protection.

Experimental work to test the effectiveness of these pedagogical conditions was organized from October 2017 to May 2019 at the NASBGSU. 198 cadets of the Faculty of State Border Defence and Protection took part in the pedagogical experiment (the direction of training "Protection and Defence of State Border"), Faculty of Law Enforcement activity (training direction "Jurisprudence"), Faculty of Foreign Languages and the Humanities (specialty "Philology"), as well as 18 representatives of scientific and pedagogical staff of Bohdan Khmelnytskyi National Academy of the State Border Guard Service of Ukraine.

From the organizational point of view, the method of introducing pedagogical conditions is a set of complex (systemic) pedagogical measures of influence on cadets in the process of gradual formation of their readiness to apply methods of risk analysis in operational and service activities. The formative stage of the pedagogical experiment included the introduction of pedagogical conditions and methods of forming readiness for risk analysis methods application. In particular, according to the first pedagogical condition, the focus was on increasing the motivation of future border guard officers to study and analyze border security risks. For this purpose, when teaching such educational disciplines as "Tactics of the Border Guard Service (management of the Border Guard Service)", "Border Control (Organization of Border Control)" and a special seminar "Application of Risk Analysis Methods in the Operational-Service Activity of the Border Guard Service", it was planned to update the value orientations of the cadets and explain the purpose of studying risk issues.

According to the second condition, the knowledge of the cadets on risk issues was expanded with an additional special course. For this purpose, a special course was developed and conducted to train cadets for risk analysis – "Application of risk analysis methods in the operational performance of the SBGSU", 100 hours. (3,3 credits). The components of the special course were mini-lectures, problem

and heuristic tasks for group discussion, examples of risk analysis and profiling, situation modelling, individual and group presentations. The special training programme included the training of future border guard officers in the application of risk analysis methods in operational and service activities, in-depth study of the essence of the integrated risk analysis model. The purpose of the special course was to provide cadets with knowledge about the risk analysis system in the State Border Guard Service of Ukraine, peculiarities of risk analysis methods application in operational and service activities.

According to the third pedagogical condition, there was a wide use of active training methods to practice skills of analytical and creative activity to future border guard officers in making managerial decisions on the organization of the state border protection. In this case, it is taken into account that the specifics of performing the tasks of the professional activity of the border guard officer – the head of the border unit – is constantly associated with the analytical work and creative approach to all the matters.

With this in mind, when studying certain topics in the academic disciplines "Tactics of the Border Guard Service (management of the Border Guard Service)", "Border Control (Organization of Border Control)" and a special seminar "Application of risk analysis methods in the operational and service activities of the SBGSU", problematic discussion of the application of risk analysis methods in operational and service activities was used.

After the completion of the formative stage of the pedagogical experiment, a re-measurement of the formation of readiness for application of risk analysis methods in CG (control group ) and EG (experimental group ) cadets was made, the results of which are presented in Table 1. The table shows that EG mainly have optimum (38,24 %) and average (55,88 %) levels of formation of readiness for application of methods of risk analysis. The number of cadets with a low level is 5.88%. In CG 26.53% and 50.0% of cadets have optimal and average level of readiness to use risk analysis methods, respectively. In this group, the number of individuals with low levels compared to the EG is much higher, at 23.47% (17.59% more than in the EG). This confirms the effectiveness of implementation of the proposed model and pedagogical conditions for the formation of readiness to use methods of risk analysis in operational and service activities.

***Table 1***

**Comparative analysis of the formation of readiness for the use of methods of risk analysis to future border guard officers after the forming stage of the experiment (in %), n = 200 (CG – 98, EG – 102).**

| Levels | Criteria | Control group | | Experimental group | |
|---|---|---|---|---|---|
| | | The beginning of the experi-ment | The end of the experi-ment. | The beginning of the experi-ment | The end of the experi-ment. |
| Optimal | Personal | 10 (10,20 %) | 26 (26,53 %) | 9 (8,82 %) | 39 (38,24 %) |
| Medium | | 33 (33,67 %) | 49 (50,0 %) | 32 (31,37 %) | 57 (55,88 %) |
| Low | | 55 (56,12 %) | 23 (23,47 %) | 61 (59,8 %) | 6 (5,88 %) |
| Optimal | Cognitive | 9 (9,18 %) | 25 (25,51 %) | 8 (7,84 %) | 38 (37,25 %) |
| Medium | | 31 (31,63 %) | 48 (48,98 %) | 31 (30,4 %) | 55 (53,92 %) |
| Low | | 58 (59,18 %) | 25 (25,51 %) | 63 (61,76 %) | 9 (8,82 %) |
| Optimal | Activity | 8 (8,16 %) | 21 (21,43 %) | 7 (6,86 %) | 37 (36,27 %) |

| | | | | | |
|---|---|---|---|---|---|
| Medium | | 29 (29,6 %) | 47 (47,96 %) | 30 (29,41 %) | 53 (51,96 %) |
| Low | | 61 (62,24 %) | 30 (30,61 %) | 65 (63,74 %) | 12 (11,76 %) |
| Medium | Average value | 9 (9,18 %) | 24 (24,49 %) | 8 (7,84 %) | 38 (37,25 %) |
| Середній | | 31 (31,63 %) | 48 (48,98 %) | 31 (30,4 %) | 55 (53,92 %) |
| Low | | 58 (59,19 %) | 26 (26,53 %) | 63 (61,76 %) | 9 (8,82 %) |

The statistical significance of the changes revealed as a result of the analysis in the level of readiness to apply risk analysis methods to future border guard officers of EG and CG is confirmed by the corresponding mathematical processing of the obtained data. Comparison of the results of the formation of readiness for the application of risk analysis methods in EG and CG of cadets using Kolmogorov-Smirnov's criterion confirmed statistically significant differences in the distribution of these skills levels, since $\lambda kr \geq \lambda kr$ (1.63 ≥ 1.36) at the level of significance $p \leq 0$ , 05. Thus, the efficiency of introducing pedagogical conditions for the formation of readiness to future border guard officers to use risk analysis methods in the process of professional training has been proved.
Based on the results of the experimental work, methodical recommendations were developed for the scientific and pedagogical staff and cadets on the formation of readiness to use methods of risk analysis. It is recommended to use the provisions of a systematic, activity-oriented, personal-oriented and acmeological approach; to increase the motivation to future border guard officers to study and analyse border security risks; broaden cadets' knowledge on risk issues using an additional special course, use active training methods to develop the analytical and creative skills of future border guard officers, etc.

**5. Conclusions and suggestions.** Formation of readiness to future border guard officers to apply risk analysis methods in operational and service activities is possible under such pedagogical conditions: increasing the motivation to study and analyse border security risks; introduction of a special thematic course for in-depth study of the essence of an integrated risk analysis model; application of innovative forms and methods of training for mastering the skills and abilities of analytical and creative activity in making managerial decisions on the organization of the state border protection.

The study has not covered all aspects of the problem. Further attention should be paid to the study of the potential of disciplines of the professional and practical cycle for the formation of cognitive-educational and operational-resulting components of the readiness of future border guard officers to use risk analysis methods; peculiarities of the organization of self-education of cadets on the problems of risk application; development of analytical skills of border guard officers in the system of advanced training.

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