Estimation of Threats on the Security

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Summary: The article emphasizes on the current issues focused on the contemporary challenges in the security environment. It presents the methodology for quantitative estimation of the existing threats using analytic techniques and means. The accent is on the determination of the significance and level of consensus in relation to the security risks. The article generalizes the results from the survey conducted on the influence of the key threats on the national security of the country.

Key words: national security, security environment, security threats, quantity estimation, importance of threats, consensus on threats.

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Introduction

Global security constantly attracts the attention of the world community and its leaders. International forums, discussing major issues concerning the security of mankind, have been held. Annual conferences on Security Policy such as "Peace through Dialogue", held in Munich, Germany with the participation of heads of the states, prime ministers, ministers, members of parliament, experts, researchers, journalists, etc. The challenges in globalization era are in the focus of conducted "Global Crisis – Global Responsibilities" discussions in the present year.[1]

Security policy in the beginning of the century focuses more and more on the achievement of comprehensive and complex security concerning the society each individual and as a whole. According to DCAF[2] greater part in the turbulent world play:

• Political threats such as terrorism, extremism, nationalism, separatism, radicalism, xenophobia, etc.
• Economic threats such as destruction, decadence, poverty, recession, unemployment, etc.
• Social threats such as corruption, criminality, conflicts, drugs, disorder, illness, hunger, misery, etc.
• Environmental threats such as disasters, accidents, catastrophes, pollutions, degradation, etc.

Territorial, demographic, ethnic, religious and other specific threats could be of a great importance for the different countries.

Existing threats to the security are notable for their diverse character. The Report on the National Security underlines that "no country could cope with risks and threats for the security by itself."[3] The Report incorporates analysis and forecasts for the conditions in security environment. It renders

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[1] International Conference on Security Policy, Munich, Germany, 11-12 February, 2007, http://securityconference.de/
[2] Parliamentary Oversight of the Security Sector, DCAF, IPU, Marshal, G., 2004
[3] Годишен доклад за състоянието на националната сигурност на Република България през 2005 г., http://parliament.bg/

the effect of variety of factors with significant impact on national security. External threats arouse from international terrorism, proliferation of weapons of mass destruction, crisis in the region, drug traffic, ecological problems and risk migration. Internal threats concern illegal migration and terrorism, organized crime and corruption, natural diseases and technogene catastrophes, demographic and ecological problems, etc. It was noted the fact that nowadays exist asymmetrical risks for national security. In a few years time is anticipated the most serious threats to be natural diseases, technogene catastrophes, demographic crisis, terrorist attacks, organized crime, financial corruption, mass epidemic, etc.

Methodology for Security Threat Estimation

In various discussions is underlined the necessity of a broader implementation of analytical techniques and means for impartial estimation of the impact of threats on the national security. It requires collecting and processing of relevant information about the situation in the security environment.

The methodology for security threat assessments includes the following activities:

• drawing up list of the key security threats, focusing on their relevance;
• selecting a numeric scale for quantitative assessments of the threat impact;
• preparing a evaluation map for collecting of the necessary information;
• surveying a group of respondents, selected by certain criteria for competence;
• processing of the empiric data collected from the survey;
• defining the degree of importance of the certain threats for national security;
• calculating the consensus level on the importance of the estimated threats;

• summarizing the collected results of the complete research;

The methodology presumes preliminarily measuring that requires quantification of different things (factors, events, circumstances, systems, objects, processes, phenomena, etc.) in the field of security. It is based on the principles of scaling, metering, composing, fragmentation, substantiating, interpreting, etc. The assessment of threat importance is made with the use of particular tools. Includes specific rules for identification, objectivism, arrangement, comparison, co-ordination, classification, summarize, etc. It should bring the necessary credibility, tenability, exhaustiveness and exactness of data. Thus an objective data is collected, compulsory for the decision-making process in the security system.

It requires reporting of various personal, psychological and other factors. Human nature should be taken into account while evaluating the various threats for the security. That means reporting of group and individual understandings of people, determined by the distinctions in mentality and behaviour. Important role play as well the intuition and sensuousness of every individual. The measurement of subjective perceptions regarding potential threats for the security could be made in different ways. Specific procedures have been applied in accordance to the need of particular information. Often they are based on the numerical scaling, related to the use of appropriate scales.

The processing of the gathered data by investigations, surveys, researches, observations and other studies in the security field could be carried out by the use of non-parametric statistics. It includes determination of parameters and specification of dependence in series of frequency. The examined multitude usually is divided into equal parts which form separate quintiles. The most frequently used are percentil,

decil, quintil, quartile, tercil, etc. Quantitative measurement of quality indicators is a complex task because it's related with formalization of human judgments and feelings. It requires taking into account of variety of personal, psychological and other factors.

Differential scale serves for immediate measurement of the human attitude. It allowes in a quantitative way to be measured the real threat significance for national security. It includes parameter for influence, described with bipolar antonyms such as "weak – strong". It provides a possibility for complete determination of personal stands of each individual. Differential scale is metrised in the interval from 1 (very weak influence) to 10 (very strong influence). The importance of threats is quantitatively determined by the group assessments. The level of consensus depends on the calculated variation and quartiles Q of distribution of the gathered judgements could be used. The first quartile Q_1 divides the set into a 25 % – 75 % proportion, the second quartile Q_2 – 50 % – 50 % proportion and the third quartile Q_3 – 75 % – 25 % proportion. The second quartile Q_2 is a median that divides the examined set. The difference Q_3-Q_1 indicates the compactness level of the individual assessments.

Quartile deviation Q_o characterizes the relative variation in the gathered assessments and is estimated using the following formula:[4]

$$Q_o = (Q_3 – Q_1)/2Q_2 .$$

Quartile deviation Q shows the consensus level in the examined totality**.** The lower its value; the higher the achieved agreement among the surveyed individuals is.

Asymmetry coefficient A_s in the empiric distribution is estimated using the following formula:[5]

$$A_s = (Q_3 + Q_1 – 2Q_2)/(Q_3\text{-}Q_1)$$

Asymmetry coefficient shows the level of deviation in the central part of the examined set. The distribution of the collected assessments is entirely asymmetric when $A_s = 0$, i.e. when the. когато е спазено условието:.

$$Q_2 = (Q_3 + Q_1)/2 ,$$

Quartile asymmetry rises in one or another direction depending on the values of expressions $(Q_3 + Q_1 – 2Q_2)$ and $(Q_3\text{-}Q_1)$.

Differentiation coefficient V_d in the collected assessments is estimated using the following formula:[6]

$$V_d = 100(Q_3\text{-}Q_1)/(Q_3 + Q_1) ,\ \text{in %}$$

Differentiation coefficient V_d characterizes the variability level in the analysed set.

Assessment of threats for the national security could be made a priori or a posteriori. On one occasion it's based on preliminary gathered data from authorities concerned, and on the summarized data concerning past events – on another. Ingenuous assessments could be made by experts from government bodies, as well as by civil structure representatives.

Empiric Estimation of Security Threat

The empiric research is based on a survey on a selected group, including 24 respondents.

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[4] Венецкий, И., В.Венецкая, Основные математико-статистические понятия и формулы в экономическом анализе, изд. Статистика, М., 1974.
[5] Венецкий, И., цит.съчинение.
[6] Венецкий, И., цит.съчинение.

It's made by filling an individual assessment card. The importance of each threat on the national security is evaluated on rating scale from 1 to 10. The assessments received are processed, using the methodology and the summarized results are shown in table 1.

Group estimations are result of individual assessment averaging. It allows the ranking of potential threats according to the opinion of the respondents involved. Their significance for the national security is determined by the average assessments corrected. The order of the examined threats is the following:

• threats, caused by corruption;

Corruption threats are ranked in the first place regarding the significance to the national security. They receive 4 grades as a min value and 10 grades – max value. The first quartile is 4,25 grades, and the third quartile – 9,75 grades respectively. This interval collects 50 % of the individual assessments of the entire set.

• threats, caused by demographic crisis;

Demographic crisis is ranked second according to its significance to the national security. It received 2 grades as a min value and 10 grades – max value. The first quartile amounts 6 grades and the third quartile – 8 grades respectively. The

2 grade interval collects 50 % of the individual assessments of the respondents.

• threats, caused by natural disasters;

Natural disasters are ranked third as a threat for the national security. They received 1 grade in min value and 10 grade – max value. The value of the first quartile is 5 grades and the third quartile – 8,75 grades. The 3,75 grade interval assembles 50 % of the assessments of the entire set.

• threats, caused by organized crime;

Organized crime threats take fourth place according to the significance to the national security criteria. It min value is 3 grades and max value – 9 grades. The value of the first quartile is 5,25 grades and the third quartile – 8 grades. The 2,75 grade interval assembles half of the assessments of the entire set.

• threats, caused by mass epidemic;

Spread of mass epidemic diseases takes fifth as a threat for the national security. It min value is 1 grade and max – 10 grades. The value of the first quartile is 4 grades and the third quartile – 7 grades. The 3 grade interval assembles 50 % of the assessments of the entire set.

Table 1

Threats	Importance			
on the national security	Median	Mean	Significance	Rank
Natural disasters	6,5	6,625	6,727	3
Technogene catastrophes	4,0	4,875	4,818	6
Demographic crisis	7,0	6,917	7,000	2
Terrorist attacks	4,0	4,667	4,591	7
Organized crime	7,0	6,625	6,682	4
Financial corruption	7,0	7,125	7,136	1
Mass epidemic	5,0	5,458	5,455	5

• threats, caused by technogene catastrophes;

Danger from technogene catastrophes is ranked sixth. It min value is 1 grade and max value – 10 grades. The value of the first quartile is 3,25 grades and the third quartile – 6 grades respectively. The 2,75 grade interval assembles 50 % of the assessments of the entire set.

• threats, caused by terrorist attacks;

Threats, caused by terrorist attacks take seventh place. It min value is 1 grade and max – 10 grades. The value of the first quartile is 2 grades and the third quartile – 7 grades respectively. 50 % of the assessments of the entire set belong to the 5 grade interval.
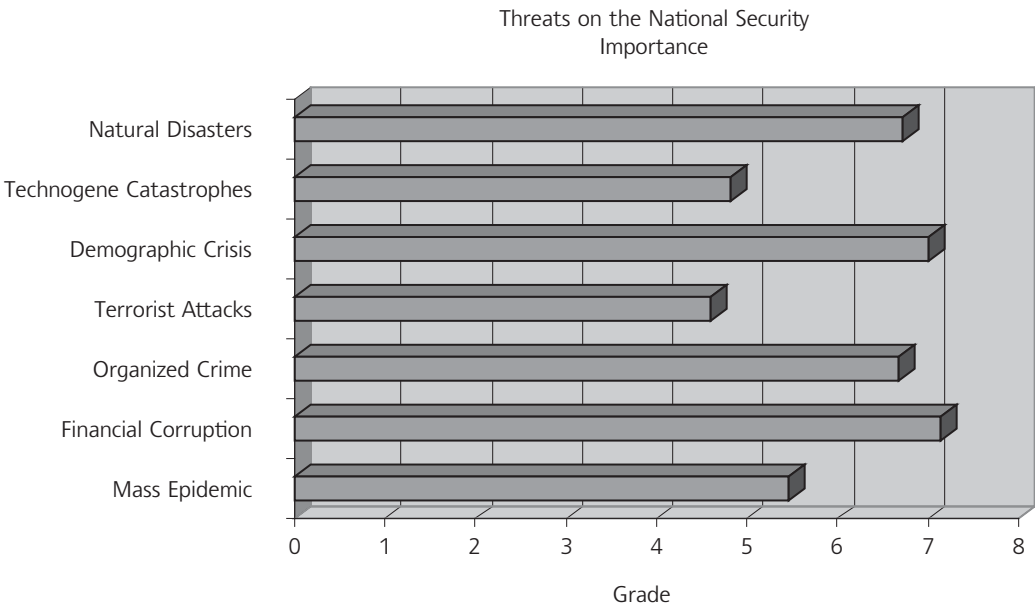
Threats on the National Security
Importance

Figure 1.

Table 2

Threats	Consensus			
on the national security	Quartile range	Quartile deviation	Agreement	Rank
Natural disasters	3,75	0,289	0,711	3
Technogene catastrophes	2,75	0,334	0,666	5
Demographic crisis	3,00	0,215	0,785	2
Terrorist attacks	5,00	0,625	0,375	7
Organized crime	2,75	0,197	0,803	1
Financial corruption	5,50	0,393	0,607	6
Mass epidemic	3,00	0,300	0,700	4

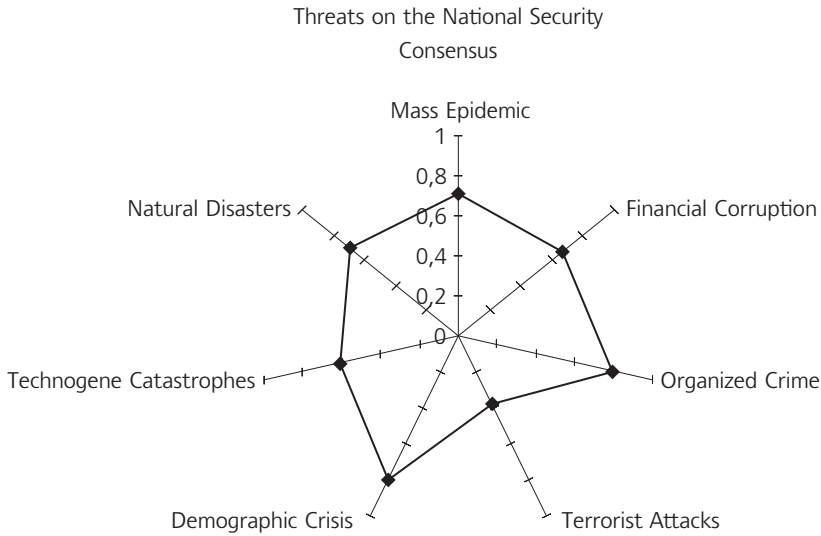Threats on the National Security
Consensus

Figure 2.

Should be mentioned the great correspondence among the median and the average value as a measurement tool of the group assessment of the demographic crisis importance (0,083), financial corruption (0,125) and natural disasters (0,125). More substantial differences have been observed regarding the collective assessment of the technogene catastrophes threat significance (0,875) and terrorist attacks for the national security (0,667).

Threats importance on the national security is thoroughly presented in figure 1.

The major priorities in the security policy during the next few years should be restricting corruption, demographic crisis overcome, natural disasters prevention and fighting organized crime, etc.

The collected results for the level of consensus in the examined set are shown in table 2.

The major indicators concerning the existing differences between the surveyed individuals are the quartile scope and quartile deviation in the individual assessments. Consent degree characterizes the consensus level. National security threats have been ranked according to the compactness of the collected assessments in the quartile interval between Q_1 and Q_3 in the range set.

The reliability of collective assessments significantly rises when there is no big difference between the individual ones. Thus contributes to increase of the consent space in the examined set. The consensus area on national security threat importance in accordance to the conducted research is shown on figure 2.

The consent level varies between 0,375 and 0,803. That signifies the presence of positive indications regarding national security threat importance. The most compact ones are the assessments on organized crime actions. The collected results show that the consensus area is increasing when increases the agreement in the positions of the respondents involved.

Conclusion

The advantage of the suggested method for importance threat estimation lie in the increase of the objectivity and reliability of the data on the basis of which the collective decisions are taken. Of great significance is the professional competency and the individual capacity for quantitative measurement of the quality indicators. The formalized information contributes to the improvement of the arguments regarding the existing risks and outlining effective measures for their limitations. The developed methodology for quantitative evaluation could be used by the state authorities concerned in our country, engaged with the problems of the national security. ИА