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Modelling the factor composition of security threats from the perspective of Czech and Slovak respondents and experts in the CR

Introduction

Security conditions in the world are changing quickly with demonstrably negative trends. The consequence of this situation is that national security analyses of European countries are becoming obsolete, and in certain areas they are not completely actual. Logically, this statement brings up the question if it's not the right time for a necessary update of Czech national security texts as well.[1]

There's almost an agreement in the expert public that security threats are more sophisticated today and by their extent and impact they are even more malicious than they used to be in the past. Many actual security threats are even harder to reveal these days. A standard example is e.g. the issue of misuse of cybernetic space for different anti-social activities, starting with terrorism and ending with interventions of official and non-official subjects against specific countries and their governments. The CR is not an exception and is fully confronted with these risks and threats these days.

The Czech Republic, together with other countries of the euroatlantic space, has a relatively high-quality description of the national security environment and analysis of specific security threats. Czech national analysis of the security environment also defining respective security threats is primarily included in the ***Security Strategy of the CR*** (BS) from 2015.[2] The CR, unlike of many other countries, also has a valuable extended version of its national security strategy, the so-called ***Audit of National Security*** (ANB) from 2016.[3] ANB makes, inter alia, a detailed analysis of each specific

[1] The *Security Strategy of the CR* comes from 2015, *Audit of National Security* from 2016 and the *Defense Strategy of the CR from 2017*. E.g. in the U.S., according to the Goldwater – Nicols Defense Department Reorganisation Act of 1986, the U.S. President shall submit the Annual Report on the National Security Strategy of the U.S. to the Congress. However, in practice, this does not happen regularly as the approach of the U.S. President towards this obligation is rather vague with the exception of President B. Clinton, who, except for 1999, has always submitted the required text to Congress on time.

[2] The *Actual Security Strategy of the CR* comes from 2015 and it's clear that with regard to the worsening security situation in the world and in Europe, it's not completely actual. Available at: *https://www.vlada.cz/assets/ppov/brs/dokumenty/bezpecnostni-strategie-2015.pdf* [online, cit. 2019-11-17]

[3] The *Audit of National Security* from 2016 (142 pages), in fact, extends and specifies the Security Strategy of 2015 and within the context of Central Europe, it represents non-

security threat using the so-called SWOT analysis method.[1] Also, two other less extenstive studies – ***the Defense Strategy of the CR*** from 2017, describing the security situation of the CR from the military point of view[2] or ***the Concept of Czech Foreign Policy*** from 2015 – were prepared in a similar way, highlighting the main directions of Czech foreign policy, including the area of enforcing our interests in the world.[3] All the documents described above require necessary revision.

Inter alia, this article is focused on the specification and extension of certain conclusions of previous Czech and Slovak surveys performed recently on the same topic at the Police Academy of the CR in Prague. However, it has the ambition to contribute, even by minor impulses, to the already initiated discussion about the variables of the security situation in the CR and Europe. This discussion is held about the occurrence of new security threats or their specified factor composition, new relevance and also about their understanding by public domestic experts. Now, the CR is facing the challenge of an update of its national security concepts. At the end of these efforts, there should be a new national description of security threats whose quality and effects will be given by the fact of how wide a national group of security experts from all respective industries the government is going to form, and how it will lead it to transparency in the discussions of topics, capacities and other issues.[4]

This article follows two previous surveys whose conclusions were published in a few short articles.[5] These surveys focused on this issue in almost identically performed empirical inquiries. However, previous inquiry was performed using a different groups of respondents. Here, we speak about the work of the collective

standard material, prepared on the basis of a national discussion of key security experts under the leadership of the MFA and MI of the CR. Despite its quality, this text is becoming obsolete as well and according to the authors of this article, it requires an update as well. Available at: *https://www.vlada.cz/assets/media-centrum/aktualne/Audit-narodni-bezpecnosti-20161201.pdf* [online, cit. 2019-11-17]

[1] SWOT analysis is one of the basic methods of strategical analysises, examining respective phenomena on the basis of four principles: S = Strengths, W = Weaknesses, O = Oportunities and T = Threats. More specifically in e.g. SARSBY, Alan: *SWOT ANALYSIS.* London, Spectaris Ltd., 2016. ISBN13: 9780993250422.

[2] The full text of the Defense Strategy of the CR, 2017, 8 p. Is available at: *http://www.mocr.army.cz/images/id_40001_50000/46088/OS.pdf* [online, cit. 2019-11-17]

[3] Full text of the actual Concept of Czech Foreign Polict, 2015. 18 p. Available at: *https://www.mzv.cz/file/1565920/Koncepce_zahranicni_politiky_CR.pdf* [online, cit. 2019-11-17]

[4] It may also be stated that national expert capacities may also affect the understanding of specific forms of danger even by a majority population by their consideration of security threats in certain cases – see e.g. DUBSKÝ, Josef a Martin VÁVRA. Anomie a vnímání hrozeb – případ České republiky. In: VEGRICHTOVÁ, Barbora a kol. *Sborník Bezpečnostní hrozby současnosti.* Praha, 2016, p. 203-213. ISBN 9788072514625.

[5] 1) JAKUBCOVÁ, Lenka; ŠESTÁK, Bedřich a Zdeněk KOVAŘÍK. Exact Estimation of factor composition of security threats for the Czech Republic*. Bezpečnostní teorie a praxe.* 2017, y. 4, p. 5-20. ISSN 1801-8211.
2) JAKUBCOVÁ, Lenka. Vnímání bezpečnostních hrozeb pro Českou republiku. *Bezpečnostní terorie a praxe.* 2018, y. 1, p. 65-82. ISSN 1801-8211.
3) JAKUBCOVÁ, Lenka; KOVAŘÍK, Zdeněk a Vladimír BLAŽEK. Odhad faktorové skladby bezpečnostních hrozeb pro Slovenskou republiku a její porovnání s Českou republikou. *Bezpečnostní teorie a praxe.* 2018, y. 3, p. 45-62. ISSN 1801-8211.

authors Bedřich Šesták, Zdeněk Kovařík, Lenka Jakubcová and Vladimír Blažek.[1] The **First stage** of their scientific research for an exact estimation of the factor composition of security threats was focused on the expert public in the Czech Republic (more specifically on representatives of the police, fire-fighters, customs officers, ministerial officers or academic employees, i.e. to 233 respondents in total).[2] The **Second stage** focused on the same research with an almost identical composition of the group of professional respondents in the Slovak Republic (in total, 407 respondents).[3]

Our article represents the **third stage** of this research, extending previously acquired knowledge about the specific reaction of a relatively small, however, compact and very elite and exclusive group of security experts from the perspective of the approach to information – members of the central analytical department of the Security Information Service of the Czech Republic (BIS).[4] In total, we speak about 57 new respondents (hereinafter referred to only as the "CR Experts"). Results of our research, published below, are the results of the total number of addressed respondents of all three sets of research together, whose number increased to 731 persons in this way. Both previous groups (Czech and Slovak) were extended by the already mentioned exclusive group of respondents – BIS analysts. Thus, the results presented by us may look more comprehensive and to a certain extent, they mildly develope or correct some earlier identified knowledge. However, results of this new survey did not change the structure of factor composition, defined by the previous two sets of research, in particular with regard to the possibilities of entire data comparison. Factor composition remains the same, however the interpretation of certain conclusions may be new. In other words, the identical structure of factor composition was only reassessed by a different priority accented by the second to last (Slovak) and by the last (expert) group of respondents. An illustrative exception is the last, fifth, factor of energy, raw material and industrial security that has improved the importance of certain environmental security threats relatively, in particular **floods and water insufficiency,** thus securing their undubitable place in the fifth factor composition. In the original research, these threats expressed the values of regression coefficients on the edge or rather beyond the limit of relevance, which is completely different in the adjusted factor composition.

This submitted article provides two new perspectives in fact: 1) specifications of certain priorities of factor composition of security threats within the context of two previous sets of research, expressed in the form of a so-called regression coefficient

[1] Lenka Jakubcová, Zdeněk Kovařík, Bedřich Šesták, Vladimír Blažek.

[2] JAKUBCOVÁ, Lenka; ŠESTÁK, Bedřich a Zdeněk KOVAŘÍK. Exaktní odhad faktorové skladby bezpečnostních hrozeb pro Českou republiku. *Bezpečnostní terorie a praxe.* 2017, y. 4, p. 5-20. ISSN 1801-8211.

JAKUBCOVÁ, Lenka. Vnímání bezpečnostních hrozeb pro Českou republiku. *Bezpečnostní teorie a praxe*. 2018, y. 1, p. 65-82. ISSN 1801-8211.

[3] JAKUBCOVÁ, Lenka; KOVAŘÍK, Zdeněk a Vladimír BLAŽEK. Odhad faktorové skladby bezpečnostních hrozeb pro Slovenskou republiku a její porovnání s Českou republikou. *Bezpečnostní terorie a praxe.* 2018, y. 3, p. 45-62. ISSN 1801-8211.

[4] An empirical survey was executed in December 2018 with the kind consent of BIS management and with the consent of the BIS analytical dept. in the form of anonymous questionnaire survey with 60 or 57 employees of the central analytical dept. of the BIS.

and 2) a more detailed insight or relevance of assessments of certain security threats, extended by the perspective of the group of CR experts.

Classification of security threats with regard to their relevance for the CR[1]

In the first part, as well as in the other previous two surveys and following the ANB, there are 34 specific security threats identical, however, differently from the ANB, only five instead of ten wider security areas were utilized.[2] With the use of an exploratory factor analysis, our research tried to execute this approach for a classification of security threats. As well as in previous surveys, instead of the material content of security threats, the extent of relevance of specific security threats for the CR was used.

For data collection, identical to the previous two surveys, a simple questionnaire with 34 specific security threats (from ANB) with the possibility of assessments of their relevance on a scale from 1 (high importance) to 6 (no importance) was used. On the basis of voluntary and anonymous participation, in total 57 respondents – CR experts from the central analytical department of the BIS - participated in our part of the research.

Composition of respondents – CR experts with regard to their categorized practice is shown in the following Table No. 1.

[1] The initial section of this chapter takes part of the text, already published by a co-author of this article, Z. Kovařík. In articles from the previous two sets of research, more specifically in JAKUBCOVÁ, Lenka; ŠESTÁK, Bedřich a Zdeněk KOVAŘÍK. Exaktní odhad faktorové skladby bezpečnostních hrozeb pro Českou republiku. *Bezpečnostní terorie a praxe.* 2017, y. 4, p. 5-20. ISSN 1801-8211; JAKUBCOVÁ, Lenka. Vnímání bezpečnostních hrozeb pro Českou republiku. *Bezpečnostní terorie a praxe*. 2018, y. 1, p. 65-82. ISSN 1801-8211 a JAKUBCOVÁ, Lenka; KOVAŘÍK, Zdeněk a Vladimír BLAŽEK. Odhad faktorové skladby bezpečnostních hrozeb pro Slovenskou republiku a její porovnání s Českou republikou. *Bezpečnostní terorie a praxe.* 2018, y. 3, p. 45-62. ISSN 1801-8211. The second part of the chapter is already original with regard to the last, i.e. third stage of research.

[2] ANB classified ten security areas, assigning specific security threats thereto (in total 34 threats). These are 1. Terrorism, 2. Extremism, 3. Organized crime, 4. Force majeure, 5. Security aspects of migration, 6. Natural disasters, 7.) Antropogennous threats, 8. Cyberspace threats, 9. Energy, raw material and industrial security and 10. Hybrid threats and their impact on the safety of CR citizens. Available in detail at: *https://www.vlada.cz/assets/media-centrum/aktualne/Audit-narodni-bezpecnosti-20161201.pdf* [online, cit. 2019-11-17]

Table No. 1

Služební praxe

		Četnost	Procenta	Procenta z platných	Kumulativní procenta
Platná	Do 9 let	25	43,9	46,3	46,3
	10 a více let	29	50,9	53,7	100,0
	Celkem	54	94,7	100,0	
Vynechaná	System	3	5,3		
Celkem		57	100,0		

Služební praxe – Practice in service **Četnost – Frequency**
Procenta – Percentage **Procenta z platných – Percentage from valid data**
Kumulativní procenta – Cumulative percentage **Platná – Valid**
Do 9 let – To 9 years **10 a více let – 10+ years**
Celkem – In total **Vynechaná - Dropped**

From the table, it's clear that three respondents did not state the period of their service. Representation of both stated groups is proportional. In total, 60 respondents were addressed, but 3 of them submitted the questionnaire in a form that could not be used.[1]

In this research, an identical five-factor model of 34 security threats was used for the CR with an identical composition from previos research (see the Tab. No 3a – 3ee): more specifically, it's the following five-factor composition of security threats:

1. Threat to state authority and its economic stability.
2. Cyberspace threats.
3. Threats related to migration.
4. Threat of extremism.
5. Energy, raw material and industrial threats.

In the tables No. 3a – 3ee below, there are particular security threats classified gradually according to the regression coefficient with respective factor from the first research with 233 Czech respondents[2] and in the following table using specific data about the size of the regression coefficient, containing the results of the total final research with a total number of 731 respondents.

Specific types of respondents are represented in the final scale as follows: (see Tab. No 2)

[1] Almost nothing was filled in or evidently, only the same fields were filled in when, beyond any doubt, our research was boycotted.
[2] Citation from articles and the composition of respondents.

Table No. 2

Typ respondenta

		Četnost	Procenta	Procenta z platných	Kumulativní procenta
Platná	Civilisté ČR	137	18,7	18,7	18,7
	Civilisté SR	190	26,0	26,0	44,7
	Policie ČR	29	4,0	4,0	48,7
	Policajný zbor SR	217	29,7	29,7	78,4
	HZS ČR	35	4,8	4,8	83,2
	Celní správa ČR	10	1,4	1,4	84,5
	Úředníci ČR	20	2,7	2,7	87,3
	Akademici ČR	36	4,9	4,9	92,2
	Experti ČR	57	7,8	7,8	100,0
	Celkem	731	100,0	100,0	

Typ respondent – Type of respondent
Četnost – FrequencyProcenta - Percentage
Procenta z platných – Percentage from valid data
Kumulativní procenta – Cumulative percentage
Platná – valid
Civilisté ČR – CR civilians
Civilisté SR – SR civilians
Policie ČR – Police of the CR
Policajný zbor SR – Police of the SR
HZS ČR – Fire-fighting unit of the CR
Celní správa ČR – Customs authority of the CR
Úředníci ČR – CR officials
Akademici ČR – Academics of the CR
Experti ČR – CR experts
Celkem – In total

The first examined factor (**threat to state authority and its economic stability**) is expressed in tables by stated security threats (Tab. No 3a – 3aa).

Tab. No. 3a - 233 respondents (CR)[1]

Security threat	Survey of 233 respondents (regression coefficients of variables at factor)
Affecting public administration by other country	0.7540
Misuse of public tenders and budgets	0.7160
Misuse of legitimate services for organized crime	0.7100
Involvement of org. crime in public administration	0.6970
Organized tax crimes	0.6790
Influencing public opinion by other country	0.6740
Money laundering	0.6450
Obtaining legally protected information by other country	0.5880
Criminality related to insolvency proceedings	0.5060

[1] Results of single empirical research of B. Šesták, Z. Kovařík and L. Jakubcová (233 respondents).

Table No. 3aa – 731 respondents (CR, SR, BIS)[1]

Security threat	Survey of 731 respondents (regression coefficients of variables at factor)
Organized tax crimes	0.8080
Money laundering	0.7760
Misuse of public tenders and budgets	0.7690
Misuse of legitimate services for organized crime	0.7140
Criminality related to insolvency proceedings	0.6110
Involvement of org. crime in public administration	0.5560
Influencing public opinion by other country	0.5260
Influencing public administration by other country	0.5210
Obtaining legally protected information by other country	0.5150

The first factor **of threat to state authority and its economic stability** contains in total 9 security threats with a detailed factor composition. This is a mixture of threats having **a)** their origin rather in a foreign country – *influencing of public administration by other country* (regression coefficient 0.5210)*, influencing of public opinion by other country* (regression coefficient 0.5260) *a*nd *obtaining of legally protected information by other country* (regression coefficient 0.5150) or **b)** representing threats of certain symbiosis of threats of a foreign and domestic origin. Here are, in fact, all residual threats – see the Table No. 3aa – first factor when none of them may be declared for certain that it's only a domestic security threat without any potential foreign intervention or demonstrable foreign presence. More detailed research then explains that the threat of an *organized tax crime* affects the first examined factor (with a high regression coefficient of 0.8080) and, conversely, the lowest relevance of affecting the first factor comes from the security threat of *obtaining of legally protected information by other country* (average regression coefficient 0.5150). Other significantly affecting threats of the first factor are *money laundering* (regression coefficient 0.7760), *misuse of public tenders and budgets* (0.7690) or *misuse of legitimate services for organized crime* (0.7140). However, this sequence is more academic as already **the fact that some of the security threats are included into one of the examined factors already guarantees that this is one of the important security threats to the CR**.

The first examined factor includes the factor composition of security threats related, in particular, to the issue of the intervention of another country into sensitive areas of state (by the use of hybrid threats through activities of official and unofficial persons, including espionage) with the objective to affect important areas of social life (e.g. interventions into public administration, efforts to affect public opinion or obtain confidential information) by clearly criminal activities of a large and organized extent where the involved persons may be domestic or foreign criminal groups or their combination (e.g. in the issue of misuse of legitimate services for organized crime, involvement of organized crime into each key area of the country or tax crimes, money laundering or crimes related to insolvency proceedings).

[1] Sum of three stages of single empirical research: 1) B. Šesták, Z. Kovařík and L. Jakubcová (233 respondents), 2) V. Blažek, Z. Kovařík (407 respondents), 3) J. Paďourek and Z. Kovařík (57 respondents).

Second factor (Tab. No. 3b – 3bb) is related to **cyberspace threats**.

Tab. No 3b - 233 respondents (CR)[1]

Security threat	Survey of 233 respondents (regression coefficients of variables at factor)
Cybernetic espionage	0.9090
Damage to the IT infrastructure resistance	0.8040
Cyberterrorism	0.6870
Harm to the eGovernment safety	0.6390
Hostile campaigns	0.3220
Hybrid threats	0.3060

Table No. 3bb – 731 respondents (ČR, SR, BIS)[2]

Security threat	Survey of 731 respondents (regression coefficients of variables at factor)
Cybernetic espionage	0.7400
Damage to the IT infrastructure resistance	0.7250
Cyberterrorism	0.7180
Harm to the eGovernment safety	0.6990
Hostile campaigns	0.6440
Hybrid threats	0.5840

The second factor, concentrating on **cyberspace threats** and its detailed factor composition contains 6 security threats in total. In fact, this is a relatively new security phenomenon that has achieved key importance only over the last decades thanks to the fast development of the internet. Cyberspace threats were ignored by European governments for a long time, in particular in the issues of national active measures against these anti-social phenomena. Only over the last years, it's possible to define certain steps of Czech government when fighting this threat.[3] The issue of cyber security is becoming a dominant threat and probably, in the near future, it's importance will be strengthened even more.[4] There are two following problems: **a)** *capacity to analyse* and **b)** *ability for defence against such threats,* that will be partially more cumulated.[5]

[1] Results of the single empirical research of B. Šesták, Z. Kovařík and L. Jakubcová (233 respondents).

[2] Sum of three single empirical sets of research: 1) B. Šesták, Z. Kovařík and L. Jakubcová (233 respondents), 2) V. Blažek, Z. Kovařík and L. Jakubcová (407 respondents), 3) J. Paďourek and Z. Kovařík (60 or 57 respondents).

[3] The National Bureau for Cybernetic and Information Security (NÚKIB) was established only on August 1, 2017 on the basis of Act No. 205/2017 Coll. it's a central body of the country for cybersecurity with its registered office in Brno and derived from the National Security Office, responsible for this area temporarily.

[4] Confirmation of our conclusion that cybersecurity will strengthen in its relevance and dominance as a security threat in the future even more is the fact that this trend is seen by almost each Euroatlantic government. At its summit in Brussels in 2018, NATO established its operational office for cyberspace within a strengthened structure of NATO command.

[5] It's limited by capacities, in particular of IT experts and in the future, division of countries according to their capacity to utilize artificial intelligence for their defence and attack will be important.

A more detailed composition of the second factor shows that *cybernetic espionage* is the major affecting threat of this group (high regression coefficient 0.7400). The last impacting factors are the so-called *hybrid threats* (average regression coefficient 0.5840). Inclusion of hybrid threats into this second factor is an interesting phenomenon as these so-called hybrid threats do not have to come only from cyberspace, albeit they dominate there. Moreover, a very emotional discussion about the existence or non-existence of so-called hybrid threats, wars, attacks, etc. has its clear opponents in the CR, but also supporters.[1] Another important finding is the fact that the regression coefficient of the security threat of *hostile campaign* almost doubled when comparing the two surveys (from 0.3220 to 0.6990).[2]

The second factor includes the threats showing a relatively high regression coefficient (always exceeding 0.500). We have threats here, representing serious security threats according to the conclusions of our research, the CR should focus on, build and strengthen all defense and protective mechanisms and capacities more intensively. The second factor, as well as the first one, sums up the threats that may have domestic, but always a foreign origin (more specifically, see the Table No. 3aa).

The third factor (Tab. No3c – 3cc) is related to **threats related to migration**

Tab. No 3c - 233 respondents (CR)[3]

Security threat	**Survey of 233 respondents (regression coefficients of variables at factor)**
Uncontrolled migration	0.7290
Islamic radicalism	0.7210
Terrorism of lone wolves	0.7050
Foreign fighters	0.6980
Threat of failed integration	0.3900

[1] A significant opponent of the existence of the presence of a hybrid war in the CR is e.g. the Institute of International Relations with its protagonists Jan DANIEL and Jakub EBERLE, who published e.g. a confrontation article with the name *Jak se Česko začalo bát hybridní války a proč na slovech záleží* (full text available at: *https://iir.cz/article/jak-se-cesko-zacalo-bat-hybridni-valky-a-proc-na-slovech-zalezi* [online, cit. 2019-11-17]. Jaroslav KURFÜRST, diplomat and political geographer provided a reaction to their article in his article *Jak se diskutovalo o „českých hybridních válečnících" a ztratila se podstata*, summarizing in fact the argumentation of the second opinion group (full text available at: *http://blog.aktualne.cz/blogy/pohled-zblizka.php?itemid=33501* [online, cit. 2019-11-17]).

[2] This fact is probably explainable by the rising aggressiveness of the campaigns by the two main Eastern powers – the Russian Federation and the China People's Republic against the CR, V4, EU, NATO, USA, etc. See e.g. the last published Annual Report of the BIS for 2017 – full text available at: *https://www.bis.cz/public/site/bis.cz/content/vyrocni-zpravy/2017-vz-cz.pdf* [online, cit. 2019-11-17]

[3] Results of the single empirical research of B. Šesták, Z. Kovařík and L. Jakubcová (233 respondents).

Tab. No. 3cc - 731 respondents (CR, SR, BIS)[1]

Security threat	Survey of 731 respondents (regression coefficients of variables at factor)
Uncontrolled migration	0.7910
Islamic radicalism	0.7190
Terrorism of lone wolves	0.6240
Foreign fighters	0.5760
Threat of failed integration	0.4750

The third factor contains 5 security threats in total. The issue of *uncontrolled migration* with a relatively high regression coefficient - 0.7910. Except for the *threat of failed integration showing* conversely the lowest regression coefficient of the third factor group ("only" 0.4750), however the residual threats correlate rather with terrorism that is often related to the issue of migration, but never demonstrably proven. From this point of view, it should be considered **if the third group should not be renamed to a "factor related to the threats of terrorism" or to a "factor related to the threat of terrorism and migration."** It contains three other security threats with high regression coefficients (see the Table No. 3cc) including only the issues of terrorism. Moreover, the key issue of the fight against terrorism is not considered in the original names of the five factor composition of security threats at all.

The evaluation of the high relevance of security threats of the third factor group of public addressed by us is taken more by the empirical knowledge from close foreign countries (e.g. from Germany or France), than from our own experience. To date, the CR has had no experience with a direct terrorist attack of larger extent within its territory and the main migration waves to Europe are moving and are directed outside of the territory of our country. The issue of migration as well as the issue of migration related to terrorism are markedly politicized in Europe.

The fourth factor (Tab. 3d-3dd) is related to the issue of **extremism**

Tab. No 3d – 233 respondents in the CR[2]

Security threat	Survey of 233 respondents (regression coefficients of variables at factor)
Right-wing extremism	0.8620
Political extremism	0.7000
Left-wing extremism	0.6160

[1] Sum of three single empirical sets of research: 1) B. Šesták, Z. Kovařík and L. Jakubcová (233 respondents), 2) V. Blažek, Z. Kovařík and L. Jakubcová (407 respondents), 3) J. Paďourek and Z. Kovařík (57 respondents).

[2] Results of the single empirical research of B. Šesták, Z. Kovařík and L. Jakubcová (233 respondents).

Tab. No 3dd - 731 respondents (CR, SR, BIS)[1]

Security threat	Survey of 731 respondents (regression coefficients of variables at factor)
Right-wing extremism	0.7190
Political extremism	0.6820
Left-wing extremism	0.6700

The fourth examined factor includes 3 security threats in total, explaining the entire standard spectrum of extremism. The three stated threats have a relatively high regression coefficient (between 0.6700 – 0.7190), while the highest regression coefficient can be seen in the threat of *right-wing extremism* (0.7190) and, conversely, the lowest one in *left-wing extremism* ("only" 0.6700). In the middle, other extremist movements are focused within the *political extremism* (0.6820) group. It may be stated that according to the expert public, the risk of extremism represents a serious issue as all three movements based themselves in highly non-democratic and populist sources, and often they point to a dark European past e.g. Nazism or Communism. Furthermore, we may state that from the political life of modern society, the traditional division of political movements to the left, centre and right part of the political spectrum is fading away slowly, represented by so-called traditional political parties. This standard division is replaced gradually by crystalically pure political populism, including comprehensively the entire traditional political spectrum (from the right wing to the left wing).[2] Therefore, the importance of a neutrally considered *political extremism* will be increasing rather than its right-wing or left-wing options. Security threats related to extremism have their domestic and foreign origin, here rather a mix of both options, expressed in practice by cross-border cooperation of some Czech and foreign extremist groups.

The last, fifth factor (Tab. No 3e-3ee), is the factor related to the **threats of energy, raw materials and industry**.

Tab. No 3e – 233 respondents in the CR[3]

Security threat	Survey of 233 respondents (regression coefficients of variables at factor)
Interruption of food supplies of large scale	0.8450
Interruption of gas supplies of large scale	0.7260
Interruption of electrical energy supplies of large scale	0.7220
Interruption of oil supplies of large scale	0.6990
Interruption of potable water supplies of large scale	0.6910
Radiation accident	0.6070

[1] Sum of three single empirical sets of research: 1) B. Šesták, Z. Kovařík and L. Jakubcová (233 respondents), 2) V. Blažek, Z. Kovařík and L. Jakubcová (407 respondents), 3) J. Paďourek and Z. Kovařík (57 respondents).

[2] According to some experts in the world, extreme right-winged political groups are strengthening, covering themselves only by populist parties. In detail e.g. globally recognized expert on populism MUDDE, Cas and Cristóbal Rovira KALTWASSER. *Populism: A Very Short Introduction.* Oxford University Press, 2017. 131 p. ISBN 9780190234874.

[3] Results of the single empirical research of B. Šesták, Z. Kovařík and L. Jakubcová (233 respondents).

Industrial security	0.5770
Raw material security	0.5280
Hazardous substance leakage	0.4000
Floods	0.2310
Long-term drought	0.0210

Table No. 3ee - 731 respondents (ČR, SR, BIS)[1]

Security threat	**Survey of 233 respondents (regression coefficients of variables at factor) - final**
Interruption of food supplies of large scale	0.8340
Interruption of gas supplies of large scale	0.7880
Interruption of electrical energy supplies of large scale	0.7800
Interruption of oil supplies of large scale	0.7680
Interruption of potable water supplies of large scale	0.7560
Radiation accident	0.6720
Industrial security	0.6640
Raw material security	0.5930
Hazardous substance leakage	0.5580
Floods	0.3470
Long-term drought	0.3410

The composition of the fifth factor from the area of energy, raw materials and industrial threats contains a higher number of specific risks, 11 security threats in total. Besides energy, raw materials' supplies and industrial security, now it also points to a higher risk of floods or, conversely, to water insufficiency or long-term drought as a key environmental issue these days and in the near future. This last example represents an important result of our research as, different from previous research, it assignes higher importance to environmental issues of floods and droughts, and so the issue of climate change than used to be in previous research. We may state that this result represents a reaction to actual climate changes of our planet and their negative tendencies that may be proven exactly and that are becoming the headlines of expert discussions over the entire scientific world. If e.g. the threat of *long-term drought* showed a minor regression coefficient of 0.0210 in the first research,[2] then the results, presented by us, assign a markedly higher regression coefficient to the same threat of 0.3410.[3] If the original measurement included the threat of a *long-term drought* outside of the scope of the fifth factor thanks to its low regression coefficient, then our more detailed factor composition fully legitimizes such assignment. During the ongoing tendency, the relevance of threat of a *long-term drought* or *floods* may even increase further in the future.

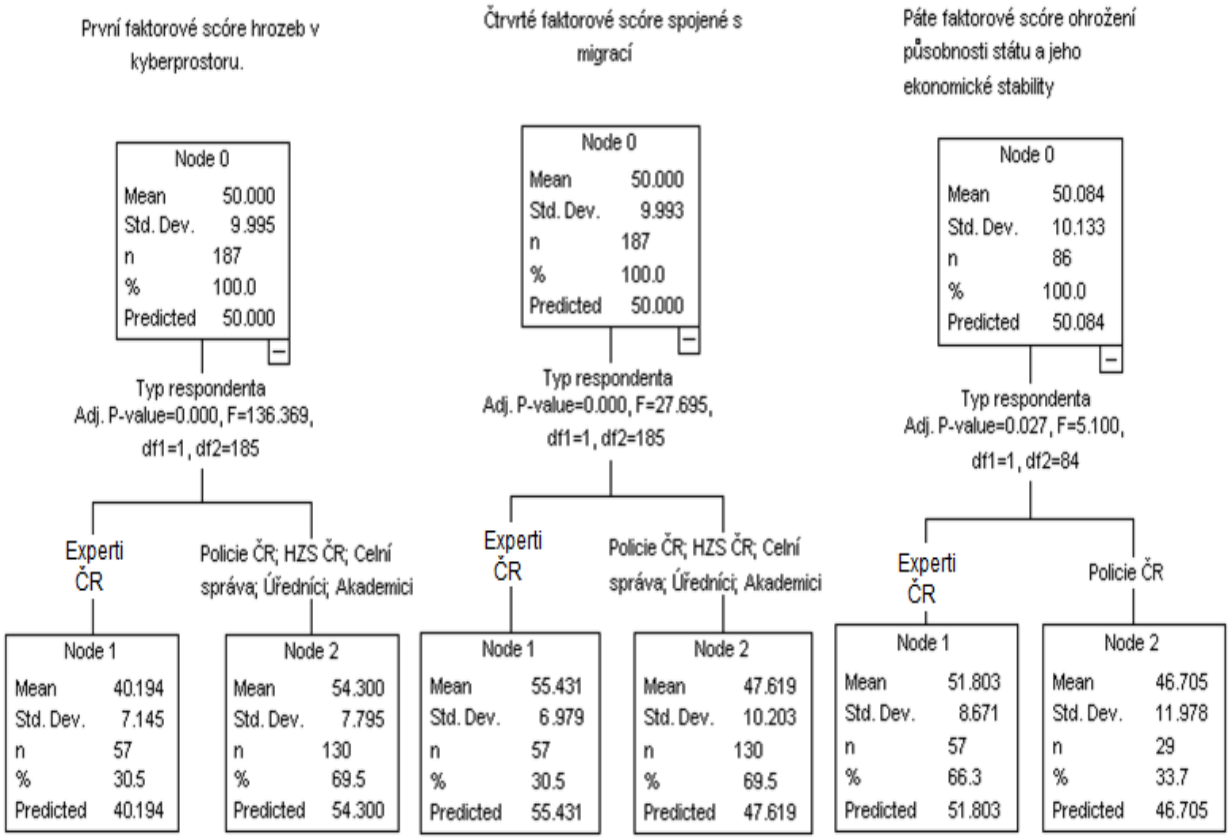
[1] Sum of three single sets of empirical research: 1) B. Šesták, Z. Kovařík and L. Jakubcová (233 respondents), 2) V. Blažek, Z. Kovařík and L. Jakubcová (407 respondents), 3) J. Paďourek and Z. Kovařík (57 respondents).

[2] Results of the single empirical research of B. Šesták, Z. Kovařík and L. Jakubcová (233 respondents).

[3] Sum of three single sets of empirical research: 1) B. Šesták, Z. Kovařík and L. Jakubcová (233 respondents), 2) V. Blažek, Z. Kovařík and L. Jakubcová (407 respondents), 3) J. Paďourek and Z. Kovařík (57 respondents).

The fifth factor is mostly affected by the threat of *interruption to the electrical energy supplies of large scale* (regression factor 0.8340), but similar high values are also seen in case of other energy threats like the *interruption to potable water supplies of large scale* (0.7880), *to food supplies of large scale* (0.7800), *gas supplies of large scale* (0.7680) or *oil supplies of large scale* (0.7560). Besides the energy security, as the CR is dependent on the supplies of key strategic raw materials from abroad in many ways, the fifth factor includes the issue of nuclear safety and industrial safety, so factors more related to domestic trends as in other cases.

Fig. No. 1

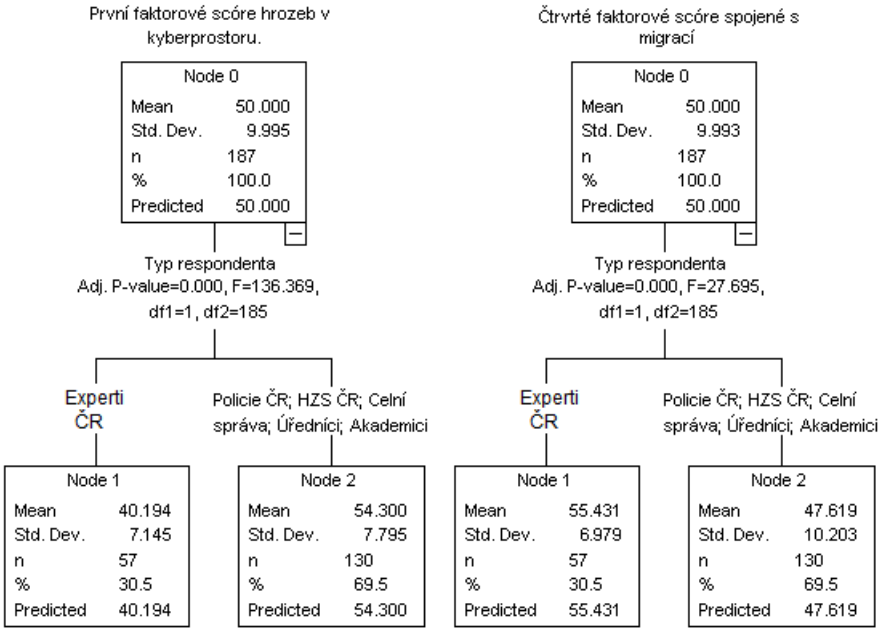


První faktorové score hrozeb v kyberprostoru – First factor score of cyberspace threats
Čtvrté faktorové score spojené s migrací – Fourth factor score related to migration
Páté faktorové score ohrožení působnosti státu a jeho ekonomické stability – Fifth factor score of threat to state authority and its economic stability
Typ respondenta – Type of respondent **Experti ČR – CR experts**
Policie ČR; HZS ČR; Celní správa; Úředníci; Akademici – Police of the CR, FFU CR, Customs Authority; Officials; Academics

Those already stated climate changes are of a global, but also of a domestic, nature that may be probably affected on its own. In these issues, a politicized discussion of supporters and opponents of the effects of humankind and society on dangerous climate changes is held.[1]

[1] Opponents of the theory of effects of humankind on climate changes come rather from conservative areas and one of the domestic representatives is e.g. the former president of the CR, Václav KLAUS, see his study *Modrá planeta v ohrožení.* Praha: Dokořán, 2009. 216 p. ISBN 978-80-7363-243-4. However, according to certain data, more than 97%

Fig. No. 2



The analysis of the impact of professional focus of respondents of selected groups of factor score provided interesting findings, documenting the regression trees, demonstrated at Fig. No. 1 and No. 2. The first and second figure show that **CR experts assess threats in cyberspace with higher importance than the other professional groups of respondents**. Conversely, from fig No. 1 and No. 2 it's clear that the **impact of threats related to migration, threats to state authority and its economic stability is assessed more benevolently than by other professional groups of respondents**.

On the basis of evidence, stated in attachments and tables 3a to 3ee, it's possible to make a conclusion to the tested hypothesis.

Conclusion – results of testing of composition of security threats

The third stage of our research analyzed the reactions of the addressed respondents of all three empirical sets of research (group of 731 persons in total). Thus, a sufficiently extensive distribution of the entire scale of respondents was achieved from the informed public up to a relevant expert level (CR, SR and CR experts). ***Inclusion of respective groups into factors seems to be the most accurate now, albeit no change to the structure of factor composition occurred, defined by the previous two sets of research****. We may state that the size of respective regression coefficients of specific security threats is not that important as the inclusion of respective items into respective factor structures. In other words: factor composition looks optimal and the regression coefficient is not primary for making a conclusion, albeit it has its natural importance.*

of global scientific elite believes that humankind has a direct impact on these procedures (Available at: *https://ct24.ceskatelevize.cz/veda/2048078-ze-klima-meni-clovek-veri-97-procent-vedcu* [online, cit. 2019-11-17]).

In specific example, we may conclude the following:

- *In the area of the first factor (**threat to state authority and its economic stability**) the main emphases are focused on foreign powers (state and non-state actors) in the issues of interventions into the sole issues of the CR even in the form of so-called hybrid attacks. The threat to state authority and its economic stability is assessed by CR experts somehow more benevolently in comparison to other professional groups of respondents. The first factor also includes the activity of organized criminal groups within our territory, often in close cooperation with international criminal gangs;*
- *In the area of the second factor (**cyberspace threats**) we may state that this threat has the tendency of additional fast increase and shortly, it'll achieve the importance of one of the dominating threats. CR experts see the cyberspace threats with higher importance than other professional groups of respondents. Probably, it's caused by the fact that CR experts consider their everyday experiences with rising cybernetic campaigns against the CR which, inter alia, is also mirrored in the description of this threat in the annual report of Czech intelligence units.*[1] *Even within this context, the Czech Republic should invest more funds into the elimination of this factor (financial, capacity, etc.), as it is by now.*[2] The regression coefficient for security threats *of hostile campaign doubled (from 0.3220 to 0.6990) when comparing two sets of research (233 and 731 respondents).*
- *In the area of the third factor (**threats related to migration**) we may state that here, also different forms of **terrorism** threats are represented beside the issue of migration. In relation thereto, we submit the proposal for renaming the third factor rather to "threats related to terrorism" or at least to "threats related to terrorism and migration" as terrorism, as a part of actual security threats in Europe, can't be ignored. Not even in case that the CR has no direct experience with these phenomena within its territory yet. The impact of threats related to migration is considered by CR experts more benevolently that in the other professional groups of respondents.*
- *In the area of the fourth factor (**extremism threats**), there is is still a division to standard distribution of extremism to left wing, right wing and neutral political extremism. That does not correspond to actual trends in the world, or in the CR. Left and right wing extremism as well as traditional left and right wing political parties leave their field to the new political trend of **populism,** so probably, also in this area, the neutral term of political extremism will achieve its importance without additional related terms.*
- *In the area of the last, fifth factor (**energy, raw materials and industrial threats**), we may mark these threats as key ones for the trouble-free operation of the national*

[1] Besides the annual reports of the Security Information Service also e.g. published parts of annual reports of the Military Intelligence.

[2] Inter alia, the Report on the Activities of the National Cyber and Information Security Agency (Národní úřad pro kybernetickou bezpečnost ČR - NÚKIB) states that the NÚKIB has insufficient funding for onboarding of new highly professional capacities. More specifically in the article „*Kyberúřad varuje před útoky na kritickou infrastrukturu, nemá peníze na*" *(available at https://zpravy.aktualne.cz/domaci/kyberurad-varuje-pred-utoky-na-kritickou-infrastrukturu/r~f7c659d2df9511e9a24cac1f6b220ee8/* [online, cit. 2019-11-17]

economy. Besides these calls to action, the fifth factor contains threats of an environmental nature like "floods" or a "long-term drought," so threats related to unwanted climate change. Research has proven the increased relevance of environmental threats by the change of its regression coefficients (e.g. in case of threat to "long-term drought" from the original 0.0210 to actual 0.3410). Even with regard to this fact, it was useful to extend the name of the chapter of the fifth factor to include the word "environmental," i.e. to ***"energy, raw materials, industrial and environmental threats."***

Therefore, the classification of security threats may be considered with regard to their material content as it was done by the above-mentioned Audit of National Security 2016 or with regard to their importance for the Czech Republic. Both approaches are possible.

Results of the exploratory factor analysis of 34 security threats demonstrate that the quantitative approach to find a wider composition for the framing of respective security threats on the basis of their importance for the CR could provide materially understandable results. Results of analysis show how quantitative estimations of the importance of security threats are very functional in most of the cases and understandably interconnected with their material content. Thus, a functional connection of the quantitative and qualitative approach is made.

The results achieved demonstrate the importance of exploratory factor analysis in case of reduction of variables also in the area of the composition of security threats. For the purpose of deeper verification of this composition, it would be useful to apply a confirmation factor analysis in the future, which will require an extension of the selected group.

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R E S U M É

PAĎOUREK, Jan; KOVAŘÍK, Zdeněk: MODELOVÁNÍ FAKTOROVÉ SKLADBY BEZPEČNOSTNÍCH HROZEB Z POHLEDU ČESKÝCH A SLOVENSKÝCH RESPONDENTŮ A EXPERTŮ ČR

Studie navazuje na závěry dvou empirických výzkumů, které byly provedeny na Policejní akademii ČR v Praze autorským kolektivem Bedřicha Šestáka, Zdeňka Kovaříka, Lenky Jakubcové (Česká republika) a Vladimíra Blažka (Slovenská republika). V této studii jsme sloučili výsledky tří nezávislých empirických výzkumů - první: (výzkum v ČR na 233 respondentech), druhý (výzkum v SR na 407 respondentech) a třetí (výzkum s experty BIS ČR na 57 respondentech), přičemž námi realizovaný poslední výzkum představoval dobrovolný a anonymní dotazníkový výzkum na příslušnících centrální analytiky Bezpečnostní informační služby. Tím bylo dosaženo většího zpřesnění faktorové skladby bezpečnostních hrozeb, jejíž původní pětifaktorová struktura se však nezměnila. Autoři statě ale navrhují úpravu názvu druhého (migrace) a pátého faktoru (energetika, suroviny, průmysl), čímž by došlo k zohlednění klíčového významu hrozeb terorismu a nežádoucích změn klimatu. Lze konstatovat, že se nyní předkládaná faktorová skladba jednotlivých hrozeb jeví jako více optimální, i když hodnota regresivních koeficientů není pro činění závěrů primární. Autoři také poukazují na význam explorační faktorové analýzy při redukci proměnných i v oblasti uspořádání skladby bezpečnostních hrozeb. Doporučují v budoucnu využít konfirmační faktorovou analýzu při zásadním rozšíření výběrového souboru.

Klíčová slova: ČR, SR, explorační faktorová analýza, regression coefficient, security threats, faktorová skladba bezpečnostních hrozeb.

S U M M A R Y

The study follows two sets of empirical research that were conducted at the Police Academy of the Czech Republic in Prague by the team of Bedřich Šesták, Zdeněk Kovařík, Lenka Jakubcová (Czech Republic) and Assoc. Vladimír Blažek (Slovak Republic). The results of three independent surveys were merged here - the first: (research within the Czech Republic with 233 respondents), the second (research within the Slovak Republic with 407 respondents) and the third (research with Czech BIS experts with 57 respondents), the last being realized via an anonymous and voluntary research questionnaire with members of the central analytics of the Security Information Service (BIS). This achieved a greater refinement of the factor composition of the security threats, with the original five-factor structure remaining unchanged. However, the authors propose to modify the names of the second (migration) and fifth factors (energy, raw materials, industry), which would take into account the importance of terrorist threats and undesirable climate changes. It can be stated that the present factor composition of individual threats appears to be more appropriate and that the values of regression coefficients are not primary for making conclusions. The authors also point out the importance of exploratory factor analysis in the reduction of variables and in the structure of security threat composition. In the future, they recommend the use of confirmatory factor analysis with a significanty extended sample size.

Keywords: Czech Republic, Slovak Republic, exploratory factor analysis, regression coefficient, security threats, factor structure of security threats.

Annex No. 1 – Overview of 34 security threats

P01	Islamic radicalism
P02	Political extremism
P03	Terrorism of lone wolves
P04	Foreign fighters
P05	Right-wing extremism
P06	Left-wing extremism
P07	Involvement of organized crime in public administration
P08	Misuse of public tenders and budgets
P09	Organized tax crimes
P10	Money laundering
P11	Misuse of legitimate services for organized crime
P12	Criminality related to insolvency proceedings
P13	Influencing public opinion by other country
P14	Affecting public administration by other country
P15	Obtaining legally protected information by other country
P16	Uncontrolled migration
P17	Threat of failed integration
P18	Floods
P19	Long-term drought
P20	Hazardous substance leakage
P21	Radiation accident
P22	Interruption of potable water supplies of large scale
P23	Interruption of food supplies of large scale
P24	Cybernetic espionage
P25	Damage to the IT infrastructure resistance
P26	Hostile campaigns
P27	Harm to the eGovernment safety
P28	Cyberterrorism
P29	Interruption of electrical energy supplies of large scale
P30	Interruption of gas supplies of large scale
P31	Interruption of oil supplies of large scale
P32	Raw material security
P33	Industrial security
P34	Hybrid threats

Annex No. 2 – Polychoric correlation matrix of 34 security threats (731 respondents)

	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11	P12
P01	1.000											
P02	0.154	1.000										
P03	0.555	0.074	1.000									
P04	0.603	0.276	0.588	1.000								
P05	0.177	0.577	0.072	0.265	1.000							
P06	0.171	0.501	0.129	0.347	0.613	1.000						
P07	-0.043	0.111	0.077	0.054	0.084	0.172	1.000					
P08	-0.150	0.154	-0.193	-0.102	0.197	0.107	0.523	1.000				
P09	-0.107	0.126	-0.120	-0.109	0.150	0.087	0.385	0.738	1.000			
P10	-0.130	0.065	-0.088	-0.112	0.123	0.136	0.391	0.592	0.712	1.000		
P11	0.002	0.205	0.025	0.029	0.132	0.198	0.470	0.451	0.530	0.590	1.000	
P12	-0.119	0.163	-0.049	0.026	0.145	0.233	0.322	0.343	0.445	0.497	0.675	1.000

	P13	P14	P15	P16	P17	P18	P19	P20	P21	P22	P23	P24
P13	1.000											
P14	0.831	1.000										
P15	0.601	0.709	1.000									
P16	-0.046	-0.021	0.121	1.000								
P17	0.089	0.138	0.150	0.567	1.000							
P18	0.078	0.069	0.078	0.006	-0.043	1.000						
P19	0.212	0.208	0.211	-0.016	0.073	0.336	1.000					
P20	0.008	0.050	0.121	0.142	0.054	0.479	0.327	1.000				
P21	0.041	0.164	0.279	0.256	0.102	0.196	0.175	0.629	1.000			
P22	0.102	0.203	0.280	0.210	0.073	0.183	0.388	0.471	0.654	1.000		
P23	0.069	0.184	0.242	0.191	0.054	0.185	0.240	0.429	0.676	0.867	1.000	
P24	0.326	0.321	0.415	0.101	0.170	0.074	0.285	0.250	0.246	0.317	0.252	1.000

	P25	P26	P27	P28	P29	P30	P31	P32	P33	P34
P25	1.000									
P26	0.542	1.000								
P27	0.640	0.636	1.000							
P28	0.636	0.448	0.617	1.000						
P29	0.385	0.279	0.374	0.437	1.000					
P30	0.405	0.335	0.340	0.383	0.821	1.000				
P31	0.368	0.256	0.354	0.397	0.755	0.798	1.000			
P32	0.335	0.280	0.386	0.352	0.619	0.579	0.581	1.000		
P33	0.324	0.292	0.396	0.333	0.535	0.461	0.462	0.734	1.000	
P34	0.495	0.493	0.589	0.493	0.491	0.457	0.427	0.565	0.580	1.000

Annex No. 3

Fig. No. 3a – Mardia's multivariate normality test

```
Analysis of the Mardia's (1970) multivariate asymmetry skewness and kurtosis.

                                        Coefficient        Statistic     df       P

Skewness                                    127.871         9206.741   7140     1.0000
SKewness corrected for small sample         127.871         9274.349   7140     1.0000
Kurtosis                                   1285.132           12.840             0.0000**

** Significant at 0.05
```

Fig. No. 3b – Adequacy of the correlation matrix of 34 variable for a factor analysis

```
ADEQUACY OF THE CORRELATION MATRIX

Determinant of the matrix                    = 0.000000011425485
Bartlett's statistic                         =  7659.4 (df =   561; P = 0.000010)
Kaiser-Meyer-Olkin (KMO) test                = 0.86515 (good)
BC Bootstrap  95% confidence interval of KMO = (  0.871      0.872)
```

Fig. No. 3c – Residual differences between data and a five-factor model

```
              Root Mean Square of Residuals (RMSR) =  0.0522
     BC Bootstrap  95% confidence interval of RMSR  = (  0.048      0.053)
Expected mean value of RMSR for an acceptable model =  0.0482 (Kelley's criterion)
(Kelley, 1935,page 146; see also Harman, 1962, page 21 of the 2nd edition)

Note: if the value of RMSR is much larger than Kelley's criterion value the model cannot be considered as good

          Weighted Root Mean Square Residual (WRMR) =  0.0658
(values under 1.0 have been recommended to represent good fit; Yu & Muthen, 2002)
     BC Bootstrap  95% confidence interval of WRMR  = (  0.056      0.071)
```

Fig. No. 3d – Indices of a five-factor model adequacy

```
ROBUST GOODNESS OF FIT STATISTICS

                       Root Mean Square Error of Approximation (RMSEA) =   0.053;

                             Estimated Non-Centrality Parameter (NCP) = 432.078
                                                Degrees of Freedom = 401
                                                Test of Approximate Fit
                                                H0 : RMSEA < 0.05;  P = 1.000

            Minimum Fit Function Chi Square with 401 degrees of freedom = 658.701 (P = 0.000010)
Robust Mean and Variance-Adjusted Chi Square with 401 degrees of freedom = 887.173 (P = 0.000010)
          Chi-Square for independence model with 561 degrees of freedom = 20377.468

                           Non-Normed Fit Index (NNFI; Tucker & Lewis) =   0.966;
                                       Comparative Fit Index (CFI) =   0.975;
                                                                     (between 0.950 and 0.990 : close)
                       Schwarz's Bayesian Information Criterion (BIC) = 2125.132;

                                                Goodness of Fit Index (GFI) =   0.976;
                                     Adjusted Goodness of Fit Index (AGFI) =   0.967;
                   Goodness of Fit Index without diagonal values (GFI) =   0.968;
           Adjusted Goodness of Fit Index without diagonal values(AGFI) =   0.955;
```

Fig. No. 3e – Reliability of a five-factor model

```
Greatest Lower Bound to Reliability =   0.979690
                  McDonald's Omega =   0.872486
      Standardized Cronbach's alpha =   0.905996
            Total observed variance =  34.000
              Total Common Variance =  28.277

 Factor      Variance   ORION

    1         5.653     0.908
    2         1.959     0.783
    3         4.204     0.872
    4         2.536     0.832
    5         3.812     0.887
```