DETERMINANTS OF DECISION-MAKING BY MILITARY PERSONNEL IN CRISIS SETTINGS: RESULTS OF A BASELINE STUDY

ДЕТЕРМІНАНТИ УХВАЛЕННЯ РІШЕНЬ ВІЙСЬКОВОСЛУЖБОВЦЯМИ У КРИЗОВИХ СИТУАЦІЯХ: РЕЗУЛЬТАТИ КОНСТАТУВАЛЬНОГО ДОСЛІДЖЕННЯ

UDC 355.4:159.947:351.86
DOI https://doi.org/10.32782/2663-5208.2025.71.38

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This study investigates the key psychological, situational, and organisational determinants influencing military decision-making in high-stakes environments. The research is grounded in the increasing complexity of modern warfare, where decentralised decision-making, asymmetric threats, and unpredictable operational conditions place significant cognitive and emotional demands on military personnel. Despite extensive theoretical studies, empirical research quantifying the determinants shaping individual decision-making under crisis conditions remains limited. This survey-based baseline study involved 699 military personnel, including members of the State Border Guard Service of Ukraine. Following data cleaning, 696 valid responses were analysed. The research utilised a binary-response questionnaire structured into seven thematic blocks, covering stress factors, emotional states, external influences, leadership, and environmental constraints. A pilot study (n = 63) confirmed the questionnaire's reliability (Cronbach's α = 0,925, McDonald's ω = 0,931). Pearson's correlation analysis identified significant relationships between leadership trust, operational constraints, and psychological stressors. The strongest correlation (r = 0,532, p < 0,0000000000207) was found between Lack of Trust in Leaders and Feeling Underappreciated by Command, indicating leadership's critical role in decision-making effectiveness. Other key determinants included limited visibility, lack of safe zones, and unit coordination issues, which significantly influenced decision confidence. The findings underscore the need for enhanced crisis decision-making training. Only 39,3% of personnel had received formal training, highlighting gaps in psychological resilience programmes and situational awareness training. This study recommends the implementation of structured resilience and leadership training, cognitive stress management training, and enhanced coordination strategies to optimise decision-making performance in crisis settings.

Key words: *military decision-making, psychological resilience in crisis conditions, situational awareness and leadership effectiveness, operational stress and cognitive performance, crisis management in military operations.*

У дослідженні виокремлено ключові психологічні, ситуаційні й організаційні детермінанти, що впливають на ухвалення рішень військовослужбовцями в умовах підвищеного ризику. Дослідження зумовлене зростанням складності сучасної війни, де децентралізоване ухвалення рішень, асиметричні загрози та непередбачувані оперативні умови створюють значні когнітивні й емоційні навантаження на військовослужбовців. Попри наявність значної кількості теоретичних досліджень, кількість емпіричних досліджень, які кількісно оцінюють детермінанти, що формують індивідуальне ухвалення рішень у кризових ситуаціях, залишається обмеженою. Дане констатувальне опитування охопило 699 військовослужбовців Державної прикордонної служби України. Після фінальної вибірки було проаналізовано 696 валідних відповідей. У дослідженні використовувався бінарний опитувальник, структурований у сім тематичних блоків, які охоплювали чинники стресу, емоційні стани, зовнішні впливи, лідерство й екологічні обмеження. Пілотне дослідження(n = 63) підтвердило надійність опитувальника (α Кронбаха = 0,925, ω Макдональда = 0,931). Кореляційний аналіз Пірсона виявив значущі взаємозв'язки між довірою до лідерства, оперативними обмеженнями та психологічними стресовими чинниками. Найсильніша кореляція (r = 0,532, p < 0,0000000000207) була зафіксована між оцінюваними чинниками «Відсутність довіри до лідерів» і «Відчуття недооцінення командуванням», що підкреслює критичну роль лідерства в ефективності ухвалення рішень. Інші ключові детермінанти включали обмежену видимість, відсутність безпечних зон і проблеми координації підрозділів, які значно впливали на впевненість в ухваленні рішень. Результати підкреслюють необхідність удосконалення навчальних програм з ухвалення рішень у кризових ситуаціях, беручи до уваги той з'ясований факт, що лише 39,3% військовослужбовців пройшли спеціальні тренінги з ухвалення рішень у кризових ситуаціях. За результатами дослідження рекомендується впровадження структурованих тренінгових програм з лідерства, управління когнітивним стресом та підвищення координаційних стратегій для оптимізації процесу ухвалення рішень у кризових умовах.

Ключові слова: *ухвалення рішень військовослужбовцями, психологічна стійкість у кризових ситуаціях, ситуаційна обізнаність і ефективність лідерства, оперативний стрес і когнітивна продуктивність, управління кризовими ситуаціями у воєнних операціях.*

Decision-making under crisis conditions is a fundamental challenge for military personnel, as rapid and effective choices can determine mission success and personnel survival. Crisis situations in military operations are characterised by high uncertainty, time constraints, and extreme psychological and physical stress, which significantly impact cognitive processes and decision-making abilities [1; 5]. The relevance of studying the determinants of decision-making among military personnel stems from the growing complexity of modern warfare, the increasing role of asymmetric threats, and the heightened reliance on decentralised decision-making by individual soldiers and unit leaders [6; 7].

A number of studies pay emphasise on the fact that decision-making in combat environments is impacted

by a combination of psychological, situational, and organisational determinants [2–4; 10]. Psychological factors include stress resilience, cognitive overload, fatigue, and post-traumatic stress disorder (PTSD), all of which might change the perception, assessment of the risk, and the speed of reaction [5; 6]. Situational determinants involve environmental stressors such as hostile fire, limited visibility, and communication failures, which create uncertainty and influence negatively judgment accuracy [7]. Additionally, leadership, trust in command, and group dynamics within units are the prerequisites of conscious decision-making under combat stress [8; 9]. Despite extensive research on general military decision-making, there is a lack of empirical studies focused specifically on the determinants which can be quantifiably measured and which influence individual decision-making under crisis conditions.

The *purpose* of this baseline study is to identify key psychological, situational, and organisational factors that shape decision-making under crisis conditions and evaluate their interdependencies using correlation. The aim to contribute to the development of evidence-based strategies and training programmes to enhance decision-making performance in high-risk military environments.

This study methodology employed a survey-based baseline research design and the survey initially involved 699 respondents from the State Border Guard Service of Ukraine with exclusion of three invalid responses from individuals diagnosed with Post-Traumatic Stress Disorder (PTSD) to prevent potential biases related to cognitive and emotional impairments associated with PTSD. The survey questionnaire was initially designed in Ukrainian by the author of the research and was distributed in a paper-based format. The questionnaire was structured into seven thematic blocks, each covering a different area, such as: a) stress factors (combat exposure, time pressure, responsibility); b) emotional states (anxiety, panic, lack of confidence); c) external factors (communication barriers, logistical challenges); d) psychological factors (motivation, cognitive overload, training level); e) physical factors (fatigue, injuries, environmental exposure); f) leadership and teamwork (trust in leadership, group cohesion); g) external environment (battlefield conditions, unpredictability). Each block of this data collection instrument contained 14 multiple-choice items, where items 1–13 were closed-ended questions assessing the presence of specific determinants, and item 14 was an open-ended question for qualitative responses. Since no respondents provided answers to the question 14 in all questionnaire blocks, these items were omitted from the analysis. The questionnaire used a binary response format, with 1 indicating “Yes” (the factor was chosen by the respondent) and 0 indicating “No” (the factor was not chosen by the respondent). Before full-scale use of this survey questionnaire, a pilot study was conducted with 63 military personnel to evaluate the questionnaire’s reliability. Internal consistency (reliability analysis) of the questionnaire was assessed using Cronbach’s α and McDonald’s ω, calculated via *Jamovi* desktop software (Version 2.2.5; https://www.jamovi.org/). The results showed significant reliability with Cronbach’s $\alpha = 0{,}925$, McDonald’s $\omega = 0{,}931$ ($M = 0.214$; $SD = 0.140$) which indicated a high degree of internal consistency, confirming that the questionnaire items effectively measured the intended constructs.

To collect data, the survey was distributed randomly among the military personnel of the State Border Guard Service of Ukraine. The data drawn from the survey were analysed using descriptive statistical analysis to summarise demographic and response distributions followed by the correlation analysis (Pearson’s *r*) to explore relationships between determinants. All analyses were performed using *Jamovi* statistical tool to ensure robust and replicable results. The ethical research standards of informed consent, anonymity, and voluntary involvement were followed in this study. The adherence to accepted ethical norms was ensured by informing the participants about the objectives of this study, their right to withdraw at any stage without any consequences, and the confidentiality of their responses before taking the survey.

The results of descriptive statistical analysis, specifically based on the demographic characteristics of the respondents, showed that the age distribution of respondents ranged from 19 to 52 years, with a mean age of 32,4 years ($SD = 6{,}2$) and the average length of military service being 8,7 years ($SD = 5{,}1$), which reflected a mix of experienced and relatively new personnel. In terms of distribution of the military rank and participation in combat operations, the majority of respondents held junior and mid-level ranks, with a smaller proportion in senior positions, 47,5 % of whom reported active participation in combat operations, while 52,5 % had no direct combat experience. Training in crisis decision-making was reported by 39,3 % of participants, indicating that a relatively low, proportion of personnel had received structured preparation for high-stress scenarios. With regard to response distribution, it was noticed that the most frequently reported situational determinants affecting decision-making included limited visibility (46,1 %), inability to coordinate between units (47,2 %) and lack of safe zones for rest (47,2 %). Among psychological determinants, the most prominent factors were lack of confidence in decisions (46,1 %) and feeling underappreciated by command (53,3 %). Organisational determinants were also significant, particularly: a) lack of trust in leadership (53,3 %). In our view, the presence of these high-response factors suggested that both psychological and environmental stressors were primary constraints on effective decision-making in crisis conditions. The above findings also suggested key observations and implications. These are as follows:

1. *Age and Experience Disparities*: The relatively young mean age of 32,4 years, combined with an average of 8,7 years in service, suggests that

decision-making personnel often have substantial military experience. However, more than half of the respondents (52,5 %) lacked combat experience, which could affect real-world decision-making under crisis conditions.

2. *High Psychological Pressure*: Lack of confidence in decisions (46,1 %) and perceived underappreciation by leadership (53,3 %) indicate potential morale issues and cognitive burdens that may affect military personnel's ability to make rapid and effective decisions.

3. *Operational Constraints*: Environmental and coordination challenges (limited visibility, lack of safe zones, and inter-unit coordination difficulties) were frequently reported, pointing to structural issues that could hinder battlefield decision-making.

4. *Training Limits*: Only 39,3 % of respondents had undergone formal crisis decision-making training, suggesting that expanding such training programmes could improve operational effectiveness.

Building on the descriptive findings that highlighted key psychological, situational, and organisational determinants influencing decision-making, we conducted Pearson's correlation analysis to explore the strength and significance of relationships between these determinants, as visualised in Figure 1 and detailed in Table 1 below.

The Pearson correlation analysis provided valuable insights into the interrelationships between psychological, situational, and organisational determinants affecting military personnel's decision-making under crisis conditions. The correlation matrix (Figure 1) and Table 1 indicate that several key determinants exhibit moderate to strong correlations ($|r| > 0{,}3$ many of which are statistically significant ($p < 0{,}001$), highlighting crucial patterns in decision-making influences.

With respect to the role of leadership and command influence, one of the most prominent findings is the strong correlation ($r = 0{,}532$, $p < 0{,}0000000000207$) between LCR_2 (Lack of Trust in Leaders) and LF_2 (Feeling Underappreciated by Command). This suggests that military personnel who perceive a lack of trust in leadership also feel undervalued, which may contribute to reduced morale, decision hesitancy, and lower operational efficiency. Similarly, LCR_3 (Commander Inability to Organise) correlates with LF_4 (Lack of Clear Instructions) ($r = 0{,}397$, $p < 0{,}0000015$), reinforcing the notion that leadership deficiencies create ambiguity, impacting decision-making confidence. Additionally, the correlation between LCR_12 (Lack of Leader Example) and LF_7 (Insufficient Training) ($r = 0{,}359$, $p < 0{,}0000159$) further underscores the importance of effective leadership in decision-making preparedness. These findings suggest that enhanced leadership training and structured command support systems could mitigate uncertainty and improve decision-making performance.

From the perspective of environmental and situational constraints, among the situational

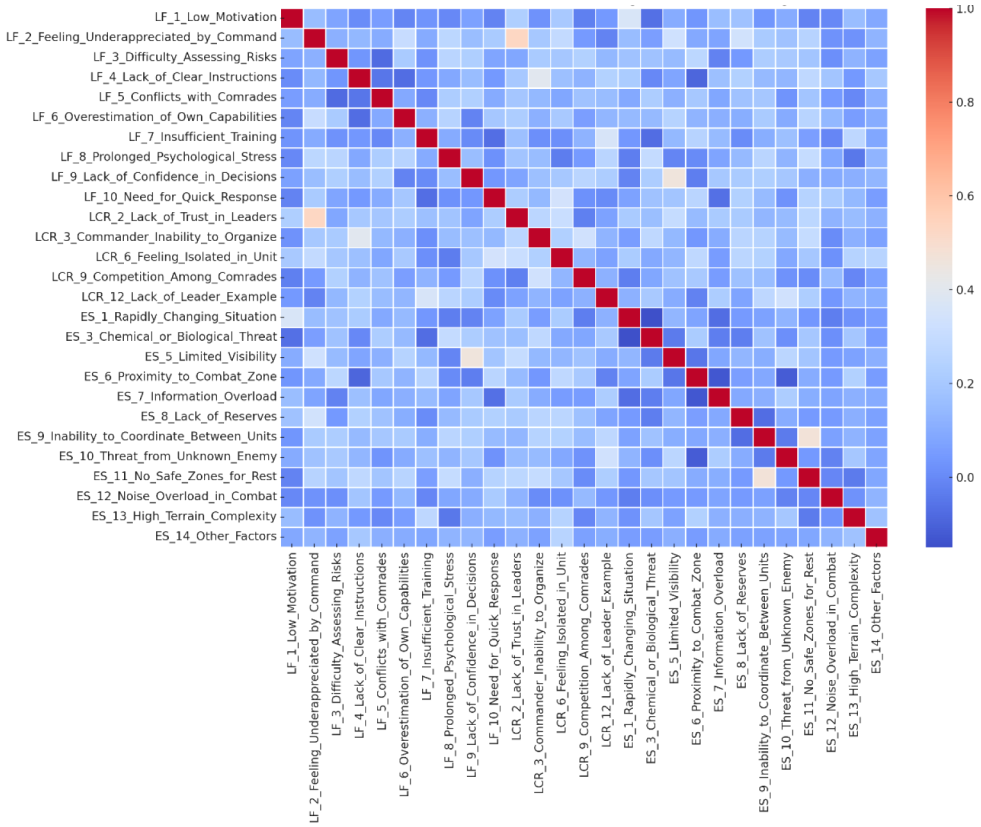

Figure 1. Correlation Matrix (Heatmap) of Psychological, Situational, and Organisational Determinants from the Survey Influencing Military Decision-Making in Crisis Conditions

Table 1

Correlations of Key Determinants (The Threshold of $|R| > 0,3$)* (see the Note)

	Variable 1		Variable 2	Correlation Coefficient, *R*	*p*
1	LCR_2_Lack_of_Trust_in_Leaders	↔	LF_2_Feeling_Underappreciated_by_Command	0,532	0,0000000000207
2	ES_11_No_Safe_Zones_for_Rest	↔	ES_9_Inability_to_Coordinate_Between_Units	0,472	0,00000000573
3	ES_5_Limited_Visibility	↔	LF_9_Lack_of_Confidence_in_Decisions	0,461	0,0000000141
4	LCR_3_Commander_Inability_to_Organize	↔	LF_4_Lack_of_Clear_Instructions	0,397	0,0000015
5	LF_1_Low_Motivation	↔	ES_1_Rapidly_Changing_Situation	0,363	0,0000125
6	LF_7_Insufficient_Training		LCR_12_Lack_of_Leader_Example	0,359	0,0000159
7	LF_10_Need_for_Quick_Response	↔	LCR_6_Feeling_Isolated_in_Unit	0,344	0,000038
8	LF_2_Feeling_Underappreciated_by_Command	↔	ES_8_Lack_of_Reserves	0,336	0,0000589
9	LCR_12_Lack_of_Leader_Example	↔	ES_10_Threat_from_Unknown_Enemy	0,335	0,000061
10	LCR_3_Commander_Inability_to_Organize	↔	LCR_9_Competition_Among_Team	0,334	0,0000639
11	ES_5_Limited_Visibility	↔	LF_2_Feeling_Underappreciated_by_Command	0,328	0,0000898
12	LCR_6_Feeling_Isolated_in_Unit	↔	LCR_2_Lack_of_Trust_in_Leaders	0,310	0,000218935
13	LF_6_Overestimation_of_Own_Capabilities	↔	LF_2_Feeling_Underappreciated_by_Command	0,302	0,000326656

* Note: $|r| \geq 0,5$ = strong correlation; $0,4 |r| < 0,5$ = moderate correlation and $|r| < 0,3$ = weak correlation.

determinants, ES_11 (No Safe Zones for Rest) and ES_9 (Inability to Coordinate Between Units) ($r = 0,472$, $p < 0,00000000573$) demonstrated a strong association, indicating that lack of rest zones contributes to coordination difficulties, likely due to fatigue-related cognitive decline. Furthermore, ES_5 (Limited Visibility) is linked to LF_9 (Lack of Confidence in Decisions) ($r = 0,461$, $p < 0,0000000141$), suggesting that environmental uncertainty directly affects decision-making confidence, possibly due to compromised situational awareness.

Relating to psychological and cognitive stressors, the data also reveal significant correlations between psychological stress and situational constraints. Notably, LF_1 (Low Motivation) correlates with ES_1 (Rapidly Changing Situation) ($r = 0,363$, $p < 0,0000125$), indicating that constantly evolving battlefield conditions contribute to lower motivation levels, potentially affecting risk assessment and decision urgency. Similarly, LF_10 (Need for Quick Response) correlates with LCR_6 (Feeling Isolated in Unit) ($r = 0,344$, $p < 0,000038$), suggesting that social isolation within a military unit may increase pressure for rapid, potentially less deliberative decision-making.

In terms of broader operational challenges, other correlations point to broader operational inefficiencies. The relationship between LCR_3 (Commander Inability to Organise) and LCR_9 (Competition Among Team) ($r = 0,334$, $p < 0,0000639$) indicates that poor leadership may foster internal rivalry, further complicating crisis response. Additionally, LCR_12 (Lack of Leader Example) correlates with ES_10 (Threat from Unknown Enemy) ($r = 0,335$, $p < 0,000061$), which could suggest that personnel facing unpredictable threats are more affected by the absence of clear leadership guidance.

The identified relationships between leadership effectiveness, environmental constraints, and psychological stressors highlight critical areas where intervention strategies could improve decision-making capabilities which suggest several critical implications:

1. *Psychological Resilience Programmes are Vital*: The links between low motivation, rapidly changing situations, and isolation indicate that psychological stressors significantly impact crisis decision-making. Implementing targeted mental resilience training and unit cohesion initiatives could improve stress tolerance and decision efficiency.

2. *Leadership Training is Critical*: The strongest correlations point to leadership-related factors (trust, command clarity, and leader example) as pivotal in crisis decision-making. Enhancing leadership development programmes could mitigate uncertainty, improve trust, and strengthen decision confidence.

3. *Situational Awareness and Environmental Control*: The correlations between limited visibility, lack of rest zones, and unit coordination difficulties suggest that structural and logistical adjustments –

such as improved reconnaissance, enhanced night-vision systems, and designated rest zones – could alleviate cognitive strain and improve decision-making clarity.

4. *Reducing Internal Competition and Structural Weaknesses*: The observed relationship between commander inability to organise and competition among unit members suggests that internal organisational dynamics need refinement. Encouraging cooperative leadership strategies and clear command structures may improve collective decision-making and operational readiness.

To conclude, this study highlights the complex interplay between psychological, situational, and organisational determinants in military decision-making under crisis conditions. The most prominent factors influencing decision-making include confidence levels, leadership effectiveness, environmental constraints, and operational coordination. Notably, with only 39,3% of personnel having received crisis decision-making training, these findings underscore the critical need for enhanced training programmes tailored to address psychological stressors and situational challenges in combat scenarios. The correlation analysis further reveals significant interactions between psychological stressors, leadership effectiveness, and environmental limitations, demonstrating how the specified determinants collectively influence decision-making. The results suggest that improving implementing psychological resilience programmes, leadership training, and enhancing situational awareness tools could substantially strengthen decision-making capabilities in high-pressure environments. By integrating organisational, situational, and psychological improvements, military leadership can enhance the accuracy of the decisions of the military personnel, reinforce unit cohesion, and improve operational efficiency in high-stakes combat scenarios. These findings provide valuable insights for military training programmes, policy development, and leadership strategies aimed at optimising crisis decision-making. Given the findings of this study, further research should focus on the design and evaluation of training programmes aimed at enhancing psychological resilience and decision-making effectiveness in crisis conditions. Future studies should explore the long-term impact of resilience training on stress tolerance, cognitive flexibility, and operational decision-making, ensuring that these interventions effectively enhance military personnel's performance in crisis settings.

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