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Recommendations for Selecting Experts with the Required Expertise to Forecast the Military and Political Situation

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Abstract. The relevance of this research is determined by the fact that the current military and political environment is characterised by high dynamism, unpredictability and the interdependence of a wide range of political, economic, military, social and technological factors. Under conditions of increasing complexity in global and regional processes, there arises a critical need for the development of high-quality forecasts that enable informed decision-making in the field of defence and national security. One of the key tools in such forecasting is expert evaluation. However, the effectiveness of this method is directly dependent on the competence of experts and the objectivity of their judgments. Therefore, the problem of selecting experts with a specified level of competence

becomes particularly relevant, as it directly affects the reliability of forecasts and the ability to consider a broad spectrum of factors shaping the military and political environment. The aim of the study is to develop recommendations for the selection of experts with a defined level of competence in order to improve the credibility of forecasting military and political processes. To achieve this objective, the study employs methods of expert evaluation, systems analysis, mathematical modelling, pairwise comparison techniques, aggregation of expert opinions, and approaches to determining integrated indicators of competence. The combination of these methods allows for a comprehensive understanding of the experts' potential capabilities, taking into account their formal characteristics such as position, academic degree and professional experience, while simultaneously verifying their practical ability to work with complex multi-factor forecasting tasks. The research resulted in the development of a methodological approach for assessing expert competence. This approach includes the use of competence coefficients, analysis of judgment consistency, identification of transitivity violations and evaluation of objectivity. A group expert evaluation procedure has been proposed, allowing for the adjustment of expert group composition according to criteria of consistency and assessment quality. This approach helps minimise the influence of subjective factors, increases the reliability of outcomes and ensures more accurate forecasts regarding the development of the military and political situation. The practical orientation of the study lies in the fact that the results can be applied by military command bodies, analytical centres and institutions within the security and defence sector for organising expert studies. They can also be used in the preparation and formation of expert groups engaged in strategic forecasting. The proposed recommendations may prove valuable for researchers working on national security and military forecasting, as well as for practitioners responsible for planning and decision-making in the defence and public administration sectors. These findings provide a foundation for further scientific exploration aimed at improving methods of expert forecasting, integrating analytical models with modern information systems and enhancing tools for assessing competence under conditions of uncertainty.

Keywords: military and political environment, experts, expert selection, expert evaluations, expert competence, group expert assessment.

Introduction

The current conditions of development in the military and political environment (MPE) are characterised by a high degree of dynamism, unpredictability and multi-factorial influences. Forecasting such processes requires the involvement of experts from diverse fields of knowledge. However, this gives rise to the challenge of objectively selecting individuals capable of ensuring comprehensive and scientifically grounded assessments. The absence of universal specialists equally proficient in military, political, economic and technological domains necessitates the development of effective approaches to determining expert competence levels.

An additional complication arises from the limited psychophysiological and intellectual capacities of individual experts, which may prevent them from simultaneously accounting for a large number of influencing factors with sufficient quality. This creates a risk of distorted assessments and reduced reliability of forecasts. In the context of applied military research, such challenges become particularly significant, as the accuracy of MPE forecasting directly influences the effectiveness of decision-making in the field of national security and defence.

Therefore, the relevance of this article is driven by the need to develop methodological approaches and recommendations for selecting experts with a specified level of competence. This will enhance the quality of expert assessments, reduce the influence of subjective factors and support more reliable forecasting of MPE developments.

Literature review

The problematics of forecasting the military and political environment (MPE) are closely linked to the quality of expert evaluations and the validity of expert selection. Foundational works on multi-criteria decision-making and hierarchy analysis have established the methodological basis for structured assessment of complex systems and the determination of factor weights [1–4]. A key element in forming collective expert judgment is the Delphi method, which allows for the reduction of dominance effects and facilitates consensus building. Another significant approach is the "classical model" by Cooke and Kalman, which provides a framework for calibrating and weighting experts based on their competence and accuracy [5, 6].

To verify the consistency of expert rankings, Kendall's coefficient of concordance is widely used, along with rank aggregation procedures such as Kemeny's rule, which minimises the overall distance between individual rankings and the collective decision [7–9]. In tasks involving pairwise comparisons and detection of transitivity violations, the Bradley–Terry model and Luce's approach are applied. These models make it possible to estimate the "strength of preference" between alternatives and to diagnose inconsistencies in expert judgments [10, 11].

Modern approaches to assessing expert competence emphasise the importance of distinguishing between formal indicators (such as position, academic degree and professional experience) and empirically validated capacity to produce accurate and calibrated judgments under uncertainty [6, 12]. Research in cognitive psychology of expertise identifies common biases and limitations that lead to violations of transitivity and reduce the reliability of assessments, particularly in multi-factor environments [13, 14].

Within the Ukrainian academic domain, the methodological aspects of MPE forecasting, organisation of expert surveys and validation of expert objectivity have been systematically addressed in studies focused on the development of theory and practice in MPE forecasting. These works offer tools for group evaluation and consistency criteria for adjusting the composition of expert panels [15]. Collectively, these approaches form a foundation for the development of practical recommendations concerning the selection of experts with defined competence, calibration of their weights and construction of reliable group aggregation procedures for MPE forecasting tasks. This article is dedicated to the development of one such approach.

Methodological Framework

The study is based on the integration of systems, analytical and expert-evaluative approaches, which together ensure a comprehensive examination of the problem of selecting experts with a specified level of competence for forecasting the military and political environment (MPE).

Firstly, the method of systems analysis was employed, enabling the process of expert group formation to be viewed as a complex multi-factor system. This system includes the interaction of formal characteristics of experts such as position, academic degree and professional experience, their individual cognitive abilities and the specifics of the subject domain, including military, economic, political and technological spheres. The application of systems analysis allowed for the structuring of factors influencing competence and the establishment of a logical framework for forming integrated assessments.

Secondly, the central tool of the research is the method of expert evaluation, which involves the formulation of group judgments and the harmonisation of individual opinions through aggregation of expert views. To ensure the quality of expert conclusions, several specific techniques were applied:

the Delphi method was used for iterative expert surveying and reducing the impact of dominance by individual participants;

the pairwise comparison method, based on the Bradley–Terry and Luce modifications, was applied to identify preference strengths between alternatives and diagnose transitivity violations in expert judgments;

Kendall's coefficient of concordance was used to assess the degree of agreement among expert assessments;

the Kemeny median was applied to generate a collective decision by minimising the distance between individual rankings.

Thirdly, mathematical modelling was employed to formalise the results. This included the calculation of competence coefficients for individual experts, integrated indicators of their objectivity and consistency, and the determination of composite indices reflecting their actual capacity to address multi-factor forecasting tasks. The use of mathematical procedures made it possible to combine formal characteristics such as position, academic credentials and professional experience with empirically confirmed ability to produce reliable evaluations.

Fourthly, methods of statistical analysis were applied to identify and eliminate outliers in expert survey results and to assess the objectivity of each expert. This facilitated the refinement of expert group composition, reduced the influence of subjective factors and improved the reliability of the final outcomes.

Additionally, the method of modelling group expert activity was applied. This method involves a programmed sequence of expert actions, including the written completion of tasks using standardised forms. Such an approach reduces the risk of informational influence among participants and enables the documentation of individual results for subsequent aggregation.

The combination of the above-mentioned methods establishes a multi-level methodological foundation that enables the following:

identification of both formal and practical characteristics of experts;

assessment of their ability to work with multi-factor models;

formation of expert groups with a high level of consistency and objectivity in their assessments;

minimisation of subjectivity and provision of more accurate and reliable forecasts concerning developments in the military and political environment.

Thus, the methodological framework of this study is based on the integration of classical expert evaluation methods with modern mathematical and analytical tools. This integration supports the development of a practically oriented mechanism for expert selection in strategic forecasting tasks within the field of national security and defence.

Results

The analysis of expert capabilities in evaluating factors that influence the military and political environment (MPE) across various domains, based on the expert competence assessment methodology proposed in [15], demonstrates that—given the psychophysiological and intellectual limitations of experts in military affairs—the task of delivering high-quality assessments (with competence coefficients $K_{RK} \to 1$ and $K_{\Sigma} \to 1$) is unachievable for the following reasons:

it is not feasible to be equally well-qualified across a large number of diverse domains that influence the MPE;

military threats are most often linked to political, economic and other strategic interests of the state, meaning that the evaluation of military threats is typically impossible without a competent understanding of a wide range of factors defining the political situation in a given region;

the psychophysiological and cognitive limitations of experts generally prevent them from reliably accounting for more than five influencing factors simultaneously when providing an integrated assessment of a multi-factor process.

Given that truly universal experts in various fields of military-applied research do not exist, the problem arises of generating a comprehensive assessment of the MPE. Such an assessment depends on a sufficiently large number of factors drawn from different domains or analytical dimensions and must rely on expert-analytical evaluations.

Taking into account the core principles of the expert competence assessment method in the field of military and political relations [15], it is proposed to determine expert competence using the framework illustrated in Figure 1. The process begins with the evaluation of candidates based on formal indicators such as position, academic degree and rank, alongside their self-assessment. This stage enables the immediate exclusion of candidates who are evidently unqualified to serve as experts. Following this, the candidates' ability to work with a specific number of factors across multiple domains is assessed, ensuring that no fundamental violations of transitivity occur in their judgments. The problem of expert selection across different domains is further illustrated using a three-domain model (Figure 2). Ideally, each domain should include no fewer than seven factors to ensure a sufficiently rigorous assessment of the candidates' competence.

In the test case, the expert analysed threats within the military-economic domain (Figure 3a) and achieved a competence coefficient of 0.84 across seven factors. Although four instances of transitivity violations were identified (Figure 3b), the expert is still considered eligible for participation in the assessment process.

Based on the obtained competence coefficient values, experts are assigned experimental design plans of corresponding dimensionality, as proposed in [15]. This step enables the evaluation of the expert's ability to maintain cardinal consistency in their judgments. The outcomes of this phase allow for the calculation of the experimental competence coefficient (K_{PW}).

These results serve as the basis for calculating the real competence coefficient (K_{RK}), which is an aggregated indicator incorporating both the formal characteristics of the expert and their demonstrated practical knowledge and analytical skills.

Once competence values are obtained across all the intended domains, the integrated competence coefficient for each expert can be calculated.

The functional relationship between K_{Σ} and K_{RK} can be explicitly derived using the method of group accounting of alternatives (MGUA), with the specific form of the function significantly depending on the ranking of partial competence coefficients K_{RK}^{m} [15]

A critical component of the expert evaluation process is the organisation of expert activity.

In accordance with the methodological principles outlined in [15], a programmed procedure is recommended, wherein expert activities are carried out in written form through structured expert assessment tables. The expert's workflow is thus predefined and controlled (Figure 4).

In accordance with the methodological principles outlined in [15], a programmed procedure is recommended, wherein expert activities are carried out in written form through structured expert assessment tables. The expert's workflow is thus predefined and controlled (Figure 4). *i* experts, collect their judgments r_i, calculate the aggregate result *R* and assess the objectivity of each expert in the group using the formula proposed in [15]:

$$\alpha_i = 1 - \frac{d(r_i,\ R)}{\sum_{i=1}^{n} d(r_i,\ R)}.$$

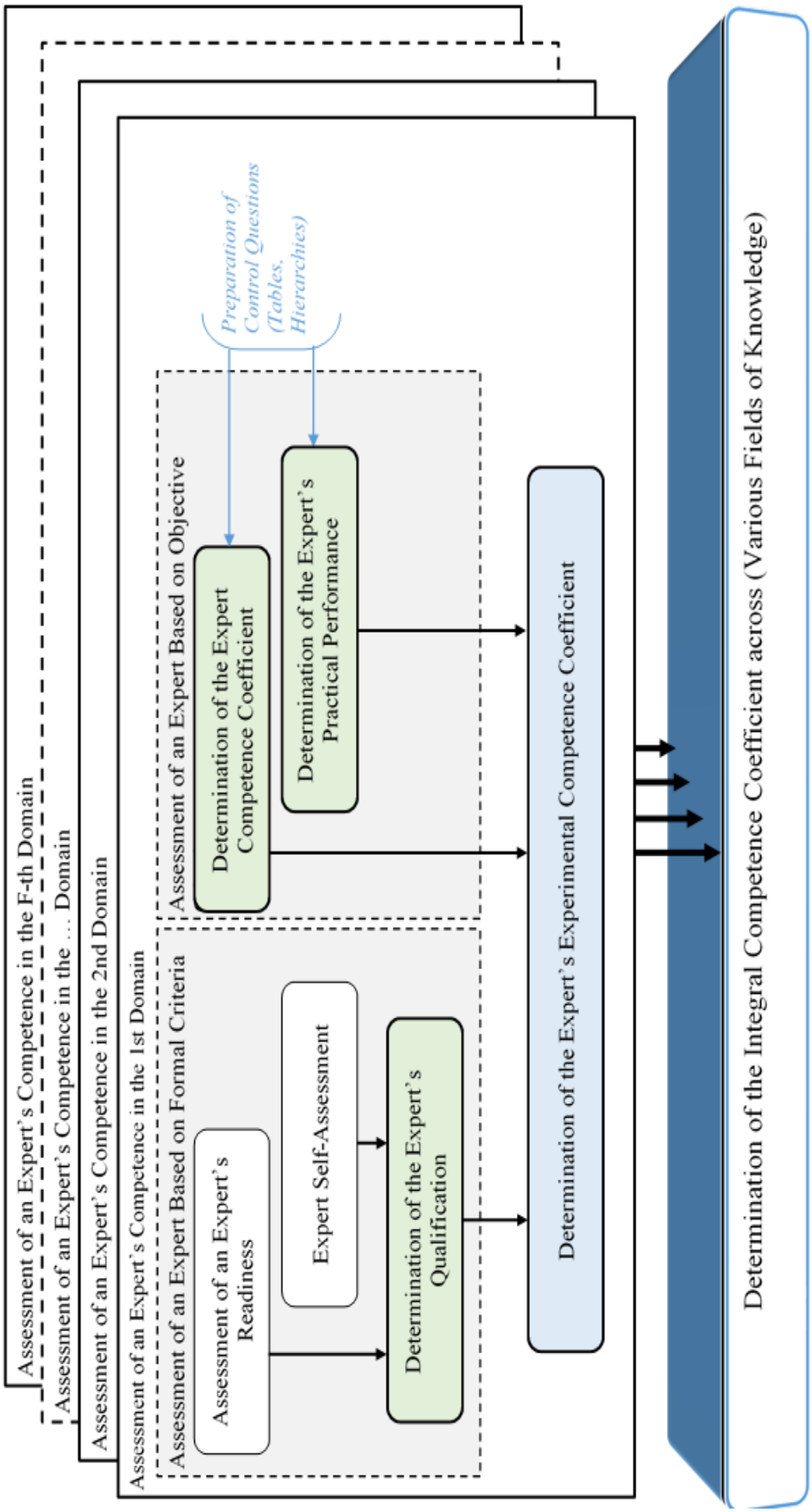


Figure 1. Procedure for Assessing Expert Competence

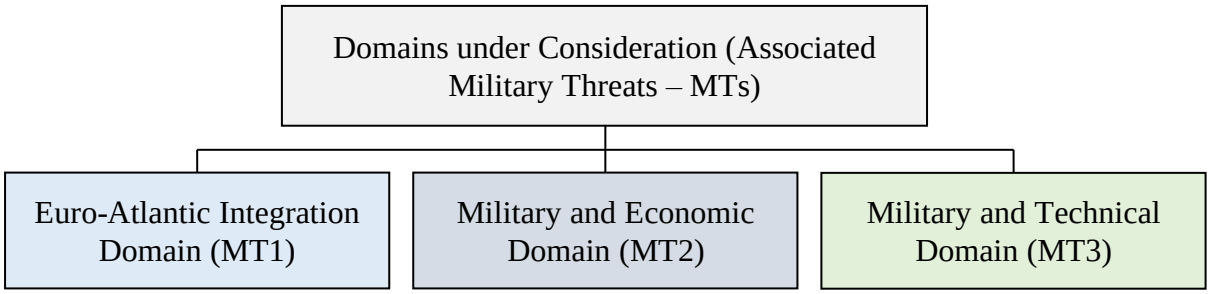
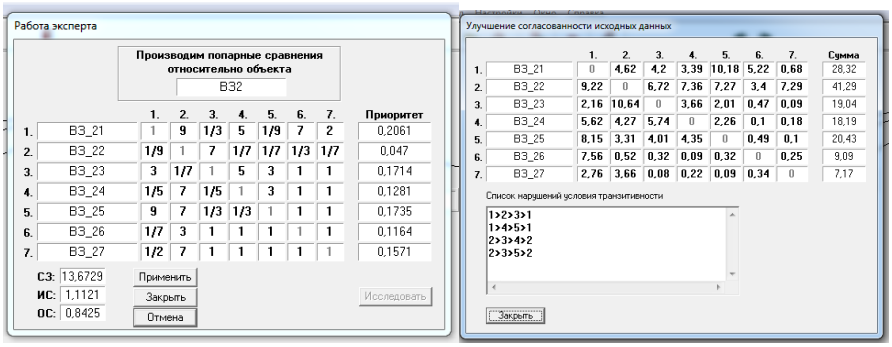


Figure 2. A test scenario comprising three domains, utilised in the process of assessing expert competence.



a b

Figure 3. Structure of the Pairwise Comparison Table for the Military-Economic Domain (a) and Results of the Analysis of Transitivity Violations (b)

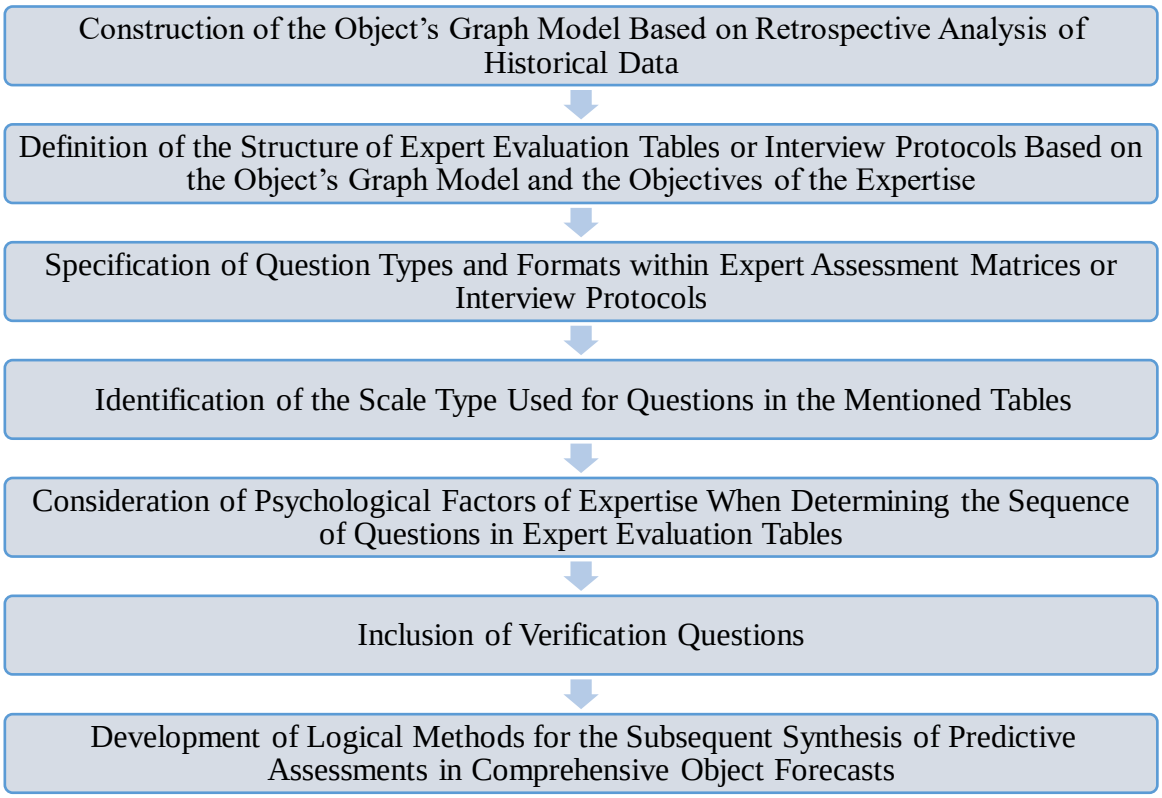


Figure 4. Organisation of Expert Activities

where α_i is the objectivity coefficient of the expert;

r_i is the assessment provided by the i-th expert;

R is the aggregated result of the expert evaluation (e.g. the average or consensus score), calculated using one of the previously discussed methods;

$d(r_i, R)$ is the distance between the individual assessment i-th and the aggregate assessment R;

n − is the total number of experts in the group;

$\sum_{i=1}^{n} d(r_i, R)$ is the total sum of distances from all expert assessments to the aggregated result R.

The general structure of the proposed approach to group expert evaluation of the military and political environment, taking into account the presence of outliers and individual assessments of objectivity (competence) for each expert-analyst, is presented in Figure 5.

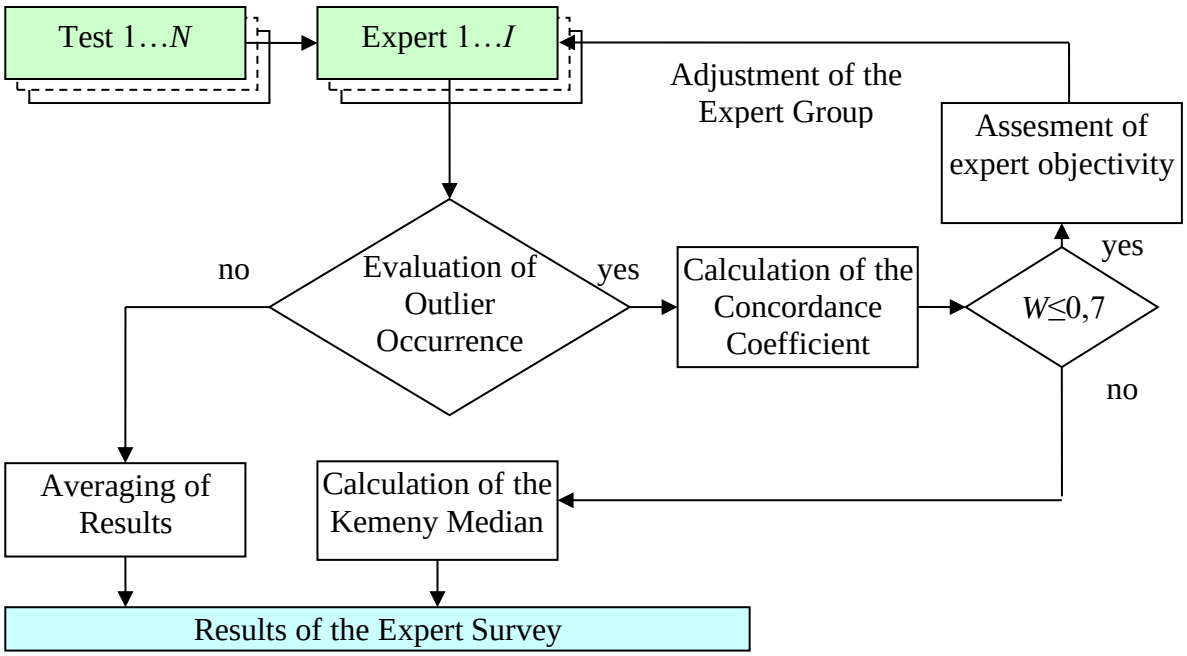


Figure 5. Framework of the Proposed Method for Group Expert Evaluation of the Military and Political Environment (MPE)

Conclusion

The article addresses the issue of selecting experts with predefined competencies for forecasting the military and political environment (MPE), which is of critical importance for ensuring the effectiveness of military-strategic planning processes and decision-making in the sphere of national security and defence. The analysis has shown that the limitations of individual experts' psychophysiological and cognitive capabilities, as well as the impracticality of universal cross-domain training, necessitate the development of methodological guidelines for expert selection.

A combined approach is proposed that integrates the evaluation of formal expert attributes (position, academic degree, experience) with the assessment of their practical capability to work on multifactor forecasting tasks. This approach enables the determination of an integral competence coefficient reflecting the objective level of each expert's capabilities.

An essential component of the methodology is group expert assessment, taking into account opinion consensus, the presence of outliers, and verification of expert objectivity. This ensures increased reliability of forecasts, reduces the influence of subjective factors, and allows for adjustment of expert group composition according to quality criteria.

The results obtained confirm that the application of a systematic approach to expert selection improves the accuracy and validity of military and political environment forecasting, while also laying the groundwork for further refinement of theoretical and methodological foundations in this field.

Promising research directions include expanding the range of considered factors, integrating mathematical evaluation models with expert approaches, and utilising information-analytical systems to support decision-making processes.

Recommendations

The practical significance of this work lies in the fact that the obtained results can be utilised by military command authorities, analytical centres, and institutions within the security and defence sector for organising expert research, as well as during the preparation and formation of expert groups engaged in strategic forecasting. The proposed recommendations may prove valuable for researchers studying national security and military forecasting issues, as well as for practitioners responsible for planning and decision-making in defence and public administration. They lay the foundation for further scientific inquiry aimed at improving expert forecasting methods, integrating analytical models with modern information systems, and developing competence assessment tools under conditions of uncertainty.

Conflict of Interest

The author of the article is a member of the editorial board. To avoid a conflict of interest, the editorial process was conducted by Oleh Semenenko.

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Рекомендації щодо добору експертів із заданою компетентністю для прогнозування воєнно-політичної обстановки

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Анотація. Актуальність дослідження визначається тим, що сучасна воєнно-політична обстановка характеризується високою динамічністю, непередбачуваністю та взаємозалежністю великої кількості факторів політичного, економічного, військового, соціального і технічного характеру. В умовах зростаючої складності глобальних і регіональних процесів виникає необхідність у формуванні якісних прогнозів, які б забезпечували обґрунтоване ухвалення рішень у сфері оборони та національної безпеки. Одним із ключових інструментів такого прогнозування є експертне оцінювання, проте ефективність цього методу безпосередньо залежить від компетентності експертів та об’єктивності їхніх суджень. Тому проблема добору експертів із заданою компетентністю набуває особливої актуальності, оскільки від неї залежить надійність прогнозів і можливість

врахування широкого кола чинників, що формують воєнно-політичну обстановку. Метою дослідження є розроблення рекомендацій щодо добору експертів із визначеним рівнем компетентності для підвищення достовірності прогнозування воєнно-політичних процесів. Для досягнення поставленої мети використано методи експертного оцінювання, системного аналізу, математичного моделювання, методи парних порівнянь та агрегування експертних думок, а також підходи до визначення інтегральних показників компетентності. Поєднання цих методів дозволяє отримати комплексне уявлення про потенційні можливості експертів, врахувати їхні формальні характеристики (посада, науковий ступінь, досвід) та водночас перевірити практичну здатність працювати із багатофакторними задачами прогнозування. У результаті дослідження сформовано методичний підхід до оцінювання компетентності експертів, який включає використання коефіцієнтів компетентності, аналіз узгодженості суджень, виявлення транзитивних порушень та оцінювання об’єктивності. Запропоновано процедуру групового експертного оцінювання з можливістю коригування складу експертних груп відповідно до критеріїв узгодженості та якості оцінок. Це дозволяє мінімізувати вплив суб’єктивного фактора, підвищити надійність результатів і забезпечити більш точні прогнози щодо розвитку воєнно-політичної обстановки. Практична спрямованість роботи полягає в тому, що отримані результати можуть бути використані органами військового управління, аналітичними центрами, установами сектору безпеки і оборони для організації експертних досліджень, а також під час підготовки та формування експертних груп, залучених до стратегічного прогнозування. Запропоновані рекомендації можуть бути корисними для науковців, які досліджують проблематику національної безпеки та воєнного прогнозування, а також для практиків, відповідальних за планування й ухвалення рішень у сфері оборони та державного управління. Вони створюють підґрунтя для подальших наукових пошуків, спрямованих на вдосконалення методів експертного прогнозування, інтеграцію аналітичних моделей із сучасними інформаційними системами та розвиток інструментів оцінювання компетентності в умовах невизначеності.

Ключові слова: воєнно-політична обстановка, експерти, добір експертів, експертні оцінки; компетентність експертів, групове експертне оцінювання.