The object of the study is the process of choosing the optimal strategy for assessing a military serviceman.

The problem, which was being solved, is non-adaptability of the existing scientific approach to the necessity of taking into account the rapid transformation of functional responsibilities and long-term career planning when assessing military servicemen.

In terms of improving the approach of choosing the optimal strategy for assessing a military serviceman, the algorithm for choosing the appropriate strategy has been suggested. The algorithm is based on the application of optimal selection criteria (Laplace, Wald and Savage). The essence of the developed algorithm implies the level of uncertainty regarding the possible transformation of service functions, the possible transformation of service functions and acquired competencies.

The peculiarity of the developed algorithm is that it allows to take into account the long-term perspective of career development by considering the uncertainty in the process of transformation of service functions.

As part of improving the approach to choosing the optimal strategy for assessing a serviceman, the procedure for choosing the appropriate optimal strategy has been improved.

The peculiarity of the suggested procedure is that it is based on the identification of the level of uncertainty, the use of a tabular method for determining the correspondence of service functions to competencies, and the distribution of competencies on the basis of their acquisition. This procedure allows to increase the accuracy of determining the level of correspondence of a military serviceman's competencies to service functions by 15% if no changes occur, and by 17% in case of minor changes and by 24% in case of fundamental changes. A distinctive feature of the procedure is the division of competencies into three groups: professional, general development, and acquired through experience.

The scope of practical application of the improved procedure is the management processes to ensure the effectiveness of HR management in the command-and-control bodies of military formations

Keywords: HR management, assessment of military servicemen, competencies, service functions, optimal selection criteria

UDC 378
DOI: 10.15587/1729-4061.2025.329088

IMPROVEMENT OF THE APPROACH TO CHOOSING THE OPTIMAL STRATEGY FOR ASSESSING A MILITARY SERVICEMAN

Oleksandr Maistrenko
Corresponding author
Doctor of Military Sciences, Professor
Department of Special Operations Forces
Command and Staff Institute of Troops (Forces) Employment
Povitryanykh Syl ave., 28, Kyiv, Ukraine, 03049
E-mail: maj_Alex@ukr.net

Vitalii Khoma
PhD, Associate Professor, Head of the Scientific and Methodological Center*

Volodymyr Kurban
PhD, Senior Researcher,
Deputy Head of the Scientific and Methodological Center*

Yuliia Mozghova
Senior Lecturer
Department of Foreign Languages
Foreign Languages Education and Research Centre**

Serhii Voitenko
PhD, Associate Professor
Department of Metrology and Standardization***

Olha Babych
Research Laboratory***

Andrii Diakov
PhD
Department of Information Systems and Technologies
Lviv State University of Internal Affairs
Horodotska str., 26, Lviv, Ukraine, 79007

Denis Sysolyatin
Adjunct*

Ihor Fishchuk
PhD, Senior Lecturer
Department of Missile and Artillery Weapons
Institute of Missile Forces and Artilery
Hetman Petro Sahaidachnyi National Army Academy
Heroiv Maidanu str., 32, Lviv, Ukraine, 79026

Serhii Horbenko
PhD, Leading Researcher
Military and Strategic Research Centre
Povitrianykh Syl ave., 28, Kyiv, Ukraine, 03049
*The Scientific and Methodological Center of Scientific, Scientific and Technical Activities Organization**
**National Defence University of Ukraine
Povitryanykh Syl ave., 28, Kyiv, Ukraine, 03049
***Ivan Kozhedub Kharkiv National Air Force University
Poltavskyi Shliakh str., 123, Kharkiv, Ukraine, 61023

Received 18.02.2025
Received in revised form 08.04.2025
Accepted 30.04.2025
Published 30.06.2025

How to Cite: *Maistrenko, O., Khoma, V., Kurban, V., Mozghova, Y., Voitenko, S., Babych, O., Diakov, A., Sysolyatin, D., Fishchuk, I., Horbenko, S. (2025). Improvement of the approach to choosing the optimal strategy for assessing a military serviceman. Eastern-European Journal of Enterprise Technologies, 3 (3 (135)), 37–48. https://doi.org/10.15587/1729-4061.2025.329088*

1. Introduction

Modern management processes in the field of HR management in the military sphere need to be adapted to changing priorities in the servicemen's competencies [1, 2]. This is due to the growing pace of development of technologies and tools that significantly change the requirements for servicemen [3].

In general, the effectiveness of management processes is directly related to HR management. This is due to the fact that the degree of realization of a serviceman's capabilities will depend on the potential level of these capabilities (competencies) and the level of compliance of these capabilities (competencies) with the conditions of the position. That is, the effectiveness of the functioning of a military formation depends on the effectiveness of HR management processes, taking into account the specifics of the positions.

One of the important elements of the HR management process is the assessment of a potential serviceman regarding the compliance of their competencies with the functions of the respective position. The analysis of the current state of human resources management reveals a number of problems related to the inconsistency of existing approaches with the current requirements.

The biggest problem in the processes of managing the staffing of military formations is the consistency of approaches to assessing the potential suitability of a future serviceman to perform functional duties. The existing approaches usually do not take into account the trends in the development of functional requirements for a particular position and even for a specialty. That is, the existing approaches do not allow to fully assess the suitability of a potential serviceman for the position in case of changes in its requirements [4].

Another problem, which is indirectly related to the previous one, is the focus of the process of assessing a potential serviceman on the short-term (1–3 years) and in some cases on the medium-term (3–5 years) perspective [5]. This was caused by the period of formation and transformation of the military-political and economic environment in the military sphere. However, the current economy and technological development is aimed at serviceman specification, i.e. developing it in a certain area. This necessitates revising the existing approaches to the assessment of potential servicemen taking into account a long-term perspective, especially in the security and defense sector.

Thus, the management processes in the field of human resources management of a military formation have a problem which is connected with neglect of the rapid transformation of functional responsibilities and the need for long-term serviceman career planning. In other words, there is a discrepancy between the existing approaches to the assessment (selection) of servicemen and the need to apply an optimal strategy considering new challenges. Thus, given the urgent need to improve the existing approaches to the evaluation (selection) of servicemen and the requirements of the changing service conditions, solution of this problem is urgent.

2. Literature review and problem statement

Section [6] discusses the challenges faced by military organizations in terms of their HRM policies, as well as the impact of the institutional environment and strategy on these policies. The identification of challenges is based on the study of the evolution of the main theories of HR management, as well as on the analysis of general differences in approaches to personnel management in military organizations of different countries. This allowed to establish an expanded range of HRM tasks in military organizations. However, the section does not address the issue of rapid transformation of functional responsibilities of military servicemen by positions caused by changes in the organizational and functional structures of military organizations. The reason for this may be the focus only on sustainable approaches that do not take into account the possibility of transforming service functions.

Taking into account the relationship between organizational strategy and personnel management might become an option for overcoming the relevant difficulties. This is the approach proposed in the paper [7]. In particular, this paper [7] investigates the relationship between organizational strategy and HR management in terms of the impact on the measurement and assessment of human resources management. The study is based on a systematic analysis and the use of the HR Scorecard method. This allowed to move from classical models of HRM assessment to value-based ones. The results of the study showed that military and civilian HRM functions somewhat differ in terms of practice and application. The application of the HR Scorecard method allowed to identify the main competencies of a serviceman, taking into account their value in the relevant area. However, the paper does not specify the mechanism for building the "HR Scorecard" in case of a rapid change in the functional responsibilities of a serviceman in its position. The reason for this may be that HR planning is conducted at one separate level.

HR planning at several levels might be one of the options for overcoming this problem. This is the approach proposed in the study [8]. In particular, the study [8] proposes an approach to planning personnel management at several levels simultaneously, including strategic and operational. This approach is based on a network flow model to represent the military human resources system. In particular, the method of mixed integer programming is used to find an adequate solution. Such simultaneous planning ensures the construction of an adequate plan that considers various aspects of the personnel. However, the proposed approach does not take into account the possible change of priorities during long-term planning, which can lead to a decrease in the quality of planning and the efficiency of using human resources. A common reason for this may be the inability to take into account the factors that have a significant impact on personnel management in the military sphere, especially when assessing military servicemen.

The identification of factors that affect human resource management in the military sphere might be one of the options for overcoming these difficulties. The article [9] is devoted to solving this issue. In particular, the paper [9] identifies the factors that influence the use of human resource management information systems (HRIS) in the military sphere. It has been established that these factors form a structure that combines three important elements in the military sphere, namely: people, process, product. The structure was proposed after the analysis of the existing researches and the methods of interviews and observations. The sampling consisted of fifteen HRIS users from the military domain. The data were analyzed using a qualitative method. The proposed structure allows to increase the efficiency of HRIS use in the military sphere. However, the proposed structure does not take into account the rapid changes of the required competencies of military servicemen due to changes in functional responsibilities. The reason for this may be the inability to take into account conditions that may change.

The development of appropriate models of the functioning of the military human resources management system might become an option to overcome this problem. In particular, overcoming this problem is proposed in the paper [10]. The paper [10] presents a new military human resources

management environment based on discrete event modeling methods. This environment allows to adapt human resource management to the specific needs of military personnel modeling and simulation. However, the proposed environment does not allow to take into account the factors which influence the long-term planning perspective, in particular, they do not allow to choose the optimal strategy for the career development of an individual serviceman. The main reason for this problem may be the inability to take into account the factors that influence the development of the human resource management environment.

Determining the factors that influence the use of human resource management information systems might become one of the options for solving this problem. The paper [11] is devoted to solving this problem. The paper [11] analyzes the factors that influence the use of human resource management information systems (HRMIS). The factors of influence were identified based on interviews and the constant comparative method. The factors identified in the study allow to increase the efficiency of HRMIS research and provide an integrated approach to studying the use and impact of HRMIS in changing conditions. However, the proposed structure of the factors is based on established approaches to assessing the competencies of military servicemen and does not take into account the dynamics of their changes under the influence of external factors. The reason for this may be the inability to take into account the decision-making process regarding the promotion of military servicemen.

The development of a methodological approach for managing military human resources taking into account the promotion of military personnel might become an option for overcoming the relevant difficulties. This approach is proposed in the article [12]. The article [12] proposes a methodology for supporting the decision-making process for the promotion of military personnel, based on multi-criteria decision-making (MCDM) methods, in particular the ELECTRE-Mor method. This made it possible to assess military servicemen according to 4 main criteria and 34 sub-criteria. In addition, a sensitivity analysis procedure by varying the threshold level of criteria values was proposed, which allows to make more flexible decisions in critical scenarios. However, the proposed approach allows to assess military servicemen directly at the time of the assessment without taking into account the prospects for its development. That is, the proposed approach does not allow to consider the prospects for a serviceman's development and a possible change in the set of required competencies. The reason for this may be the inability to take into account the factors that affect the work of military servicemen.

Analyzing the service activities of military servicemen and determining the factors that affect it might become an option for overcoming this problem. This definition is made in the article [13]. In particular, the article [13] analyzes the factors that influence the work of servicemen at the strategic level of management. The analysis was carried out using a reflective model with independent variables of intelligence, stress resistance, staff relations, burnout and career strategies. It has been found out that such factors as intelligence, staff relations, career strategies, and effectiveness of performance have a direct impact on productivity. However, the proposed study does not analyze the impact of adaptability as a result of changes in functional responsibilities. The general reason for this may be the inability to take into account the influence of the competence which characterizes the flexibility of military servicemen depending on different conditions.

Research of the influence of flexibility on the main service functions of a military serv iceman might become an option for solving the problem. It is precisely to the study This study [14] is devoted to this problem. In particular, the paper [14] investigates the impact of human resource flexibility on strategic thinking among strategic level officers in the Sri Lanka Air Force (SLAF). The study is based on the questionnaire method and the use of Smart PLS software to analyze the results. The results indicate that flexibility significantly increases the ability of SLAF officers to develop innovative and adaptive strategies, thereby increasing organizational effectiveness. However, the study does not analyze the impact of flexibility in the long-term perspective. Moreover, the paper notes that assessing the long-term impact of flexibility on strategic outcomes in a military context is a necessary further development of this study. The reason for this may be the inability to take into account the levels of uncertainty in military human resources management.

Defining such modeling methods in the field of military human resources planning and management that would take into account the level of uncertainty might become a solution to the problem. This approach is proposed in the study [15]. In particular, the study [15] analyzes the three most common simulation modeling methods in the field of military manpower planning and management: system dynamics modeling, agent-based modeling, and discrete event modeling. This research is based on a systematic analysis of the use of these methods in the subject area, and allows to structure an approach to navigating the subject area of simulation modeling in the field of manpower management. However, this study does not analyze the ability of existing approaches to adapt to changes in position functional responsibilities and, accordingly, the transformation of a serviceman's set of competencies.

Thus, the analysis of researches on management processes in the field of ensuring the human resources potential of a military formation shows that existing studies focus on the need to improve these processes. At the same time, these studies focus on the development of tools for a stable set of functional responsibilities for positions and, accordingly, a stable set of competencies. In addition, existing studies do not take into account the long-term perspective of career development due to significant uncertainty in this process.

Thus, there is a discrepancy between the need to take into account the long-term perspective of career development and the ability to adapt to changing functional responsibilities, on the one hand, and the inability to consider the mentioned above aspects due to the lack of an appropriate approach that would take into account the uncertainty in this process, on the other hand.

3. The aim and objectives of the study

The aim of the study is to improve the approach to choosing the optimal strategy for assessing a military serviceman, taking into account the uncertainty caused by the need for a long-term career development perspective and a possible change in functional responsibilities. This will allow to determine the most suitable serviceman for a particular position.

To achieve the aim, the following objectives have been set:

– to develop an algorithm for choosing the optimal strategy for assessing a military serviceman;

– to improve the procedure for choosing the optimal strategy for assessing a military serviceman.

4. Materials and methods

The object of the study is the process of choosing the optimal strategy for assessing a military serviceman.

The main hypothesis is that the application of appropriate optimal selection criteria, in particular by Wald, Savage, Laplace, will allow to reduce the negative impact of uncertainty on the choice of an assessing a military serviceman strategy. It will also allow to take into account the long-term perspective of career development and the ability to adapt when changing functional responsibilities, which will lead to the appointment of the most suitable servicemen to certain positions.

The assumptions made in the study are that the processes of assessing and selecting military servicemen are combined. This is due to the fact that, in general, the strategies are common in terms of assessment and selection, although they differ in practical (methodological) implementation. In the following, the term assessment is used to cover both the process of evaluation and the process of selection of a military serviceman.

It is also assumed that the basis of uncertainty in choosing the optimal strategy is defined by the factors caused by different types of adverse conditions. The study focuses on assessing a military serviceman, as this area contains the greatest degree of uncertainty in human resources management.

The study uses the category of "Benefits from applying strategies", which refers to the degree to which the available competencies are appropriate for the service functions.

The simplification adopted in this paper is that the value of the degree of uncertainty is determined by a priori method. That is, the degree of uncertainty is based on the experience of the official who will use the approach. This is consistent with the existing approach, but does not exclude the possibility of further development of a methodological approach for determining the level of such uncertainty.

The assumption in the article is that one of the most important factors affecting the effectiveness of assessing a military serviceman is the rapid transformation of functional responsibilities and tightening of the specification of military servicemen in a particular area.

To verify the results obtained in this paper, a group of 30 servicemen of the "UAV operator" staff category was involved. To demonstrate the advantages of the suggested approach, which includes the developed algorithm and improved procedure for selecting the optimal strategy for assessing a military serviceman, two servicemen from this group were randomly selected.

The initial conditions are the assessment of unmanned aerial vehicle (UAV) operators using the professional standards "Unmanned Aviation System Operators" [16] and "Remote Commander of an Unmanned Aircraft" [17]. Accordingly, the serviceman's functions {F1→6} are presented in Table 1.

A possible transformation of functions (Table 1) in the future may be realized by adding functions possible in the near future (F_6, F_7) and undefined, possible functions (F_8, F_9).

The existing competencies of the two UAV operators are presented in Table 2.

In general, the list of competencies (Table 2) includes conditional sets of competencies for UAV operators, but they are appropriate and can be used as a basis for developing a complete set of competencies.

Regarding the degree of uncertainty, it is proposed to consider three options – $\gamma := 0.2; 0.5; 0.9$. This will allow to check the compliance of the suggested approach with forecasting.

Table 1

Service functions of UAV operators

Indicators	The essence of the function
Existing	
F_1	Preparation and conduct of flight training activities
F_2	Remote piloting of UAVs in various conditions
F_3	Preparation and execution of post-flight activities
F_4	Performance of combat missions (reconnaissance and observation missions, correction of artillery and strike weapons fire, strike operations)
F_5	Participation in the modernization of UAVs, onboard and ground equipment
Defined, possible functions in the near future	
F_6	Remote piloting of UAVs in conditions of using electronic warfare means
F_7	Organization of evacuation and recovery of UAVs
Undefined, possible functions	
F_8	The function related to the use of artificial intelligence
F_9	The function related to the use of drone swarm technologies (swarm of UAVs)

Table 2

Competencies of the two UAV operators

Competencies		Operators	
Indicators	Essence	No. 1	No. 2
K_1	Ability to conduct a technical inspection of a UAV and pre-flight system check	1	1
K_2	Ability to analyze meteorological, climatic, seismic and other natural conditions and their impact on the mission result	1	–
K_3	Ability to control a UAV in various landscape and meteorological conditions	1	1
K_4	Ability to maneuver the UAV during enemy fire counteraction	–	–
K_5	Ability to analyze the information received and report the conclusions of the analysis	1	1
K_6	Ability to diagnose a UAV after flights and fix detected malfunctions	1	–
K_7	Ability to determine the coordinates of objects (targets) and transmit them on command	–	1
K_8	Ability to adjust the procedure of combat mission execution in accordance with situational changes	1	1
K_9	Knowledge of the latest technologies in the field of unmanned systems	–	–
K_{10}	Ability to integrate and test new equipment on a UAV	1	1
K_{11}	Ability to adjust and control artificial intelligence algorithms for data analysis	1	1
K_{12}	Ability to evaluate the results of artificial intelligence work	–	–
K_{13}	Ability to coordinate and manage a group of UAVs while performing joint tasks	1	–
K_{14}	Ability to distribute tasks between UAVs in different conditions using algorithms	–	1
K_{15}	Ability to determine signs of the impact of electronic warfare (EW) and respond appropriately	1	1
K_{16}	Ability to use stable communication channels with UAVs and autonomous UAV flight modes	–	1
K_{17}	Ability to determine the location of a UAV crash or emergency landing	–	–
K_{18}	Ability to diagnose and restore UAV performance in the combat field	1	1

In this paper, let's apply approaches from game theory, in particular, optimal selection criteria of Wald, Laplase, and Savage [18–20].

The essence of the Wald criterion (maximin criterion (Wald's maximin model)) is to find an outcome that would meet condition (1) [18–20]. That is, determining the largest value of the objective function among a number of smallest values for each of the conditions

$$Y_V = \max_i \min_j a_{ij}, \quad (1)$$

where, a_{ij} – prize-winning of i-strategy under j-conditions.

The essence of applying the Laplace criterion (optimism criterion) is to find a result that would meet condition (2) [18, 20, 21]. That is, finding a value of the prize-winning that would be maximal for any conditions and strategies

$$Y_L = \max_i \max_j a_{ij}. \quad (2)$$

The essence of applying Savage's criterion (Savage's minimax regret model) is to find a result that would meet condition (3) [18, 20, 22]. That is, finding a value of the prize-winning that would correspond to the minimum value for certain strategies among the maximum values according to the conditions. In other words, the essence of the choice according to this criterion is to select the minimum value of the action option among the maximum values of the subtraction between the maximum and current values according to the conditions

$$Y_S = \min_i \left(\max_j \left(\max_i a_{ij} - a_{ij} \right) \right). \quad (3)$$

The study used the Microsoft Excel 2010 software environment (USA) to perform the calculations. A personal computer based on an Intel core i5-2xxx processor, 4Gb DDR3 RAM, 500Gb HDD (Taiwan) was used to calculate the data.

5. The results of improving the approach to choosing the optimal strategy for assessing a military serviceman

5. 1. Development of the algorithm for choosing the optimal strategy for assessing a military serviceman

The development of an algorithm for choosing the optimal strategy for assessing a military serviceman is proposed to begin with the definition of general, conceptual stages. The first stage is to determine the input data for further selection. The second stage is to determine the required set of competencies that significantly affect the successful performance of functional duties [23, 24]. The third stage is to group competencies into appropriate groups. The fourth stage is the formation of strategies, where the strategy is understood as an emphasis on certain groups of competencies in the assessment. Next, it is necessary to determine the conditions for the possible development of functional responsibilities for the position. The next step is to determine the gains matrix when applying strategies according to a certain list of conditions. Next, it is necessary to choose the appropriate selection criterion, according to the conditions of uncertainty. The next step is to choose the optimal strategy for the accepted conditions.

It is suggested to consider in details each of the stages of the improved algorithm. Accordingly, the first stage is to determine the input data for further selection. These data include the number of service functions by position $\{F_{1\to s}\}$, competencies of the serviceman $\{K_{1\to m}\}$, and the degree of uncertainty (γ).

Accordingly, the first block, which in particular reflects the peculiarity of this study, is the block of determining the conditions for the development of a particular position taking into account the transformation of their service functions $\{G_{1\to j}\}$. In general, it would be possible to define such conditions as the following, where functional responsibilities do not change, have minor changes, have fundamental changes. However, it would be advisable not to strictly define the conditions as a specified exclusive set. This will allow to take into account a wider range of possible conditions in future research. However, for the purposes of this study, it is proposed to focus on these three conditions, which will demonstrate the effectiveness of this approach and its peculiarities.

The second stage is the definition of the required set of competencies $\{K_{n\to m}\}$ that significantly affect the successful performance of service functions $\{F_{1\to s}\}$ and their grouping by the relevant features (M). Such definition and grouping are proposed to be carried out by creating a corresponding matrix of a certain service function to a certain competence. The general approach to such distribution is presented in Table 3.

Table 3

Tabular method of determining the correspondence of a service function to a certain competence

Groups	Competences	Service functions		
		F_1	...	F_s
1	K_{11}	k_{111}	...	k_{s11}
	...	...	...	...
	K_{1n}	k_{11n}	...	k_{s1n}
...	...	...	...	...
M	K_{M1}	K_{1M1}	...	K_{sM1}
	...	...	...	...
	K_{Mm}	K_{1Mm}	...	K_{sMm}

The analysis of Table 3 shows that the use of a tabular method of determining the compliance of a service function with a certain competence allows to conduct a comprehensive analysis of the available competencies, as well as to develop an assessment strategy. This can be explained by the fact that the grouping of competencies by certain features highlights the necessary groups of competencies that significantly affect the effectiveness of performing functional duties on a particular position. It should also be noted that the degree of compliance of a competency with a particular serviceman function can be defined either as a strict compliance – meets, does not meet, or as a level of compliance – from 0 to 1. The option of using the level of compliance is more accurate, but significantly complicates the data processing in the study. Therefore, in future studies, both options may be used depending on the factors that affect the conditions of the study.

The third stage is to determine the resulting value of the indicator for certain competencies and their groups. It is proposed to make this determination by summing the values of the degrees of competence correspondence to a serviceman's service functions (4). This is because the sum of the values

will most fully reflect the importance of the competence for a particular position

$$K_{\Sigma i} = \sum k_i. \quad (4)$$

The fourth stage is the formation of strategies, where the strategy is understood as an emphasis on certain groups of competencies in the assessment. The essence of the strategy is to identify a certain group of competencies that have a significant impact on the performance of service functions, and the scores for other groups are the correction coefficients (5). In particular, it is proposed to determine the coefficients by normalizing from the maximum value

$$l_i = \frac{K_{\max} + K_{\Sigma i}}{K_{\max}}. \quad (5)$$

Accordingly, taking into account (4) and (5), the resulting value of the indicator of the impact of a certain group of competencies (a certain strategy) on the degree of compliance with service functions will be determined by the formula

$$a = \left(\frac{K_{\Sigma i}}{K_{\Sigma ij}}\right)\prod_{j \neq i} l_j, \quad (6)$$

where, $K_{\Sigma \bar{i}}$ is the resulting value of the indicator for a certain group (i) for a certain position; $K_{\Sigma ij}$ is the resulting value of the indicator for a certain group (i) for a certain serviceman (j); l_j is the correction coefficient for a certain group of competencies for a certain serviceman (j).

The next stage is to determine the gains matrix when applying strategies according to a certain list of conditions (Table 4).

Table 4

The gains matrix when applying strategies according to a certain list of conditions

Strategies for assessing a military serviceman	Conditions for the development of a certain position with the transformation of their service functions		
	G_1	...	G_j
x_1	a_{11}	...	a_{1j}
...	...	...	...
x_i	a_{i1}	...	a_{ij}

The use of the gain matrix (Table 4) will allow to generalize information about the corresponding change in the values of the influence of a certain group of competencies (a certain strategy) on the degree of compliance with service functions.

The next stage is to determine the appropriate selection criterion, in accordance with the conditions of uncertainty. Thus, it should be noted that under conditions of high uncertainty, it is advisable to choose the Laplace criterion (Table 5).

The application of the Laplace criterion (Table 5) allows to choose the best result from the best ones (2). Under the condition that the uncertainty is average, it is proposed to apply the Savage criterion (Table 6).

The application of the Savage criterion (Table 6) will allow to maximize the gain (3) at an average level of uncertainty. Under conditions of a low level of uncertainty it is advisable to choose the Wald criterion (Table 7).

Table 5

The gain matrix when using the Laplace criterion

Assessment strategies	Conditions for the development of a certain position			max	Y_L
	G_1	...	G_j		
x_1	a_{11}	...	a_{1j}	$\max(a_1)$	$Y_L = \max_j(\max_i(a_{ij}))$
...	...	...	...	...	
x_i	a_{i1}	...	a_{ij}	$\max(a_i)$	

Table 6

The gain matrix when using the Savage criterion

Assessment strategies	Conditions for the development of a certain position			max	Y_S
	G_1	...	G_j		
x_1	a_{11}	...	a_{1j}	$\max(a_1)$	$Y_S = \min_j(\max_i(a_{ij}))$
...	...	...	...	...	
x_i	a_{i1}	...	a_{ij}	$\max(a_i)$	

Table 7

The gain matrix when using the Wald criterion

Assessment strategies	Conditions for the development of a certain position			min	Y_V
	G_1	...	G_j		
x_1	a_{11}	...	a_{1j}	$\min(a_1)$	$Y_V = \max_j(\min_i(a_{ij}))$
...	...	...	...	...	
x_i	a_{i1}	...	a_{ij}	$\min(a_i)$	

The application of the Wald criterion (Table 7) will allow to maximize the gain (1) at a high level of uncertainty. Moreover, it is advisable to take the degree of uncertainty within the framework of this study in normalized values from 0 to 1. Within the framework of this study, it is proposed to determine the value of the degree of uncertainty by the apriori algorithm in the range from 1 to 0.67 – high, from 0.66 to 0.34 – medium, from 0.33 to 0 – low. In the future, a possible way to increase the accuracy of the suggested approach is to develop a separate methodology for determining the degree of uncertainty, which would be based on a posteriori method.

The general view of the block diagram of the algorithm for choosing the optimal strategy for assessing a serviceman is shown in Fig. 1.

The most important factor in the specified algorithm is that by taking into account the level of uncertainty (blocks 10, 12) it is possible to increase the accuracy of choosing a strategy for assessing military servicemen in long-term career development planning. Also, the use of the Laplace (block 13), Wald (block 11) and Savage (block 14) criteria will allow to choose the optimal set of competencies of a military serviceman, which will reduce the negative impact of a possible change in functional responsibilities.

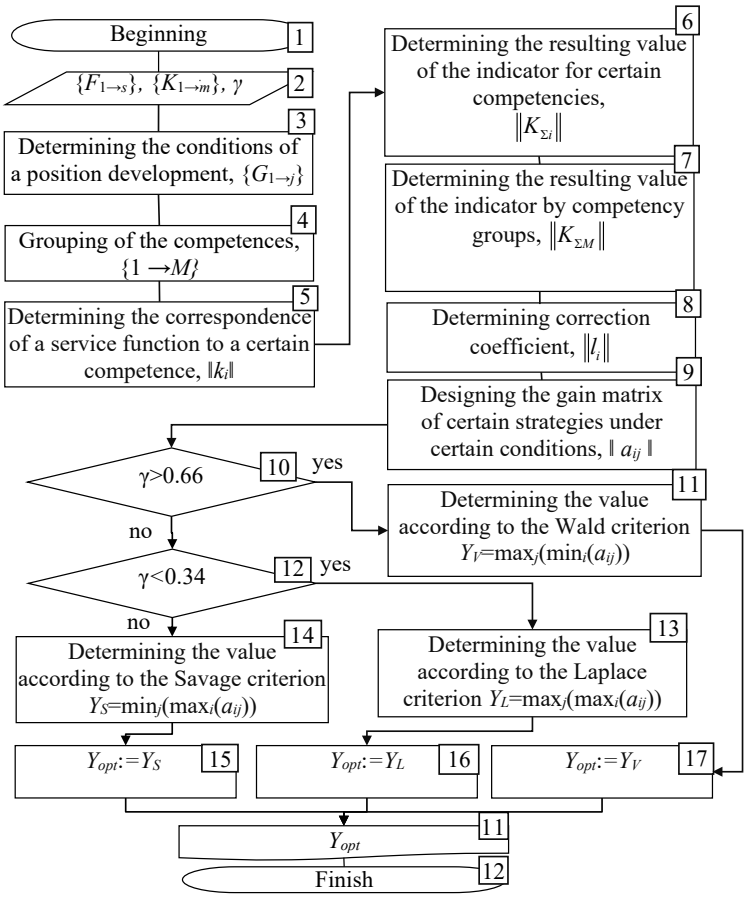

Fig. 1. The general view of the block diagram of the algorithm for choosing the optimal strategy for assessing a serviceman

5. 2. Improving the procedure for choosing the optimal strategy for assessing a military serviceman

The existing procedure for choosing a strategy for assessing a military serviceman is based on a stable set of competencies that ensure the performance of service functions on this particular position. However, given the need to take into account the possibility of changes in both service functions and, accordingly, the required competencies, it is necessary to consider the degree of uncertainty. That is, the degree of uncertainty must be established when determining the input data. This can be implemented by applying the criteria proposed in the developed algorithm for assessing a military serviceman (block 10, block 12).

The next element of improving the procedure is the use of a tabular method for determining the compliance of a service function with a certain competence (Table 1). This will allow to get a general idea of the required set of competencies needed for a particular position and create prerequisites for predicting possible changes in service functions.

Another element of the existing procedure that needs to be improved is the distribution of competencies by a certain criterion. According to the current procedure, professional competencies are the basis. However, the transformation of approaches to manning the defense forces shows that assessment based only on professional competencies does not allow a full assessment of a military serviceman. Taking into account the objective reality and the developed algorithm for assessing a military serviceman, it is advisable to divide competencies by their acquisition. Thus, three groups can be distinguished: general development competencies, professional competencies, and competencies acquired through experience.

The need to divide into these groups is due to the need to minimize the likelihood of not taking into account the entire set of competencies of a serviceman.

Thus, professional competencies are defined as knowledge, skills and abilities aimed at performing the functional duties on a particular position. These competencies are emphasized in relation to positions that have clearly structured, regulated functional responsibilities without a large influence of the creative component, such as creativity, innovation, etc.

General development refers to the knowledge, skills and abilities that are not directly related to the performance of the functional duties on a particular position. The emphasis on these competencies is made in relation to positions that tend to transform functional responsibilities and involve competencies from different fields.

Experience is defined as knowledge, skills and abilities formed on the basis of performing functional tasks in previous positions. This group is emphasized in relation to positions that can significantly change functional responsibilities, and these responsibilities themselves involve taking into account trends development in the professional sphere or according to a position.

To verify the feasibility of the suggested recommendations, an example was considered to compare the difference between the existing approach and with the suggested recommendations. The initial data are presented in section 4.

Firstly, it is proposed to identify three types of conditions for the development of the UAV operator position, respectively: service functions will not change (G_1), have minor changes (G_2), and have fundamental changes (G_3).

Secondly, the correspondence of the existing competencies to the service functions was determined using a tabular method (Table 1).

The competencies were also grouped according to their acquisition into the following groups: general development competencies, professional competencies, and competencies acquired with experience.

The results of this determination according to the "HR Scorecard" [25] are presented in Table 8.

Consideration of the correspondence of the UAV operator's service functions to the military serviceman's competencies (Table 8) allows to proceed to determining the resulting value of the indicator for certain competencies and their groups. The results of calculations using formula (4) are presented in Table 9.

The analysis of the resulting values of the UAV operator competency level indicators by groups (Table 9) shows that the general development competencies and those acquired with experience significantly affect the level of competencies of a serviceman.

The next step of the procedure is to compile an "HR Scorecard" for a specific serviceman. According to the conditions of the example, 2 servicemen with the corresponding competencies were selected: serviceman 1 (Table 10), serviceman 2 (Table 11).

Table 8

The table of correspondence between the service functions of a UAV operator and the competencies of a military serviceman

Groups	Competences	Functions								
		Existing					Defined		Undefined	
		F_1	F_2	F_3	F_4	F_5	F_6	F_7	F_8	F_9
Professional	K_1	1	–	–	–	1	–	1	–	–
	K_2	1	1	–	1	1	1	–	–	–
	K_3	–	1	–	1	–	1	–	–	1
	K_4	–	1	–	1	–	1	–	1	1
	K_5	–	–	1	1	1	–	1	–	–
	K_6	–	–	1	–	1	–	1	1	–
	K_7	–	–	–	1	–	–	1	–	1
	K_8	–	–	–	1	–	1	–	–	–
	K_9	–	–	–	1	1	–	1	1	1
	K_{10}	1	–	1	–	1	–	–	–	–
General development	K_{11}	1	1	–	1	–	1	–	1	1
	K_{12}	–	–	1	–	1	–	–	1	–
	K_{13}	–	1	–	1	–	1	–	1	1
	K_{14}	1	1	–	1	–	1	–	1	1
Acquired through experience	K_{15}	–	–	–	1	–	1	–	1	–
	K_{16}	–	1	–	1	–	1	1	–	–
	K_{17}	–	–	1	–	–	–	1	–	–
	K_{18}	–	–	1	–	1	–	1	–	–

Table 9

The table for determining the resulting value of the UAV operator's competency level indicators by groups according to the "HR Scorecard" (Table 8)

Group	The resulting value of indicators		
	Existing	Defined	Undefined
Professional	22	31	38
General development	10	13	20
Acquired through experience	6	11	12

Table 10

The table of correspondence of No. 1 UAV operator competencies to service functions according to the "HR Scorecard"

Groups	Competences	Functions								
		Existing					Defined		Undefined	
		F_1	F_2	F_3	F_4	F_5	F_6	F_7	F_8	F_9
Professional	K_1	1	–	–	–	1	–	1	–	–
	K_2	1	1	–	1	1	1	–	–	–
	K_3	–	1	–	1	–	1	–	–	1
	K_4	–	–	–	–	–	–	–	–	–
	K_5	–	–	1	1	1	–	1	–	–
	K_6	–	–	1	–	1	–	1	1	–
	K_7	–	–	–	–	–	–	–	–	–
	K_8	–	–	–	1	–	1	–	–	–
	K_9	–	–	–	–	–	–	–	–	–
	K_{10}	1	–	1	–	1	–	–	–	–
General development	K_{11}	1	1	–	1	–	1	–	1	1
	K_{12}	–	–	–	–	–	–	–	–	–
	K_{13}	–	1	–	1	–	1	–	1	1
	K_{14}	–	–	–	–	–	–	–	–	–
Acquired through experience	K_{15}	–	–	–	1	–	1	–	1	–
	K_{16}	–	–	–	–	–	–	–	–	–
	K_{17}	–	–	–	–	–	–	–	–	–
	K_{18}	–	–	1	–	1	–	1	–	–

The analysis of the "HR Scorecard" of the UAV operator No. 1 (Table 10) shows that, in general, the acquired competencies ensure the performance of its functions. However, it is necessary to note the absence of competencies: K_4, K_7, K_9, K_{12}, K_{14}, K_{16}, K_{17}.

Table 11

The table of correspondence of No. 2 UAV operator competencies to service functions according to the "HR Scorecard"

Groups	Competences	Functions								
		Existing					Defined		Undefined	
		F_1	F_2	F_3	F_4	F_5	F_6	F_7	F_8	F_9
Professional	K_1	1	–	–	–	1	–	1	–	–
	K_2	–	–	–	–	–	–	–	–	–
	K_3	–	1	–	1	–	1	–	–	1
	K_4	–	–	–	–	–	–	–	–	–
	K_5	–	–	1	1	1	–	1	–	–
	K_6	–	–	–	–	–	–	–	–	–
	K_7	–	–	–	1	–	–	1	–	1
	K_8	–	–	–	1	–	1	–	–	–
	K_9	–	–	–	–	–	–	–	–	–
	K_{10}	1	–	1	–	1	–	–	–	–
General development	K_{11}	1	1	–	1	–	1	–	1	1
	K_{12}	–	–	–	–	–	–	–	–	–
	K_{13}	–	–	–	–	–	–	–	–	–
	K_{14}	1	1	–	1	–	1	–	1	1
Acquired through experience	K_{15}	–	–	–	1	–	1	–	1	–
	K_{16}	–	1	–	1	–	1	1	–	–
	K_{17}	–	–	–	–	–	–	–	–	–
	K_{18}	–	–	1	–	1	–	1	–	–

The analysis of the "HR Scorecard" of the UAV operator No. 2 (Table 11) shows that, similarly to the UAV operator No. 1, the acquired competencies ensure the performance of official functions. However, it is necessary to note the absence of competencies: K_2, K_4, K_6, K_9, K_{12}, K_{13}, K_{17}.

The availability of data on the presence of relevant competencies (Tables 10, 11) allows to proceed to the determination of the resulting values of indicators (4) and correction coefficients (5) for each of the UAV operators (Table 12).

Table 12

The table of the results of determining the values of indicators (4) and correction coefficients (5) for each of the UAV operators

Results	Indicators	Conditions of changes					
		UAV operator No. 1			UAV operator No. 2		
		G_1	G_2	G_3	G_1	G_2	G_3
Resulting values	K_{prof}	17	23	25	12	17	19
	K_{gen}	5	7	11	6	8	12
	K_{ex}	3	5	6	5	9	10
Correction coefficients	l_{prof}	1.77	1.74	1.66	1.55	1.55	1.50
	l_{gen}	1.50	1.54	1.55	1.60	1.62	1.60
	l_{ex}	1.50	1.45	1.50	1.83	1.82	1.83

The results of the analysis of the values of indicators and correction coefficients for each of the UAV operators (Table 12) show that they have a similar level of competence acquisition. However, UAV operator No. 1 has an advantage in the acquisition of professional competencies, which, according to the existing procedure, gives it an advantage. Taking into account

the developed algorithm (Fig. 1), it is proposed to improve the procedure for choosing the optimal strategy for assessing a military serviceman by applying the appropriate optimal selection criteria in accordance with the level of uncertainty.

Thus, taking into account blocks 10–13 of the developed algorithm (Fig. 1) and taking into account the formulas for determining the gain (6), a generalized table for choosing a strategy for assessing a military serviceman was formed (Table 13). It should be noted that the strategies for assessing UAV operators focus on certain groups of competencies, in particular: professional (x_1), general development (x_2), and acquired through experience (x_3). Accordingly, the conditions for the development of the UAV operator's position are as follows: job functions will not change (G_1), have minor changes (G_2), have fundamental changes (G_3).

The analysis of the results of choosing the optimal assessment strategy (Table 13) shows that the considered UAV operators have different assessment strategies at different levels of uncertainty. In particular, UAV operator No. 1 uses strategy x_1 (emphasis on professional competencies) at a low level of uncertainty, strategy x_2 (emphasis on general development) at an average level of uncertainty, and strategy x_1 at a high level of uncertainty. This is due to the fact that UAV operator No.1 has developed professional and general development competencies, which will allow it to perform its service functions in case of their transformation.

UAV operator No. 2 at a low level of uncertainty uses strategy x_3 (emphasis on experience), at an average level – strategy x_1 (emphasis on professional competencies), at a high level – also strategy x_3. This is due to the fact that the UAV operator No.2 has both a high level of competencies acquired through experience and sufficient professional competencies that will allow it to ensure the performance of its service duties in any case.

It is expedient to compare the results of assessing a military serviceman according to the existing procedure and the improved procedure. The peculiarity of the existing procedure is that the assessment is conducted with a focus only on professional competencies and only according to the existing list of service functions. That is, only strategy x_1 and only under condition G_1. Thus, a generalized comparative characterization of the procedures based on the results obtained (Table 13) is presented in Fig. 2.

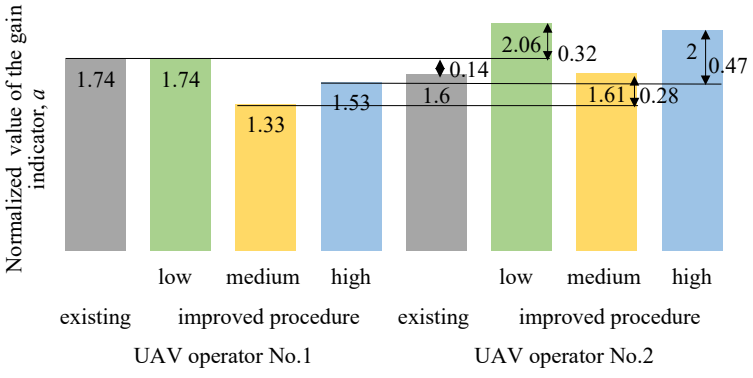

Fig. 2. The generalized comparative analysis of the existing and improved procedures taking into account the degree of uncertainty (low, medium, high) based on the obtained results for two UAV operators

Thus, the comparative analysis (Fig. 2) shows that according to the existing approach, the UAV operator No. 1 has an advantage of the relevant competencies by 8% (0.14). This is because the existing approach emphasizes professional competencies. At the same time, according to the proposed approach, the level of competencies of the UAV operator No. 2 is 15% higher (0.32). This is due to the fact that the suggested approach proposes to take into account the greater influence of general development competencies and those acquired through experience. Moreover, it should be noted that the strategies for assessing competencies with a medium and high degree of uncertainty in the change in service functions show the better result for the UAV operator No. 2. In particular, at a medium level of uncertainty, the advantage of the UAV operator No. 2 is 17% (0.28), and at a high level – 24% (0.47). This is due to the fact that the application of optimal selection criteria (Laplace, Savage, Wald) allows to take into account the level of uncertainty. Also, the advantage of the level of acquired competencies by UAV operator No. 2 is explained by the presence of better general development competencies and those acquired through experience.

6. Discussion of the results of improving the approach to choosing the optimal strategy for assessing a military serviceman

Within the framework of improving the approach to assessing a military serviceman, the algorithm for choosing the optimal strategy for assessing a military serviceman is proposed ((4)–(6), Fig. 1). It has been established that its application will simplify the management processes for assessing military servicemen, taking into account different levels of uncertainty. This can be explained by the fact that the proposed algorithm uses clear criteria for determining the optimal assessment strategy, taking into account the level of uncertainty (blocks 10, 12 (Fig. 1)). The application of this algorithm will ensure the accuracy of assessing a military serviceman in the long-term planning of the development of a serviceman's career.

Table 13

The summary table of results of determining gains when applying strategies according to a specified list of conditions for UAV operators No. 1 and No. 2

Strategies	Conditions of a position development			min	max	Optimal selection criteria		
						Laplace	Savage	Wald
	G_1	G_2	G_3			$Y_L = \max_j(\max_i(a_{ij}))$	$Y_S = \min_j(\max_i(a_{ij}))$	$Y_V = \max_j(\min_i(a_{ij}))$
UAV operator No. 1								
x_1	1.74	1.66	1.53	1.53	1.74	1.74	1.33	1.53
x_2	1.33	1.36	1.37	1.33	1.37			
x_3	1.33	1.22	1.28	1.22	1.33			
UAV operator No. 2								
x_1	1.60	1.61	1.47	1.47	1.61	2.06	1.61	2
x_2	1.70	1.73	1.65	1.65	1.73			
x_3	2.06	2.05	2.00	2.00	2.06			

This is explained by the fact that depending on the level of uncertainty about the development of service functions, the appropriate selection criterion will be used (Tables 5–7).

The essence of the developed algorithm for choosing the optimal strategy for assessing a military serviceman is to use the Laplace (block 13 (Fig. 1)), Wald (block 11 (Fig. 1)) and Savage (block 14 (Fig. 1)) criteria for choosing a strategy appropriate to the level of uncertainty. Moreover, the proposed algorithm involves determining the conditions for the development of the position (block 3 (Fig. 1)), which will take into account a possible change in service functions of the position.

Also, the proposed algorithm allows choosing the optimal set of competencies of a serviceman (block 4 (Fig. 1), Table 3), which will reduce the negative impact of a possible change in functional responsibilities. This is explained by the fact that the use of a tabular method of determining the correspondence of a service function to a certain competence (Table 3) allows creating a gain matrix when applying strategies according to a certain list of conditions (Table 4).

The peculiarity of the developed algorithm for choosing the optimal strategy for assessing a military serviceman is to take into account the level of uncertainty about the possible transformation of service functions. In contrast to existing studies [6, 7, 9, 11, 14], where the level of uncertainty was not taken into account, the proposed algorithm allows to take into account the level of uncertainty (block 10, block 12 (Fig. 1)).

This feature of the developed algorithm closes the challenge related to the impossibility of taking into account the long-term perspective of career development due to significant uncertainty in the process of transformation of service functions. This makes it possible to adapt the existing scientific and methodological approach for assessing a military serviceman to modern trends in the development of HR management processes.

The limitation of the developed algorithm is the use of only three levels of uncertainty (block 10, block 12 (Fig. 1)). However, the use of these three levels generally reflects the impact of uncertainty and does not significantly affect the accuracy of assessing a military serviceman. In addition, the introduced structure of the algorithm allows to implement changes regarding the number of levels in uncertainty.

The disadvantages of the developed algorithm include the dependence of the accuracy of the subsequent assessment on the conditions of the position development. At the same time, it should be noted that forecasting the development of certain professions allows to draw conclusions about the development of certain positions, which offsets the negative impact of this drawback.

The development of the choice of the optimal strategy for assessing a military serviceman can be continued in the direction of increasing the number of uncertainty levels. This will expand the scope of the proposed algorithm and allow taking into account more conditions for the development of a particular position and, accordingly, a serviceman.

As part of improving the approach to assessing a military serviceman, the procedure for choosing the optimal strategy for assessing a military serviceman has been improved (Tables 8, 12, 13). The essence of the improvement lies in determining the level of uncertainty, applying a tabular method for determining the correspondence of service functions to competencies (Table 8), and distributing competencies by their acquisition (Tables 8, 10, 11). This procedure allows to choose such strategy for assessing a military serviceman that will allow to focus on those competencies that have the greatest impact on the performance of service functions. Moreover, the proposed procedure allows, in accordance with the example, to increase the accuracy of the forecast of the correspondence of the competencies of a serviceman to the conditions of the position (Tables 8, 10, 11).

In contrast to the existing procedure, the improved one, according to the example, allows to increase the accuracy of determining the level of competence by 15% in the absence of changes (Fig. 2). In addition, the proposed procedure allows to increase the accuracy at an average level of uncertainty by 17% (Fig. 2), and by 24% at a high level (Fig. 2). This is due to the fact that the proposed procedure allows to take into account the level of uncertainty by applying an optimal selection criterion. This is also due to the comprehensive consideration of competencies by the way of their acquisition, including professional, general development and acquired through experience (Tables 8, 10, 11).

The peculiarity of the proposed procedure is to take into account three levels of uncertainty in the development of a particular position, in particular: service functions will not change (G_1), have minor changes (G_2), have fundamental changes (G_3). Another peculiarity is the use of a tabular method for determining the correspondence of service functions to competencies according to the HR Scorecard (Table 8). The next feature is the distribution of a serviceman's competencies into three groups: professional, general development, and acquired through experience (Tables 8, 10, 11). Unlike the studies [8, 10, 13, 15], which take into account only one level of uncertainty and do not take into account the relevance of competencies to service functions, the proposed procedure allows to consider it.

The proposed procedure closes the problematic part of adapting the existing scientific and methodological approach to the need to take into account the long-term perspective of career development and the ability to adapt in case of changing functional responsibilities. This allows to increase the level of accuracy in assessing a military serviceman in accordance with the conditions of the position.

The limitation of this procedure is that the degree of compliance of the competence with a particular service function is defined as an indicator of availability and is marked as 0 or 1 (Tables 10, 11). It should be noted that it is possible to define the level of compliance in the form of a degree of compliance. This approach is more accurate, but it significantly complicates data processing in the study. Therefore, the further development of this procedure may be the development of a methodology for determining the degree of competence to a particular service function as a degree of compliance.

The disadvantage of the improved procedure is the absence of possibility to transform the set of service functions and competencies after the start of the assessment. However, it should be noted that when using the software in assessing a military serviceman, this disadvantage will not significantly affect the speed of the process.

Possible directions for the further research may include the development of a methodological apparatus for determining the level of uncertainty in planning a serviceman's career and the correspondence degree of competence to a particular service function.

7. Conclusions

1. As a part of improving the approach to assessing a military serviceman, an algorithm for choosing the optimal strategy for assessing a military serviceman is proposed. It has been

established that its application will simplify the management processes for assessing military servicemen, taking into account different levels of uncertainty. The peculiarity of the proposed algorithm is to take into account the level of uncertainty regarding the possible transformation of service functions. Unlike existing studies, it allows to take into account the long-term perspective of career development by considering uncertainty in the process of transformation of service functions. A distinctive feature of this developed algorithm for choosing the optimal strategy for assessing a military serviceman is the use of a criterion (Laplace, Wald, and Savage) to choose a strategy that is appropriate to the level of uncertainty. The proposed algorithm allows the selection of the optimal strategy for assessing a military serviceman, taking into account the level of uncertainty, possible transformation of service functions and acquired competencies. It also makes it possible to adapt the existing scientific and methodological approach for assessing a military serviceman to modern trends in the development of HR management processes. The scope of the proposed algorithm is the HR management processes during assessing a military serviceman.

2. As a part of improving the approach to assessing a military serviceman, the procedure for choosing the optimal strategy for assessing a military serviceman has been improved. The essence of the improvement is to identify the level of uncertainty, apply a tabular method for determining the correspondence of service functions to competencies, and distribute competencies on the basis of their acquisition. This procedure allows, according to the example, to increase the accuracy of determining the level of compliance of a serviceman's competencies with the service functions by 15% in the absence of changes. Also, the proposed procedure allows to increase the accuracy in case of minor changes in service functions by 17%, and by 24% in case of fundamental changes. The peculiarity of the proposed procedure is that it is based on three levels of uncertainty in the development of a certain position, in particular: service functions do not change, have minor changes, and have fundamental changes. A distinctive feature of the improved procedure is the use of a tabular method for determining the compliance of service functions with the HR Scorecard competencies and the distribution of competencies into three groups: professional, general development, and acquired through experience. The area of application of the improved procedure is the management processes to ensure the effectiveness of HR management in the military command and control bodies.

Conflict of interest

The authors declare that they have no conflict of interest in relation to this research, including financial, personal, authorship, or other, that could affect the research and its results presented in this article.

Financing

The study was conducted without financial support.

Data availability

The manuscript has no associated data.

Use of artificial intelligence tools

The authors confirm that they did not use artificial intelligence technologies in the making the presented work.

References

1. Zubarev, S. (2024). HR-management during the war: personnel support. Scientific Journal of Polonia University, 63 (2), 212–219. https://doi.org/10.23856/6328
2. Levchuk, K., Bandurka, K. (2024). HR management: challenges faced by employers during martial law in Ukraine. Economic Bulletin of the Dniprovsk State Technical University, 2 (9), 90–94. https://doi.org/10.31319/2709-2879.2024iss2(9).318987pp90-94
3. Soeters, J. (2023). Economics, Logistics, and (Human Resources) Management in Military Sciences. Handbook of Military Sciences, 1–17. https://doi.org/10.1007/978-3-030-02866-4_67-2
4. Mazilu (Alexandrescu), E.-A. (2024). The Necessity of the Process of Modernisation of the Human Resources of the Military System. Nemzet És Biztonság, 16 (2), 90–99. https://doi.org/10.32576/nb.2023.2.6
5. Setiawan, B. (2024). Enhancing Human Resources Competency in a Defense University: Strategies and Best Practices. AL-ISHLAH: Jurnal Pendidikan, 16 (3), 3101–3117. https://doi.org/10.35445/alishlah.v16i3.5796
6. op den Buijs, T., Olsthoorn, P. (2023). Human Resource Management for Military Organizations: Challenges and Trends. Handbook of Military Sciences, 1–26. https://doi.org/10.1007/978-3-030-02866-4_68-1
7. Özcan, K., Genç*, S. (2019). Developing An Hr Strategy Map For Military Context. The European Proceedings of Social and Behavioural Sciences, 86–97. https://doi.org/10.15405/epsbs.2019.01.02.8
8. Mazari Abdessameud, O., Van Utterbeeck, F., Guerry, M.-A. (2021). Military Human Resource Planning through Flow Network Modeling. Engineering Management Journal, 34 (2), 302–313. https://doi.org/10.1080/10429247.2021.1900660
9. Noor, M. M., Razali, R. (2011). Human Resources Information Systems (HRIS) for military domain - a conceptual framework. Proceedings of the 2011 International Conference on Electrical Engineering and Informatics, 1–5. https://doi.org/10.1109/iceei.2011.6021559
10. Okazawa, S. (2013). A discrete event simulation environment tailored to the needs of military human resources management. 2013 Winter Simulations Conference (WSC), 2784–2795. https://doi.org/10.1109/wsc.2013.6721649
11. Arifin, M. A., Tajudeen, F. P. (2020). Impact of human resources information systems in the military environment. Asia Pacific Management Review, 25 (4), 198–206. https://doi.org/10.1016/j.apmrv.2020.02.001

12. Costa, I. P. de A., Terra, A. V., Moreira, M. Â. L., Pereira, M. T., Fávero, L. P. L., Santos, M. dos, Gomes, C. F. S. (2022). A Systematic Approach to the Management of Military Human Resources through the ELECTRE-MOr Multicriteria Method. Algorithms, 15 (11), 422. https://doi.org/10.3390/a15110422
13. Levianto, J., Husin, Z., Kusnadi, K. (2024). HRM Model In Civil-Military Environment: Investigation Of The Influencing Factors On Performance. Management Studies and Entrepreneurship Journal (MSEJ), 5 (2), 5273–5280. Available at: https://journal.yrpipku.com/index.php/msej/article/view/4959
14. Ranamukha, N. C. (2024). The Role of Human Resources Flexibility in Strategic Thinking of Strategic Level Military Officers of Sri Lanka Air Force. Journal of Management, Social Sciences and Humanities, 5 (1), 115–137. https://doi.org/10.4038/jmsh.v5i1.22
15. Jnitova, V., Elsawah, S., Ryan, M. (2017). Review of simulation models in military workforce planning and management context. The Journal of Defense Modeling and Simulation: Applications, Methodology, Technology, 14 (4), 447–463. https://doi.org/10.1177/1548512917704525
16. Profesiynyi standart za hrupoiu profesiy «Operatory bezpilotnykh aviatsiynykh system: operator nazemnykh zasobiv keruvannia bezpilotnym litalnym aparatom; operator dystantsiyno kerovanykh bezpilotnykh litalnykh aparativ; operator dystantsiyno kerovanykh bezpilotnykh aparativ ahropromyslovoho vyrobnytstva» (2025). Hromadskoi orhanizatsiyi «Ukrainska asotsiatsiia operatoriv bezpilotnykh aparativ». Available at: https://register.nqa.gov.ua/uploads/0/724-ilovepdf_merged_14.pdf
17. Profesiynyi standart. Dystantsiynyi komandyr bezpilotnoho povitrianoho sudna (2024). Available at: https://register.nqa.gov.ua/uploads/0/682-distancijnij_komandir_bezpilotnogo_povitranogo_sudna.pdf
18. Sniedovich, M. (2016). From Statistical Decision Theory to Robust Optimization: A Maximin Perspective on Robust Decision-Making. Robustness Analysis in Decision Aiding, Optimization, and Analytics, 59–87. https://doi.org/10.1007/978-3-319-33121-8_4
19. Manski, C. F. (2021). Econometrics for Decision Making: Building Foundations Sketched by Haavelmo and Wald. Econometrica, 89 (6), 2827–2853. https://doi.org/10.3982/ecta17985
20. Maistrenko, O., Khoma, V., Kurban, V., Saveliev, A., Shcherba, A., Karavanov, O. et al. (2023). Improving the scientific and methodological apparatus for determining the optimum strategy when selecting a grouping element for performing the task. Eastern-European Journal of Enterprise Technologies, 5 (3 (125)), 64–74. https://doi.org/10.15587/1729-4061.2023.289100
21. Tuyl, F., Gerlach, R., Mengersen, K. (2008). A Comparison of Bayes-Laplace, Jeffreys, and Other Priors. The American Statistician, 62 (1), 40–44. https://doi.org/10.1198/000313008x267839
22. Manski, C. F. (2017). Optimize, satisfice, or choose without deliberation? A simple minimax-regret assessment. Theory and Decision, 83 (2), 155–173. https://doi.org/10.1007/s11238-017-9592-1
23. Maistrenko, O., Khoma, V., Shcherba, A., Olshevskyi, Y., Pereverzin, Y., Popkov, O. et al. (2022). Improving a procedure for determining the factors that influence the need of higher education institutions for specialists of the highest qualification. Eastern-European Journal of Enterprise Technologies, 1 (3 (115)), 86–96. https://doi.org/10.15587/1729-4061.2022.251027
24. Maistrenko, O., Artamoshchenko, V., Petushkov, V., Shcherba, A., Balandin, M., Stetsiv, S. et al. (2022). Improving the methodological approach to determining the number of postpostgraduates planned for admission. Eastern-European Journal of Enterprise Technologies, 3 (3 (117)), 43–56. https://doi.org/10.15587/1729-4061.2022.259707
25. Walker, G., MacDonald, J. R. (2001). Designing and Implementing an HR Scorecard. Human Resource Management, 40 (4), 365–377. https://doi.org/10.1002/hrm.1025