SCIENTIFIC AND PRACTICAL APPROACHES TO INSTITUTIONAL SUPPORT OF STRATEGIC COMMUNICATIONS IN PUBLIC ADMINISTRATION OF UKRAINE

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ABSTRACT

The scientific and practical problem of forming the optimal model of institutional support of strategic communications in the public administration system of Ukraine was solved in the article. Analysis and ranking of alternatives of institutional and organizational structures on strategic communications in the structure of public administration authorities were carried out to this end. According to the results of the research, the most acceptable alternative is the decision to establish the Center for Strategic Communications under the President of Ukraine, the main purpose of which is to form and monitor the implementation of strategic communications policy, and the Office of Strategic Communications under the CMU, the main purpose of which is to implement a policy in the strategic communications sphere as well as to ensure coordination and synchronization of communication actions of public administration entities in general. It was substantiated that the obtained research results can be taken into account during the development of the Concept of Strategic Communications in order to realize the communication potential of the public administration system to ensure sustainable development of Ukraine as well as to develop a system of legal and organizational support for their practical implementation by public administration entities.

Keywords*:* Making of Management Decisions, Methodology of Multicriteria Analysis, Strategic Communications, Public Administration, Model of Strategic Communications, Institutional and Organizational Alternatives, Expert Survey

INTRODUCTION

During 2015–2021, in the development of state strategies and programs, the issues of increasing trust in government authorities and the state as a whole by establishing interaction between all subjects of public administration are updated. Starting with the Sustainable Development Strategy "Ukraine – 2020", which identified the need to strengthen institutional capacity for strategic communications (President of Ukraine, 2015), and ending with the Vectors of Economic Development 2030. where the strategic goal of the vector "Reputation of Ukraine" is to increase trust and respect to Ukraine from citizens and international partners as well as to establish a partnership in building the reputation of Ukraine between government authorities and business (Cabinet of Ministers of Ukraine, 2021). The military block in the context of national security is a separate block for the use of strategic communications tools in Ukraine. In particular, "Strategy of Military Security of Ukraine" states that the achievement of state policy goals in the military sphere will be carried out through the use of strategic communications and improvement of information policy of the state (President of Ukraine, 2021).

A number of attempts to provide institutional support for strategic communications in Ukraine were made during this period. For example, in 2015 the Ministry of Information Policy and

the department of strategic communications in its structure were established. One of the main tasks of the mentioned ministry was to ensure the development of the system of state strategic communications in Ukraine (Cabinet of Ministers of Ukraine, 2015). However, in 2019 this ministry was liquidated through the establishment of the Ministry of Culture, Youth and Sports of Ukraine (Cabinet of Ministers of Ukraine, 2019), which in 2020 was renamed to the Ministry of Culture and Information Policy (Cabinet of Ministers of Ukraine, 2020), in accordance with the Provision that included ensuring the formation and implementation of state policy in the strategic communications sphere to its main tasks. In 2017 the state institution "Ukrainian Institute" was established in Ukraine (Cabinet of Ministers of Ukraine, 2017). In 2021 the Center for Strategic Communications and Information Security under the Ministry of Culture and Information Policy was established in order to effectively implement this task.

This period can be described as the search for the most optimal model of institutional support for strategic communications in the public administration system. Even as of 2021, the functions of strategic communications are scattered between several central executive authorities. In fact, it makes it impossible to implement them from a single center, which is one of the principles of strategic communications (Syvak, 2019). The largest in terms of functions in the strategic communications sphere is the national level, which is provided by public administration authorities and which is system-forming and should ensure the overall coordination and synchronization of communications in two dimensions: horizontal and vertical. This level should be used as a basis for identifying alternatives to institutional and organizational structures for strategic communications.

MATERIALS AND METHODS

The main methods that were used in the research process, based on the object and purpose of the article, are analysis and synthesis, system analysis, screening and analysis of alternatives, multicriteria analysis of management decisions, expert assessment, expert competence assessment, hierarchy analysis, generalization, logical and mathematical methods, etc.

Analysis and synthesis of data is a key element of this research, which clarifies the features of the institutional support of strategic communications in the public administration system of Ukraine. The system analysis method allowed to determine the prospects for the use of strategic communications as part of the public administration system. The analysis of alternatives was used in order to select and rank alternatives of institutional and organizational structures for strategic communications in the public administration system. The method of multicriteria analysis of management decisions was used in order to streamline the experts' assessment. The method of expert survey (questionnaire) was used to assess the proposed alternatives for institutional support of strategic communications in the public administration system. The assessment of experts' competence and their ranking were used in order to determine their global priority and coefficient of competence. The method of hierarchy analysis was used when compiling a matrix of pairwise comparisons of the criteria of certain alternatives. Logical and mathematical methods, as well as the generalization method, were used to analyze the data and our own conclusions.

RESULTS

The Scientific and Practical Approach to Making Management Decisions

In order to substantiate the chosen approach to the screening of alternatives, it is advisable to develop an algorithm for decision-making taking into account the multicriteria analysis of management decisions (Figure 1).

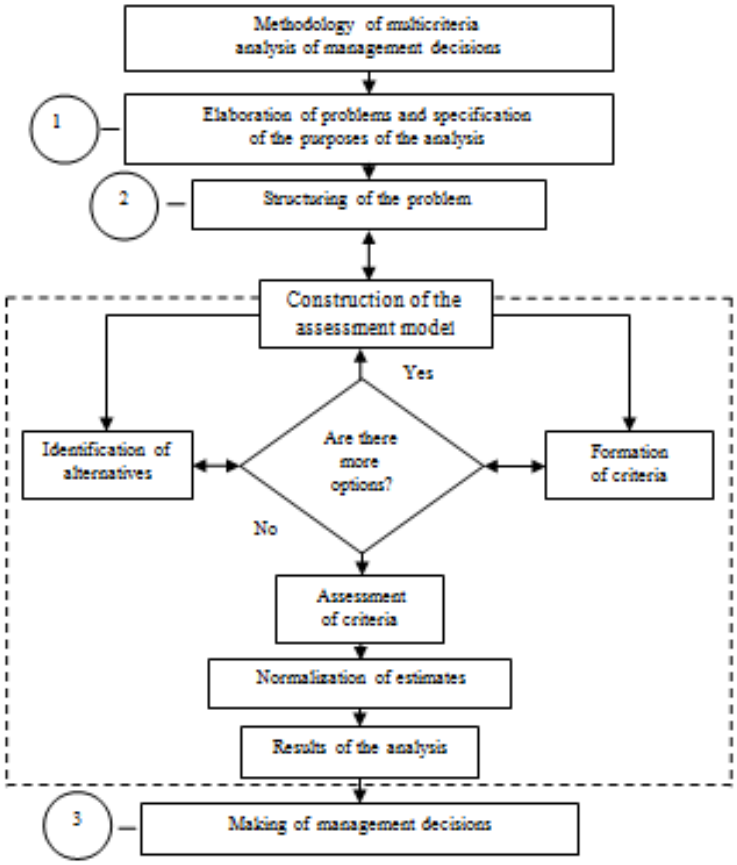

FIGURE 1
MANAGEMENT DECISION-MAKING PROCESS BASED ON MULTICRITERIA ANALYSIS METHODOLOGY

Revealing the content of block 2 (Figure 1), it should be noted that it is necessary to follow such steps in order to solve the problem by applying the methodology of multicriteria analysis of management decisions: 1) screening alternatives, which involves the analysis and selection of the most significant ones in order to solve a particular problem of alternatives from the number of possible or specified options; 2) determining the best alternative from those considered; 3) ranking of alternatives.

One of the approaches to solving multicriteria management tasks is related to the procedure of forming a generalized function: $f(a_1,a_i, a_{i3};...,a_{in})$, which monotonically depends on the criteria $a_{i1},a_{i2},a_{i3},...,a_{in}$. This approach is implemented through the method of collapsing criteria. It is expedient to apply the method of additive reduction of criteria according to the objectives of the research and tasks that were set. The normalization of criteria, *i.e.*, bringing them to comparability, is the basis of this method. In addition, the vector of criteria weighting coefficients is determined $\lambda=(\lambda_1, \lambda_2, ..., \lambda_j)$. They can be used in order to assess the importance of an appropriate alternative. In this case, such requirement should be complied (1):

$$\sum_{j=1}^{n}\lambda_j = 1, \quad \lambda_j \geq 0. \tag{1}$$

The new objective function is constructed for the additive criterion (2):

$$F(A_i) = \sum_{j=1}^{n}\lambda_j a_{ij} \tag{2}$$

The problem of optimization of the scalar criterion $z= f(A) \rightarrow max\ (min)$ is solved under the conditions that $A \in D$, where $A=(a_1, a_2, \ldots, a_n)$ is the set of points satisfying the system of constraints $g(a_1, a_2, \ldots, a_n) \leq b_i$, $i=1,2,\ldots,m$; A is the allowable area of decisions. The elements of the set D are valid solutions or alternatives, and the numerical functions f_j, $j=1,2,\ldots,n$ are objective functions or criteria given for the set A.

In general, the objective function is as follows (3):

$$F(A) = \sum_{j=1}^{n} \lambda_j \frac{F_j(A)}{F_j^0(A)} = \sum_{j=1}^{n} \lambda_j f(A) \rightarrow \max(\min) \quad (3)$$

where: n is the number of combined partial criteria;

λ_j is the weighting factor of the *j-th* partial criterion;

$Fj(A)$ is the numerical value of the *j-th* criterion;

$F_j^0(A)$ is the *j-th* normalized divisor;

$f_j(A)$ is the normalized value of the *j-th* partial criterion.

As can be seen from the formula (3), the criterion for optimal selection is the maximum (minimum) value of the objective function. The generalized goal function can be used in order to collapse partial optimality criteria under the stipulation that:

- Partial criteria are quantitatively measurable in importance, *i.e.,* each of them can be matched by a number λ_j, which quantitatively characterizes its importance relative to other criteria;
- Partial (local) criteria are homogeneous (have the same dimension).

In this case, the application of the additive criterion of optimality is valid for solving the problem of multicriteria optimization.

Additive criterion or optimality criterion is determined by adding normalized values of partial criteria.

Such conditions should be met according to the additive formula (2):

- Availability of m solutions (alternatives);
- Developed criteria (n), according to which the choice of the optimal solution is made;
- Weighting coefficients (λ_j , where: j=1,…,n.) in order to assess the importance of each criterion;
- Assessment of alternatives for each criterion a_{ij} , i=1,…,m, j=1,…,n.

The matrix is formed on the basic of the conditions described above. It is advisable to use the graphical method of scientific research by constructing a table for better visualization of the matrix (Table 1).

Table 1
MULTICRITERIA CHOICE OF ALTERNATIVES (MATRIX)

Alternatives	**Local Criteria**			
	k_1	k_2	…	k_n
A_1	a_{11}	a_{12}	…	a_{1n}
A_2	a_{21}	a_{22}	…	a_{2n}
…	…	…	…	…
A_m	a_{m1}	a_{m2}	…	a_{mn}
Weighting coefficients	λ_1	λ_2	…	λ_n

The generated matrix displays alternatives (A_m) in rows and criteria (a_{mn}) in columns. According to the described conditions the value of the optimality criteria (objective function) is determined (4):

$$F_1 = \sum_{j=1}^{n} \lambda_j a_{1j}; \quad F_2 = \sum_{j=1}^{n} \lambda_j a_{2j}; \ldots \quad F_m = \sum_{j=1}^{n} \lambda_j a_{mj} \tag{4}$$

Due to the heterogeneity of the criteria for the optimization vectors (max/min) or if different measurement scales are used, these criteria should be normalized.

The maximum and minimum of each local criterion is determined according to:

– minimizing criteria (5):

$$a_j^- = \min a_{ij}, \ i = \overline{1,m} \tag{5}$$

– maximizing criteria (5: 6)

$$a_j^+ = \max a_{ij}, \ i = \overline{1,m} \tag{6}$$

Normalized criteria are determined from the following ratios according to the principle of maximum efficiency:

– for maximizing criteria normalized estimates are based on formulas (7; 8):

$$\overline{a_{ij}} = \frac{a_{ij}}{a_j^+}, \ j = \overline{1,e}; \tag{7}$$

$$\overline{a_{ij}} = \frac{a_{ij} - a_j^-}{a_j^+ - a_j^-}, \ j = \overline{1,e}; \tag{8}$$

– for minimizing criteria normalized estimates are based on formulas (9; 10):

$$\overline{a_{ij}} = 1 - \frac{a_{ij}}{a_j^+}, \ j = \overline{e+1,n}; \tag{9}$$

$$\overline{a_{ij}} = \frac{a_j^+ - a_{ij}}{a_j^+ - a_j^-}, \ j = \overline{e+1,n}; \tag{10}$$

The best option would be the one that provides the maximum value of the goal function (2).

Normalized criteria are determined from the ratios according to the principle of minimum loss:

– for maximizing criteria normalized estimates are based on formulas (11; 12):

$$\overline{a_{ij}} = 1 - \frac{a_{ij}}{a_j^+}, \ j = \overline{1,e}; \tag{11}$$

$$\overline{a_{ij}} = \frac{a_j^+ - a_{ij}}{a_j^+ - a_j^-}, \ j = \overline{1,e}; \tag{12}$$

– for minimizing criteria normalized estimates are based on formulas (13; 14):

$$\overline{a_{ij}} = \frac{a_{ij}}{a_j^+}, \ j = \overline{e+1,n}; \tag{13}$$

$$\overline{a_{ij}} = \frac{a_{ij} - a_j^-}{a_j^+ - a_j^-}, \ j = \overline{e+1,n}; \tag{14}$$

The best option would be the one that provides the minimum value of the goal function (2).

Thus, the proposed methodology is the basis of scientific and practical approach of the screening of alternatives for the formation of institutional support for strategic communications in the public administration system. In order to substantiate such a model, it is necessary to pay attention to its organizational and functional principles. It is advisable to take as a basis the national

level, which is basic and system-forming, taking into account the scale of functions, the presence of an extensive public administration system.

Alternatives of Institutional Support of Strategic Communications

According to the main purpose of the research, the task is to identify the most effective and institutionally capable in terms of organizational principles authority, which will be able to ensure the implementation of strategic communications in the most effective way. In order to solve this problem, it is necessary to analyze a number of institutional and organizational structures as appropriate alternatives that have a common goal, but differ in the legally defined possibilities of legal action of the authority according to its rights, purpose, functions, responsibilities and tasks.

The first alternative on ensuring the implementation of strategic communications in the public administration system is the establishment of the Center for Strategic Communications under the President of Ukraine and the Office of Strategic Communications under the CMU. The second alternative justifies the formation of a separate public administration authority (ministry), endowed with the power to formulate and implement public policy in this sphere (Lipkan, 2016). The third alternative involves expanding the powers of the Ministry of Culture and Information Policy of Ukraine (Shkliaruk, 2018). The fourth alternative provides for the establishment of a Government Communications Office (Ministry of Information Policy, 2017). The delineation of such structures by alternatives, goals and functions is shown in the Table 2.

Table 2
CHARACTERISTICS OF ALTERNATIVES FOR INSTITUTIONAL SUPPORT OF STRATEGIC COMMUNICATIONS

Alternatives	Name of institutional and organizational structures of strategic communications	Purpose of activity	Functional features
1.	Center for Strategic Communications under the President of Ukraine and Office of Strategic Communications under the Cabinet of Ministers of Ukraine	Formation and implementation of state policy in the strategic communications sphere	– development and implementation of state foreign and domestic policy; – ensuring coordination and synchronization of communication activities of public administration entities; – development of a national communication strategy and ensuring its implementation; – implementation of general coordination of government authorities in the public diplomacy sphere; – development of general guidance on strategic communications; – implementation of specific national communication strategies.
2.	Ministry of Strategic Communications	Formation and implementation of state policy in the strategic communications sphere	– formation and implementation of information and communication policy in the country and abroad; – coordination of the activities of ministries and other central executive authorities on information security issues; – assessment of technical protection of information and telecommunication systems; – coordination of activities of separate subdivisions of the Ministry of Internal Affairs, the Security Service of Ukraine on strategic communications.
3.	Ministry of Culture and Information Policy of Ukraine	Formation and implementation of state policy in the spheres of popularization of Ukraine in the world, information security	– ensuring the formation and implementation of state policy in the strategic communications sphere; – promoting the development of a state strategic communications system in Ukraine; – implementation of international cooperation on state broadcasting, information security and strategic communications;

			– development of program documents in the sphere of interventions.
4.	Government Communications Office	Implementation of state policy in the information sphere	– formation of the Government's communication program; – ensuring interconnections between ministries; – co-management of communication subdivisions of central executive authorities; – implementation of specific government communication.

In order to determine the effective management structure (Table 2) it is necessary to justify the advantages and disadvantages of the proposed alternatives.

The main advantages of *the first alternative* are the ability to coordinate information interaction between all public administration authorities, including law enforcement and foreign policy, as well as the concentration of all information flows and ties of the state at the highest political level of the state. The advantage of such an alternative is relatively low funding for its creation and operation, as well as flexibility in the management of information flows according to the already established cooperation with public authorities at all levels due to the Law of Ukraine "On the Cabinet of Ministers of Ukraine" (Verkhovna Rada of Ukraine, 2014). The main disadvantages of this alternative are the need for diverse specialists with appropriate qualifications, as well as duplication of functions due to the ramifications of functional responsibilities.

The second proposed alternative is characterized by the following advantages: optimization of disparate elements of strategic communications into a single system by creating a single systemic vertically integrated government authority. Moreover, it is the ensuring an approach, when the state policy is formed and implemented by one authority and it is responsible for its implementation. The main disadvantages are a sufficiently long period of time to carry out all reorganization manipulations, the cost of creating new structures, the dissatisfaction of the dismissed employees, focusing only on security and defense.

The third alternative, which provided for the expansion of the powers of the Ministry of Culture and Information Policy, has the following advantages: no reorganization and optimization of central executive authorities and their structural units, institutional affinity of spheres that are important for strategic communications. The disadvantages are the newly created authority should perform their various functions after the merger of several ministries, as well as the inability to coordinate and synchronize the activities of other authorities in the strategic communications sphere.

The advantages of *the fourth alternative* are the possibility of intergovernmental cooperation, the coordination of their communication activities, the formation of joint intergovernmental communication programs, the ability to ensure a "one voice policy" of the Government. The disadvantages are the lack of coordination of communication activities in the national security sphere, concentration only at the governmental level and the level of central executive authorities.

The method of expert assessment should be used in order to obtain qualified judgments on the proposed alternatives, as well as to test the methodology of multicriteria analysis on empirical objects according to the tasks that were set.

Expert Assessment

The expert assessment is a procedure for obtaining an assessment of the problem on the basis of the opinion of experts for further decision-making (choice) (Danelian, 2015). Despite the probable bias (subjectivity) of the use of the abovementioned characteristics for the selection of experts, expert assessments can often be one of the most effective, fast and accurate decision-making tools (Marycheva, 2018).

On the basis of expert assessments, it is possible to obtain generalized information regarding the object under research in order to substantiate a particular decision, which is the purpose of the examination. We can visualize the process of assessing the competence of experts, which is based on traditional assessment criteria and existing approaches and methods of examination, on the basis

of the generalization of scientific sources (Azghaldov & Kostyn, 2012; Afonichkin & Mikhailenko, 2009; Kalinina, Hozhyi & Musenko, 2012; Podolianchuk, 2014) (Figure 2).

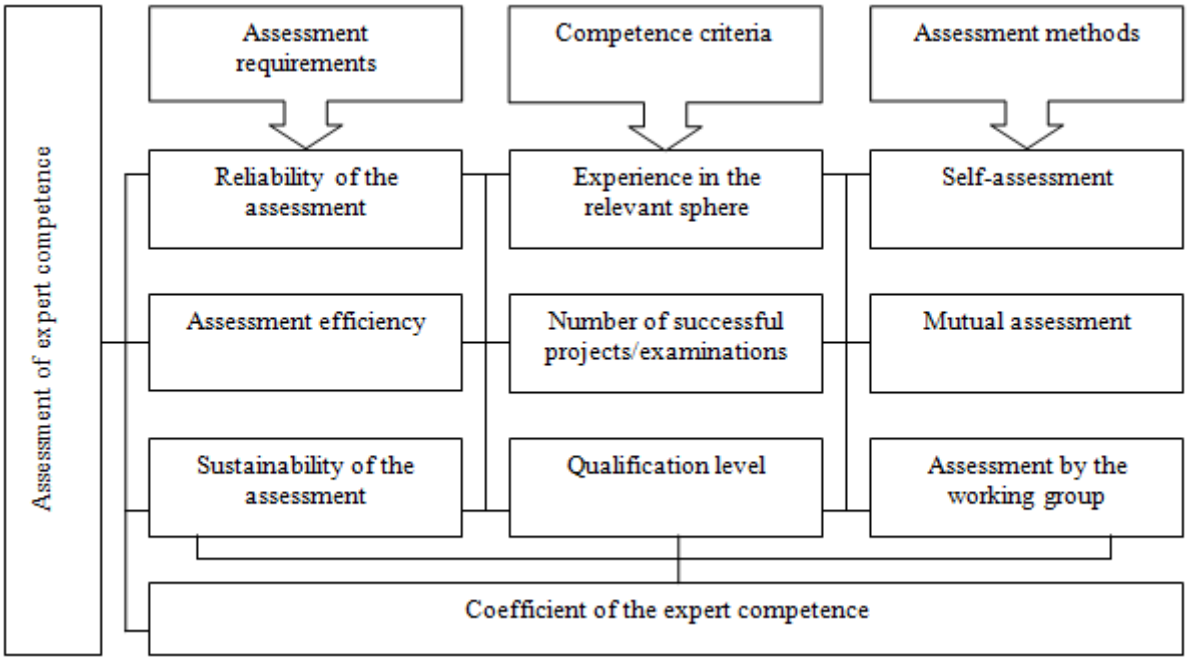

FIGURE 2
MAIN COMPONENTS OF THE FORMATION OF EXPERT COMPETENCE COEFFICIENT

The connections defined in Figure 2 reflect the influence of certain components on the formation of the expert's competence assessment. According to the tasks that were set, the following formally general criteria of competence can be used for evaluation: position, scientific degree and academic title, length of service, number of examinations or completed projects, number of scientific investigations and developments in the research sphere, etc.

The choice of the abovementioned criteria is based on the hypothesis that there is an available amount of information sources for decision-making to solve the problem. Therefore, experts are high-quality sources and fairly accurate measures of information in accordance with these problems. If the assessment uses a method of mutual evaluation, each candidate selected in the group of experts evaluates the competence of others. In this regard, it is advisable to use such a method as self-assessment, during which the assessment of the degree of awareness of the subject of examination and its competence is provided by the expert himself. This method is the most acceptable in the context of our assessment because the criteria of competence are based on the analysis of documentary data.

If the selection of experts to perform tasks and objects is based on maximum scores on the coefficient of competence (Bratushka, Novak & Khailuk, 2010), you can use a combined method of ranking of experts, which involves the use of methodological method of hierarchy analysis. The algorithm for conducting an expert assessment on the basis of the coefficient of competence using the method of analysis of hierarchies is shown in Figure 3.

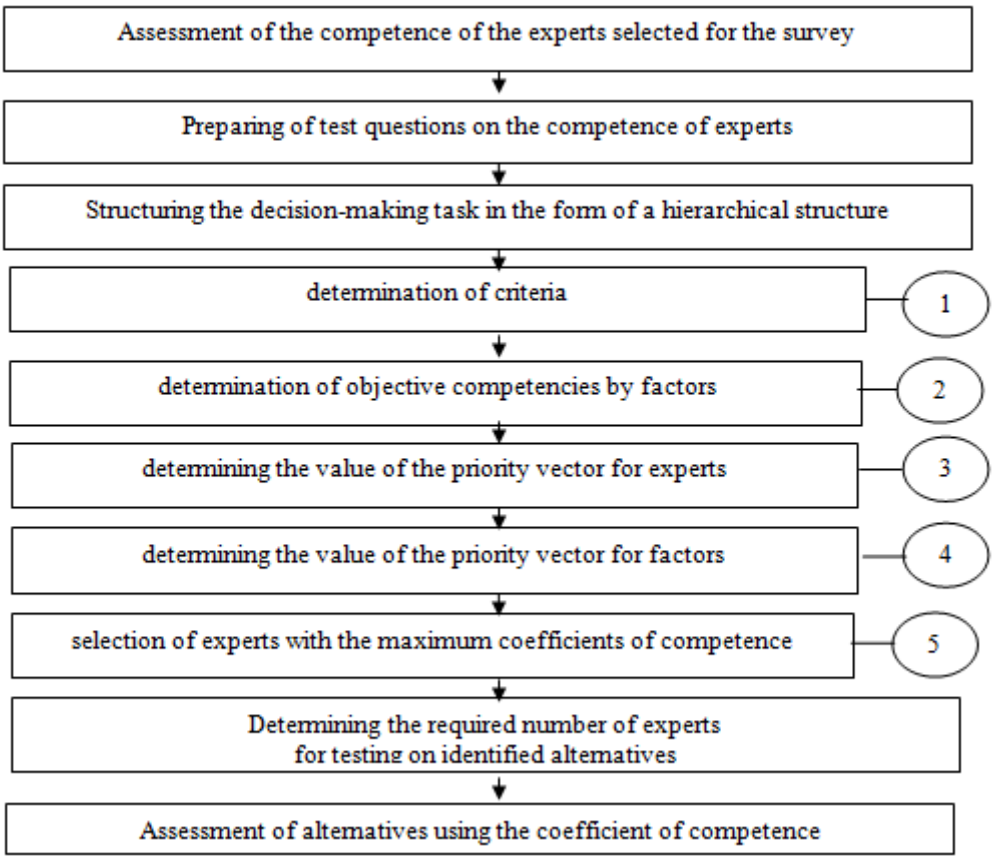

FIGURE 3
ALGORITHM FOR SELECTION OF EXPERTS BY APPLYING THE METHOD OF ASSESSMENT OF THEIR COMPETENCE ON THE BASIS OF THE METHOD OF HIERARCHIES

According to the given figure, the following issues are necessary for the process of structuring tasks as a hierarchical structure:

1. Building a hierarchy according to the objectives of the analysis using criteria through the comparison of options to the lower level, which includes a set of alternatives.
2. Selection of factors for assessing competence:
   - Specialization of an expert in terms of education;
   - Work experience in the system of central executive authorities;
   - Scientific qualification;
   - Experience in the field of the subject of examination, which includes the work in the public administration sphere related to the administrative management;
   - Experience in the conducting of expert assessment, *i.e.*, the practice of conducting examinations on the formation, creation and liquidation of organizational structures in the public administration sphere.

The solution to the problem of selection of experts for expert assessment is carried out through three stages (Vasutynska, Lipkan & Syvak, 2018):

1. The first stage includes compiling a list of potential candidates for the examination of certain objects;
2. The second stage includes the selection of the expert group with a smaller dimension taking into account the qualitative components of the assessments;
3. The third stage includes the determination of the average sampling error.

In order to assess the professional competence of the expert, test questions, which he should answer, are compiled. The test form, which includes questions on the professional qualifications of

the expert (Table 3) and questions on the assessment of alternatives for deciding on the choice of a particular institutional and organizational structure.

Table 3
TEST QUESTIONS REGARDING THE PROFESSIONAL COMPETENCE OF EXPERTS BY CERTAIN FACTORS (CRITERIA)

Factors (criteria)	**Value of the weighting factor, according to the defined scales**		
Specialization of an expert according to the education *(F1)*	Legal	Economic	Public administration
	0.2	0.3	0.5
Work experience in central executive authorities *(F2)*, years	1 - 5	5 - 10	more than 10
	0.2	0.3	0.5
Scientific qualification *(F3)*	no degree	scientific degree of candidate of sciences	scientific degree of doctor of sciences
	0	0.4	0.6
Experience in the subject of examination *(F4)*, years	—	5 - 10	than 5 years
	0	0.4	0.6
Experience in conducting the expert assessment *(F5)*, times	—	1 - 3	more than 3
	0	0.4	0.6

Ten experts were selected for the survey according to the field of research, subject of examination, professional activity. Respondents answered test questions by applying the documentary method. The results of the survey are presented in Table 4.

Table 4
RESULTS OF THE EXPERT SURVEY AND CALCULATION OF WEIGHTING COEFFICIENTS

Expert	***F1***	***F2***	***F3***	***F4***	***F5***	***Sum X_i***	***W_i***
No. 1	0.5	0.4	0.4	0.4	0.4	2.1	0.121387
No. 2	0.5	0.2	0	0.4	0.6	1.7	0.098266
No. 3	0.3	0.5	0.4	0	0	1.2	0.069364
No. 4	0.5	0.3	0.4	0.6	0.6	2.4	0.138728
No. 5	0.5	0.5	0.6	0.6	0.4	2.6	0.150289
No. 6	0.2	0.2	0.4	0.6	0.4	1.8	0.104046
No. 7	0.3	0.4	0	0	0.4	1.1	0.063584
No. 8	0.2	0.5	0.6	0	0	1.3	0.075145
No. 9	0.3	0.2	0.4	0	0	0.9	0.052023
No. 10	0.3	0.3	0.4	0.6	0.6	2.2	0.127168
Sum F_j	3.6	3.5	3.6	3.2		17.3	1

The issue of choosing the weighting coefficients of experts in accordance with the selected factors is solved at the first stage of assessing the competence of experts. The developed scales were based on the statement (15):

$$\sum_{i=1}^{m} W_i = 1 \tag{15}$$

where W_i is a weighting coefficient of the *i-th* expert; m is a number of experts.

The calculation of the weighting estimate of the *i-th* expert on the *j-th* factor (criterion) is performed by the following algorithm:

1. The total scores of *Sum* X_i points, that were scored by the *i-th* expert on all identified factors, are calculated (16):

$$SumX_i = \sum_{j=1}^{n} a_{ij} \tag{16}$$

where n is a number of criteria; a_{ij} is a score obtained by the *i-th* expert on the *j-th* factor (criterion).

2. The sum of points (*Sum* F_j), where F_j is a factor for each expert, calculated through the formula (17):

$$Sum\Phi_j = \sum_{i=1}^{m} a_{ij} \tag{17}$$

3. The weighting coefficient of experts is calculated by all factors (criteria) using the formula (18):

$$W_i = \frac{\sum_{i=1}^{m} \sum_{j=1}^{n} a_{ij}}{\sum_{j=1}^{n} a_{ij}} \tag{18}$$

The obtained results of the calculation of weighting coefficients, shown in Table 4, allow to carry out the analysis of the received weighting coefficients, as well as to carry out the ranking of a set of variants that can be described by such expression: $V = \{v_1, v_2, \ldots, v_n\}$. Variants are ranked in descending order (Figure 5).

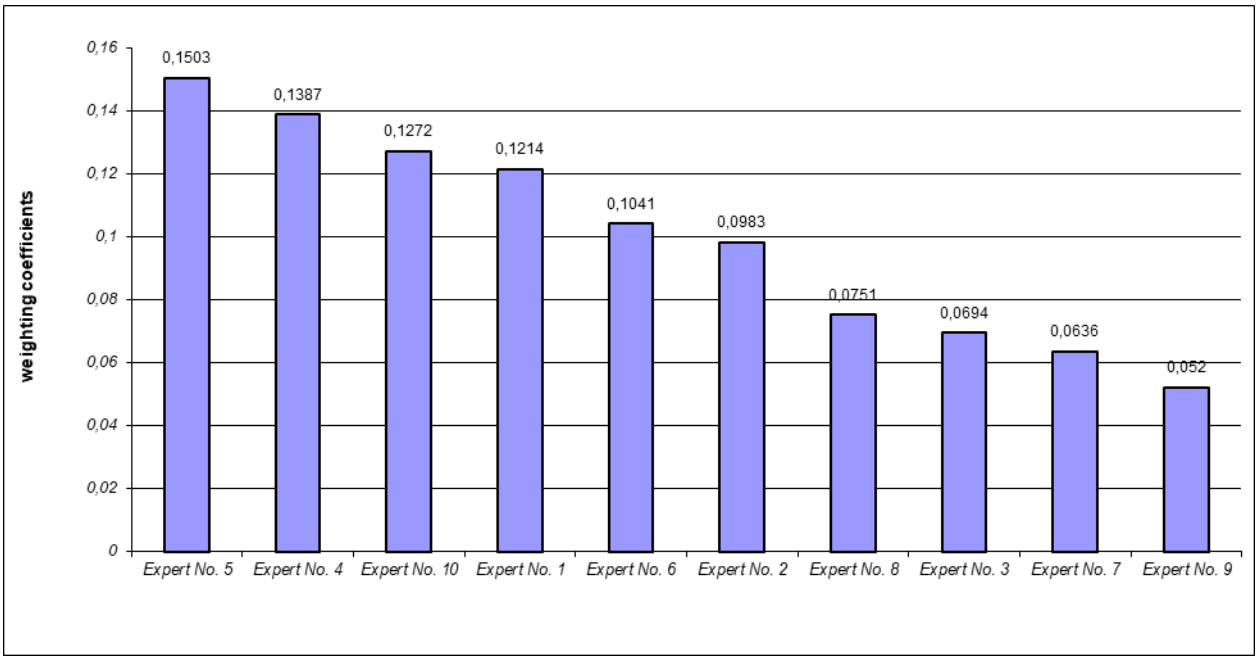

FIGURE 5
RANKING OF EXPERTS BY LEVEL OF COMPETENCE ON THE BASIS OF WEIGHTING INDICATORS

As Figure 5 shows, the highest ratings belong to experts at number 5; 4; 10; 1. Priority vectors by normalizing assessments need to be identified in order to understand which expert assessments can be used to select alternatives. The matrix of pairwise comparisons of criteria is used for this purpose.

The determination of the vector of local priorities (L_i) is carried out by calculating the geometric mean of the rows of the matrix of pairwise comparisons R (19):

$$R = \begin{pmatrix} r_{11} & r_{12} & \ldots & r_{1n} \\ r_{21} & r_{22} & \ldots & r_{23} \\ \ldots & \ldots & \ldots & \ldots \\ r_{n1} & r_{n2} & \ldots & r_{nm} \end{pmatrix} \tag{19}$$

The sum of the columns of the matrix is calculated according to the matrix $\sum_{i=1}^{n} r_{ij}$.

The next step is the normalization of all components of the priority vector (20):

$$L_i = \sqrt[n]{\left(\prod_{j=1}^{n} r_{ij}\right)} \Big/ \sum_{i=1}^{n} \sqrt[n]{\left(\prod_{j=1}^{n} r_{ij}\right)} \quad (20)$$

where n is the number of criteria of the hierarchy level.
The results obtained are shown in Table 5.

Table 5
MATRIX OF PAIR COMPARISONS OF FACTORS (CRITERIA)

Factors	***F1***	***F2***	***F3***	***F4***	***F5***	$\sqrt[5]{\prod_{j=1}^{5} r_{ij}}$	L_i
F1	1	3	2	0.5	2	1.43097	0.25656
F2	0.3333	1	0.5	0.5	0.5	0.52961	0.09495
F3	0.5	2	1	0.3333	0.3333	0.64439	0.11553
F4	2	2	3	1	2	1.88818	0.33853
F5	0.5	2	3	0.5	1	1.08447	0.19443
Sum	4.3333	10	9.5	2.8333	5.8333	5.57762	1

Table 5 shows that *F1* and *F4* presumed in assessing the professional competence of experts (Table 6).

Table 6
RESULTS OF CALCULATION OF GLOBAL PRIORITIES OF SURVEYED EXPERTS

Expert	**F1**	**F2**	**F3**	**F4**	**F5**	**G**
L_i	0.256	0.095	0.116	0.339	0.194	
No. 1	0.122	0.114	0.111	0.129	0.120	0.122
No. 2	0.122	0.057	0	0.129	0.160	0.112
No. 3	0.074	0.143	0.111	0	0.160	0.076
No. 4	0.122	0.086	0.111	0.194	0.160	0.149
No. 5	0.122	0.143	0.167	0.194	0.120	0.153
No. 6	0.122	0.057	0.111	0.194	0.120	0.138
No. 7	0.074	0.114	0	0	0	0.097
No. 8	0.046	0.143	0.167	0	0	0.045
Expert No. 9	0.074	0.057	0.111	0	0	0.037
Expert No. 10	0.122	0.086	0.111	0.160	0.160	0.138

From the data in the table, we can conclude that Expert No. 5, Expert No. 4, Expert No. 6 and Expert No. 10 have the highest global priority. Thus, their opinions can be used as a basis for assessing certain alternatives. However, it is necessary to clarify the boundaries of the group of key experts. Certain mathematical tools, which determine the number of experts forming the abovementioned group, are used for this purpose (5; 21):

$$n = \frac{t^2 \times \sigma^2 \times N}{\Delta^2 \times N + t^2 \times \sigma^2} \quad (21)$$

where t=3 with probability 0.997; σ^2=0.003397, selective variance for data (Table 5, 6), N is a general totality (N=10); Δ is a sampling error (no more than 7%) or Δ=0.07.

By substituting the data, the result is obtained, where n=3.841898.

Thus, the required number of experts for the examination of alternatives is 4 people in the general sample N=10.

According to the calculations by the formula (21), you can choose experts who have the rank No. 1; 2; 3; 4 in order to assess the identified alternatives. In particular, these should include Expert No. 5; Expert No. 4; Expert No. 10; Expert No. 6.

On this basis, the generalized opinion of the group of experts is defined as average for their individual judgments, and therefore it can be considered adequate to existing realities.

For the final decision, it makes sense to calculate the coefficient of competence according to the formula (22):

$$KK_i = \frac{\sum_{j=1}^{m} k_{ij}}{\sum_{i=1}^{n}\sum_{j=1}^{m} k_{ij}} \quad (22)$$

where n is a number of experts; m is number of expert assessment criteria;

k_{ij} is score obtained by the *i-th* expert on the *j-th* criterion.

The coefficient of competence calculated group of experts is determined on the basis of the received answers of experts in the questionnaires and assessments shown in Table 7 on the basis of formula (22).

Table 7
CALCULATION OF COMPETENCE COEFFICIENT

Experts	Points that determine the competence of experts					Total score of each expert	KK_i
	F1	F2	F3	F4	F5		
No. 5	0.5	0.5	0.6	0.6	0.4	2.6	0.29
No. 4	0.5	0.3	0.4	0.6	0.6	2.4	0.27
No. 10	0.3	0.3	0.4	0.6	0.6	2.2	0.24
No. 6	0.2	0.2	0.4	0.6	0.4	1.8	0.2
Total score						9	1.0

According to the results of determining the experts, who should participate in the survey, the next step is to focus on the criteria by which alternatives will be assessed.

Assessment of Alternatives

As alternatives, the organizational structures of providing strategic communications in the public administration system of Ukraine proposed in Table 2 are considered. They should be created in order to implement the relevant tasks.

The criteria for assessing alternatives include the following:

- Level of ability to carry out interdepartmental coordination (Kp_1);
- Degree of possibility to distinguish between political and state communications (Kp_2);
- Level of coverage of strategic and executive functions (Kp_3);
- Time to create an organizational structure (Kp_4);
- Cost for creating an organizational structure (Kp_5).

The defined criteria were assessed by experts by means of questionnaires in the created Google-form. Assessments were presented in different ranges according to growth vectors, requirements and assessment objectives. For example, the maximum point was exposed on growth vectors. In particular, the maximum score to criteria Kp_1; Kp_2; Kp_3 was assigned by the maximum value of the score in the range from 1 to 5, *i.e.*, the higher the value of the score, the greater the advantage of the alternative. In other words, the function strives for the maximum (Kp_1, Kp_2, $Kp_3 \rightarrow$

max). Answers on pairwise comparisons of alternatives were based on the Saati's scale (Saati, 1993) with a scale from 1 to 9 points. (Bratushka, Novak & Khailuk, 2010).

The experts expressed their point of view on the basis of their own practical experience and in accordance with the level of qualifications and knowledge in the public administration sphere and the specifics of strategic communications.

The weighting coefficients of each criterion should be determined in order to assess the alternatives. In this regard, it is necessary to use the methodology of analysis of hierarchies based on the answers of experts in the Google-questionnaire. The matrix of pairwise comparisons of criteria concerning the chosen alternatives compiled on the basis of the obtained data (Table 8).

Table 8
MATRIX OF PAIR COMPARISONS OF ALTERNATIVE CRITERIA

	Кр$_1$	**Кр$_2$**	**Кр$_3$**	**Кр$_4$**	**Кр$_5$**	$\sqrt[5]{\prod_{j=1}^{5} r_{ij}}$	L_i
Кр$_1$	1	9	5	0.25	0.143	3.178	0.469
Кр$_2$	0.111	1	0.333	0.143	0.5	0.437	0.065
Кр$_3$	0.2	3	1	5	3	1.045	0.154
Кр$_4$	7	2	0.333	0.5	1	0.844	0.125
Кр$_5$	4	7	0.2	1	2	1.267	0.187
Sum	12.311	22.000	6.867	6.893	6.643	6.771	1.000

The results obtained during the analysis reflect the weighting of the criteria by levels of significance. However, it is necessary to check the consistency of experts' opinions by determining the consistency index (I_t) and the consistency ratio (I_0).

The consistency index is determined by the formula (23):

$$I_t = \frac{\lambda_{\max} - n}{n-1}, \tag{23}$$

where $\lambda_{\max}$ is the maximum value of the matrix R (24):

$$\lambda_{\max} = \sum_{j=11}^{n} \left(L_j \sum_{i=1}^{n} r_{ij} \right), \tag{24}$$

According to the data (Table 9), the maximum value of the matrix R, in particular $\lambda_{\max}$=7.516. The random consistency index ($I_в$) is determined by the tabular method and according to the reference table is $I_в$=1.24, as well as the consistency ratio (I_0) is calculated by the formula:

$$^{2}_{\hat{i}} = \frac{^{2}_{\hat{i}}}{^{2}_{\hat{a}}} \quad \text{or} \quad ^{2}\acute{I} = \frac{0{,}0860}{1{,}24} == 0{,}0694$$

– According to the fact that the consistency index determines a satisfactory state at $I_0 <$ 0.10. it can be argued that the level of consistency of the matrix R is quite acceptable because the results meet this requirement (0.0694< 0.10). Thus, according to the results of the research, it can be concluded that the highest rating (Table 8) belongs to the criterion of "level of ability to carry out interdepartmental coordination", the weighting of which was (Кр$_1$) – 0.469. The next in the ranking are the criteria that have slight differences in values, in particular, the criterion of "cost for creating an organizational structure" (Кр$_5$) – 0.187; the criterion "level of coverage of strategic and executive functions" (Кr$_3$) – 0.154; the criterion "time to create an organizational structure" (Кр$_4$) – 0.125. The lowest rating belongs to the criterion "degree of possibility to distinguish between political and state communications" (Кр$_2$) – 0.065.

According to the results shown in Tables 8 and 9, a summary table is formed. It is the basis for the application of the methodology of multicriteria analysis by collapsing local criteria in order to calculate the additive criterion through the use of normalized values of local criteria (Table 9).

Table 9
SUMMARY ASSESSMENTS OF ALTERNATIVES

Alternatives	Кр$_1$	Кр$_2$	Кр$_3$	Кр$_4$	Кр$_5$
A_1	5.0	3.93	4.76	1.47	1.71
A_2	3.67	2.97	4.29	3.36	3.36
A_3	2.27	1.71	1.95	4.76	4.56
A_4	1.27	2.31	2.27	3.49	3.73
Weighting coefficients (λ)	0.469	0.065	0.154	0.187	0.125

In Table 9, the values of the weighting coefficients are the result of the calculation of local criteria (Table 9). According to the data, we can calculate the additive optimization criteria for the provided alternatives, using formula (4). Due to the objective function of the problem, we obtain the following mathematical expressions:

$$F_{1(a_{ij})} = \lambda_1 \cdot a_{11} + \lambda_2 \cdot a_{12} + \lambda_3 \cdot a_{13} + \lambda_4 \cdot a_{14};$$
$$F_{2(a_{ij})} = \lambda_1 \cdot a_{21} + \lambda_2 \cdot a_{22} + \lambda_3 \cdot a_{23} + \lambda_4 \cdot a_{24};$$
$$F_{3(a_{ij})} = \lambda_1 \cdot a_{31} + \lambda_2 \cdot a_{32} + \lambda_3 \cdot a_{33} + \lambda_4 \cdot a_{34};$$
$$F_{4(a_{ij})} = \lambda_1 \cdot a_{41} + \lambda_2 \cdot a_{42} + \lambda_3 \cdot a_{43} + \lambda_4 \cdot a_{44}.$$

In order to solve this problem, it is necessary to normalize the assessments determined by experts – to highlight a group of criteria that tend to the maximum (Кр$_1$, Кр$_2$, Кр$_3$ → max) and a group of criteria that tend to the minimum (Кр$_4$, Кр$_5$ → min).

During the next step, we should solve the general optimization problem according to maximizing or minimizing the objective function. This formula is used for the normalization of estimates at the maximum (7). Normalized scores for minimized criteria are found by this formula (9). The results of normalization are shown in Table 10.

Table 10
NORMALIZED ASSESSMENTS

Alternatives	Кр$_1$	Кр$_2$	Кр$_3$	Кр$_4$	Кр$_5$	$F_{n\,(a\ ij)}$
A_1	1	1	1	0.691	0.625	0.895
A_2	0.734	0.756	0.901	0.294	0.263	0.620
A_3	0.454	0.435	0.410	0.000	0.000	0.303
A_4	0.254	0.588	0.477	0.267	0.182	0.304
Weighting coefficients (λ)	0.469	0.065	0.154	0.187	0.125	x

As shown in Table 11, the obtained estimates have a rating: A_1=0.895; A_2=0.620; A_4=0.304; A_3=0.303. This gives grounds to claim that under conditions when the function strives for the maximum, the most acceptable alternative should be the alternative with the maximum value $F_{n\,(a\ ij)}$, *i.e.*, A_1, which justified the decision to establish the Center for Strategic Communications under the President of Ukraine and the Office of Strategic Communications under the CMU.

CONCLUSION

Thus, on the basis of the provided analysis of alternatives of institutional and organizational structures for strategic communications in the public administration system, taking into account alternative is to create a Center for Strategic Communications under the President of Ukraine and the Office of Strategic Communications under the CMU. The expediency of creating two

organizational structures is justified by the need to use strategic communications in the sphere of security and defense as a way to counter hybrid threats and neutralize them. It is worth identifying a military block with direct subordination to the Center in accordance with the NATO Strategic Communications Concept. The argument in favor of establishing the Office of the CMU is that strategic communications are a tool for strengthening one's capabilities in opposition to possible information interventions and communication and content aggressions as well as a tool for the strategic development of the country in accordance with the Concept of Strategic Communications of the EU.

The results of the provided analysis can be taken into account during the development of the Concept of Implementation and Development of Strategic Communications in order to realize the communication potential of public administration to ensure sustainable development of Ukraine, as well as for the development of a system of regulatory and legal and organizational support for their practical implementation by public administration entities through coordinated communication activities at all levels of government.

ENDNOTE

https://docs.google.com/forms/d/1GtlrkBW2EjKXRsU40NwNHRQDTGvWtwh9miUUYP_Pd2w/edit.

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