

**Key words:** strategic goals; expert assessment; dispersion; variance

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## **APPLYING THE EXPERT METHOD TO DETERMINE A COMPANY'S STRATEGIC GOALS**

**Summary.** The most important factor for the success of a company in today's competitive environment is to have clearly defined goals. Objectives define what a company strives for, what it wants to achieve, and what it wants to realize in its activities. Clearly defined goals are necessary to ensure the sustainability and effectiveness of a company's operations and the successful achievement of its desired results. This paper proposes an expert method for determining the strategic goals of a company. The experts ranked 24 strategic goals in terms of importance, and variance and coefficient of variation were then used to determine the consistency of the experts. As a result, 15 important strategic goals were identified of the 24 goals of the assessed transport company.

### **1. INTRODUCTION**

Setting strategic goals is a necessary process for a company to plan its operations and achieve fast and efficient business development. In order to develop strategic plans, a company must define strategic goals. We suggest several variations on the concept of strategic goals. Strategic goals are measurable objectives of a company that reflect its long-term vision [1]. Such goals are also business visions that have quantitative or qualitative results [2] and reflect the long-term objectives of a company [3]. Strategic goals also represent the outcomes that the company seeks to achieve in the long term [4]. The starting point for the development of strategic goals is the question of which goals should be chosen.

Defining goals is a very important element of strategy development because all subsequent activities of a company will be subordinated to the achievement of these goals. Strategic goals represent the strategic ideas and intentions of a company in the form of specific, measurable indicators of the company's activities in both the short and long term [5].

It should be noted that strategic goals become a real strategic management tool only if they are properly formulated, if they are accurately measured and selected, and if the managers of the company rely on them in their daily activities and stimulate their implementation throughout the company.

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## 2. LITERATURE REVIEW

In practice and theory, there are many methodologies for selecting strategic goals. These include SMART methods, the balanced scorecard (BSC), multi-criteria decision-making methods, and others. For the goals to be useful and successful, they need to be passed through a method called SMART. In management practice, the essence of SMART means that the goals must meet five criteria. SMART was introduced in 1954 by American theorist Peter Drucker [6]. This acronym, formed by the first letters of English words, means that strategic goals should be specific (S) (i.e., indicate exactly what the company is trying to achieve), measurable (M) in that the company can collect data and measure results to determine whether a goal has been achieved, achievable (A) (i.e., realistic, taking into account the company's capabilities and the opportunities available to achieve the goal), relevant (R) (i.e., meaningful and relevant to the mission and vision of the company), and time-bound (T) (i.e., the goal should have a specific deadline that indicates when to achieve it).

Professors R. Kaplan and D. Norton proposed the BSC method [7] to build a unified system of company goals. The BSC method divides goals into four perspectives: finance, customers, processes, and employee training and development. The use of projections (perspectives) allows companies to structure the process of defining strategic goals. Multi-criteria decision-making methods include the analytical hierarchy process (AHP) method, fuzzy sets, DEMATEL, TOPSIS, ELECTRE, Grey theory, and others [8-10]. These methods help to avoid making wrong decisions and to take into account the possible negative consequences of improper choices. A successful solution to multi-criteria problems is impossible without the use of various kinds of information about the decision-maker's preferences. One of the most important types of information is that about the relative importance of criteria [5, 11, 12].

In this paper, we propose the use of the method of expert judgment to select strategic goals. The essence of expert judgment methods is that the forecast is based on the opinions of a specialist or team of specialists according to their professional, scientific, and practical experience.

The use of expert methods should be seen as a possible approach to a comprehensive study of complex problems whose final solution is unclear. Expert judgment introduces a degree of subjectivity to the obtained results. However, today, there is no alternative method. It is clear that the validity of the findings and the possibility of using them in practice depend on the accuracy and soundness of the choice of particular indicators, the establishment of benchmarks, and the interpretation of results. A detailed review of publications has confirmed that forming an expert group is a time-consuming, complex, and multi-stage process [13-15].

The method of expert assessments was used in this research to achieve the following objectives:

- to identify risks in the construction of transport infrastructure facilities [16]
- to study problems to ensure reliability, safety, and decision-making in the management of transport processes and facilities [17, 18]
- to analyze urban transport networks, flows, and infrastructure development [19].

Expert methods were performed using the AHP method to determine a transportation strategy based on the weights of selected criteria [20]. The AHP method is applied to independent structures, while interrelated and dependent problems are encountered in transport. In [21], the analytical network process method has been applied to decision-making to improve urban transport. In this case, the AHP method was used to determine the weights of bicycling destinations in urban areas. In this paper, we propose the use of the method of expert judgment to select strategic goals. Expert judgment has long been used to select courses of action, including in economic practice. Interest in the application of expert judgment has increased considerably in the second half of the last century [13].

### 3. RESEARCH METHODOLOGY

#### 3.1. Methods of expert judgment

Expert judgment methods involve working with experts and processing expert opinions expressed in quantitative or qualitative forms. The method of expert judgment is widely used in areas of knowledge where it is not possible to evaluate an object or process using other methods. Expert surveys serve as a basis for either direct decision-making or preparing information for decision-making. In the latter case, the results of expert interviews are processed, including by means of mathematical statistics, and final conclusions are drawn. There are now various classifications of expert assessment methods.

Table 1 presents the main methods of expert assessments, divided into three groups.

Table 1

Classification of expert judgment methods

No.	Group	Components	Description
1	Individual assessments	Interview method	Oral questioning in the form of a conversation or interview.
		Questionnaire	Interviews with experts in writing in the form of questionnaires.
2	Expert panel interview methods	Delphi method	Multi-level questionnaire procedure with information processing and reporting of results by experts working in isolation from each other.
		Brainstorming method	Group discussion with the aim of obtaining new solutions to the problem.
		Scripting method	Based on determining the logic of a process or phenomenon over time under different conditions.
		Goal tree	Involves identifying several structural or hierarchical levels.
		Morphological analysis method	Applied in the prediction of complex processes. The basic idea behind morphological analysis is to streamline the process of putting forward and considering different options for solving a problem.
		Foresight method	An umbrella term for a set of techniques for long-term forecasting.
3	Mathematical and statistical methods	Weighted factor method	The characteristics under investigation are assigned certain weighting coefficients.
		Simple ranking method	The arrangement of objects in ascending or descending order of some intrinsic property. Ranking allows for the selection of the most significant factor from the set of factors under investigation.
		Pairwise comparison method	Involves comparing all characteristics in pairs.
		Point rating method	Each element of the set under study is assigned a score given according to rules known in advance to the experts.
		Serial comparison method	Consists of systematically checking estimates on the basis of their consistent comparison.
Note: Developed by [13]			

The characteristics of the expert group are determined on the basis of the individual characteristics of experts: competence, creativity, attitude towards expertise, conformity, constructive thinking, collectivism, and self-criticism. At present, the listed characteristics are mainly assessed qualitatively. For a number of characteristics, there are attempts to introduce quantitative assessments. Next, the number of experts needs to be determined. A simplified method for determining the number of experts

is used in statistics. It consists of extracting the root of a number of measurements and finding it by using a simplified formula (1).

$$m = \sqrt{n} \quad (1)$$

where:

m – number of experts

n – number of measurements in focus [14].

In this paper, we propose a methodology for selecting strategic goals based on expert judgments using rankings.

### 3.2. Stages of appraisal

All types of expert assessments go through several stages until the end point of the study, when valuable information on the problem being studied is provided. The following stages need to be followed in order to select important strategic objectives:

#### Stage 1. Ranking strategic goals by importance

The experts are provided with a list of strategic goals from the company's strategy. The task of the experts is to rank these goals according to their importance. First place is given to the most important strategic goal, and n-th place is given to the lowest priority goals. Consequently, the number of n-th place is equal to the number of strategic goals. Each number should only be used once. Next, the experts' consistency is assessed using different methods, and the most important strategic goals are selected.

#### Stage 2. Statistical processing and analysis of expert assessments

When evaluating strategic goals, experts may disagree on the selection process. This makes it necessary to quantify the degree of agreement among experts. Obtaining a quantitative measure of consistency allows for a more informed interpretation of the reasons for differences of opinion. A variety of statistical methods are used to analyze expert opinions. The main purpose of processing expert opinions is to check their consistency.

**The consistency of expert opinions is assessed by using the following statistical characteristics:**

- 1) A rank matrix is created, and then the variance is determined. This concept was used by English mathematician and scientist Ronald Fisher (1890-1962) to determine the mean value of the standard deviations of a random variable. The following formula is used to determine the variance (2):

$$d = \sum X_{ij} - \frac{\sum \sum x_{ij}}{n} = \sum X_{ij} - 125 \quad (2)$$

- 2) The standard deviation is determined, which is a statistical characteristic of the distribution of a random variable and indicates the average degree of dispersion of the values of the variable relative to the mathematical expectation. It is denoted by the Greek letter  $\sigma$  (sigma) and is defined by Formula (3):

$$\sigma = \sqrt{D} \quad (3)$$

- 3) Once the coefficients of variance have been determined for each strategic objective, their coefficients of variation are calculated (Table 2). The coefficient of variation indicates the degree of dispersion of the values in numerical order. Specifically, each value indicates how different it is from the average [13]. The following formula is used to calculate the coefficient of variation (4):

$$V = \frac{\sigma}{\bar{X}} \quad (4)$$

where:

$\sigma$  – standard deviation

$\bar{X}$  – arithmetic mean

In statistical terms:

- If the coefficient of variation is less than 10%, the degree of dispersion of the data is insignificant.
- If it is between 10% and 20%, it is medium.
- If it is greater than 20% and less than or equal to 33%, it is recommended to consider it important.

If the value of the coefficient of variation does not exceed 33%, the set of experts' answers is considered homogeneous; if it exceeds 33%, the experts' answers are considered heterogeneous.

- 4) After the experts' results are collected, their average consistency is assessed. The concordance coefficient or Kendall's coefficient is used for this task [13, p. 25].

$$W = \frac{12S}{m^2 * (n^3 - n)} \quad (5)$$

where:

n – number of strategic objectives

m – number of experts

S – sum of variance ( $d^2$ )

A qualitative assessment of the consistency of experts' opinions can be conducted using a verbal-quantitative scale proposed by Harrington, which is presented in Table 2.

Table 2

Harrington verbal-quantitative scale

No	Quantitative value of the coefficient of concordance (Kendall)	Evaluation of the consistency of experts' opinions
1	$0 \leq W \leq 0.2$	Very low consistency
2	$0.2 \leq W \leq 0.37$	Low consistency
3	$0.37 \leq W \leq 0.64$	Average consistency
4	$0.64 \leq W \leq 0.8$	High consistency
5	$0.8 \leq W \leq 1.0$	Very high consistency
Note: [13, p. 68]		

- 5) To assess the significance of the Kendall coefficient, Pearson's goodness-of-fit criterion is defined, which is found according to Formula (6):

$$\chi^2 = m(n-1) * W \quad (6)$$

**Stage 3.** The analysis should be followed by general expert recommendations on the issue under investigation.

#### 4. RESEARCH MODEL

The Company Strategy 2017-2026 of international airline AirAstana was followed to identify important (key) strategic objectives.

Air Astana JSC is the largest international airline of the Republic of Kazakhstan and is recognized as the best airline in Central Asia. The company's core business is the carriage of passengers and cargo by civil aviation aircraft. The company performs scheduled domestic and international flights along more than 60 routes. The company is a joint venture of JSC National Welfare Fund Samruk-Kazyna (51%) and the British Company BAE Systems (49%) [22].

The development of the list of strategic objectives involves all stakeholders, including company employees, the consumers of transport services, and government agencies. In this article, only experts from the evaluated company were involved in order to obtain preliminary results of the selection of important strategic goals.

Experts included in the study were selected on the basis of individual characteristics. The selection criteria were related to age, job experience, and gender (Table 3).

The number of experts was determined according to Formula (1).

Accordingly, 10 people from different departments within the transport company were selected as experts. In particular, four people from the finance department, three people from the passenger transport department, and three people from the administration and personnel department were chosen [22].

**Stage 1.** The experts were provided with a list of 24 strategic goals from the company's strategy [22]. The task of the experts was to rank these goals according to their importance. That is, first place was given to the most important strategic goal, and 24th place was given to the lowest priority goal.

The experts ranked each goal in terms of importance; the results can be seen in Table 4.

Table 3

## Information about experts

Expert	Age			Job experience			Gender
	25-30	30-45	45-55	5-10	10-15	15-20	
1		✓				✓	F
2		✓			✓		M
3			✓		✓		F
4			✓			✓	F
5			✓			✓	M
6			✓			✓	M
7	✓			✓			F
8		✓			✓		M
9			✓		✓		M
10			✓		✓		M

Table 4

## Expert assessment

No.	Goals	EXPERT										Σ Sum of ranks
		1	2	3	4	5	6	7	8	9	10	
1	Increasing the number of passengers carried	4	5	3	6	5	2	6	3	5	5	44
2	Increasing the market value of equity	7	18	17	22	14	16	15	17	18	16	160
3	Increasing the number of international connections	21	22	22	20	20	21	22	20	13	20	201
4	Increasing income	1	1	1	1	1	1	1	2	1	1	11
5	Implementing a corporate information system	14	13	6	18	15	18	19	19	16	15	153
6	Increasing the profitability of sales	3	3	2	4	3	4	3	1	3	4	30
7	Increasing in asset turnover	15	15	12	23	17	15	13	15	15	18	158
8	Reducing cost	2	4	4	2	2	3	2	4	2	3	28
9	Increasing capacity in emerging markets	16	16	19	17	19	19	18	23	14	23	184
10	Developing international cooperation	8	10	9	5	16	7	7	10	11	10	93
11	Modernizing the workspace	23	20	20	21	22	24	21	16	20	21	208
12	Increasing the company's share in terms of passenger traffic in the air transport market	9	7	8	3	7	11	5	8	7	8	73

13	Improving passenger satisfaction	5	6	7	7	8	6	4	7	4	2	56
14	Increasing aircraft operating lease expenses	11	24	21	16	23	20	17	14	23	24	193
15	Improving the corporate climate	17	19	14	13	6	13	16	18	17	14	147
16	Developing staff	12	8	18	11	12	10	12	11	10	17	121
17	Attracting passengers	10	11	11	8	4	5	8	6	6	6	75
18	Increasing the volume of transit traffic	24	17	24	24	18	22	23	21	21	19	213
19	Ensuring flight punctuality	18	9	5	10	10	8	11	9	9	9	98
20	Expanding and modernizing the aircraft fleet	6	14	10	9	11	9	10	5	8	12	94
21	Attracting young talent	20	23	23	19	24	23	20	24	22	7	205
22	Ensuring the safety of flights	13	2	13	12	13	14	14	13	12	13	119
23	Increasing the company's staff	22	21	15	14	21	17	24	22	24	22	202
24	Achieving leadership in the e-commerce market	19	12	16	15	9	12	9	12	19	11	134
											Sum of ranks	3000
Note: Calculated by the author on the basis of expert assessments												

## Stage 2. Determining expert consistency

- To determine the variance, we obtained the sum of the ranks. We calculated that the sum of the matrix was 3000. After dividing it by the total number of strategic objectives (i.e., 24), we obtained 125. For example, we could calculate strategic objective number one as follows:  
Variance  $d$  is equal to  $= 44 - 125 = -81$   
and  $d^2$  is equal to  $= -81^2 = 6561$ .  
The variance of the remaining strategic objectives is calculated in the same way (Table 5).
- The coefficient of variation according to Formula (3) was found (Table 5).
- The standard deviation was calculated according to Formula (4) (Table 5).

Table 5

### The Meaning of Variations

No.	Goals	$\sum$ sum of ranks	$\bar{X}$ the average of a set	D (dispersion)	$d$	$d^2$	$\sigma$ standard deviation	V the coefficient of variation
1	Increasing the number of passengers carried	44	4.4	1.82	-81	6561	1.35	30.68
2	Increasing the market value of equity	160	16	14.67	35	1225	3.83	23.94
3	Increasing the number of international connections	201	20.1	6.99	76	5776	2.64	13.15
4	Increasing income	11	1.1	0.10	-114	12996	0.32	28.75
5	Implementing a corporate information system	153	15.3	15.12	28	784	3.89	25.42
6	Increasing the profitability of sales	30	3	0.89	-95	9025	0.94	31.43
7	Increasing in asset turnover	158	15.8	9.29	33	1089	3.05	19.29
8	Reducing cost	28	2.8	0.84	-97	9409	0.92	32.82
9	Increasing capacity in emerging markets	184	18.4	8.49	59	3481	2.91	15.83
10	Developing international cooperation	93	9.3	8.90	-32	1024	2.98	32.08
11	Modernizing the workspace	208	20.8	4.62	83	6889	2.15	10.34

12	Increasing the company's share in terms of passenger traffic in the air transport market	73	7.3	4.68	-52	2704	2.16	29.63
13	Improving passenger satisfaction	56	5.6	3.38	-69	4761	1.84	32.82
14	Increasing aircraft operating lease expenses	193	19.3	20.90	68	4624	4.57	23.69
15	Improving the corporate climate	147	14.7	13.79	22	484	3.71	25.26
16	Developing staff	121	12.1	9.66	-4	16	3.11	25.68
17	Attracting passengers	75	7.5	6.28	-50	2500	2.51	33.41
18	Increasing the volume of transit traffic	213	21.3	6.68	88	7744	2.58	12.13
19	Ensuring flight punctuality	98	9.8	10.84	-27	729	3.29	33.60
20	Expanding and modernizing the aircraft fleet	94	9.4	7.16	-31	961	2.67	28.46
21	Attracting young talent	205	20.5	25.61	80	6400	5.06	24.69
22	Ensuring the safety of flights	119	11.9	12.54	-6	36	3.54	29.76
23	Increasing the company's staff	202	20.2	12.84	77	5929	3.58	17.74
24	Achieving leadership in the e-commerce market	134	13.4	13.60	9	81	3.69	27.52

Note: Calculated by the author using Formulas (3) and (4)

By analyzing Table 4, we found that the experts' responses were homogeneous with respect to the statistical coefficient of variation between 25% and 33%.

4) In our case, the concordance coefficient is

$$W = \frac{12 \cdot 95228}{10^2 \cdot (24^3 - 24)} = 0.828$$

In our study, the coefficient of concordance is  $W = 0.828$  (i.e., according to Table 2 of the Harington verbal-numerical scale, the consistency of expert opinions is very high).

5) If we calculate Pearson's criterion according to Formula (5), we get the following values:

$$\chi^2 = 10 \cdot (24 - 1) \cdot 0.828 = 190.44$$

If we determine this value by the significance level in the special table,  $E = 0.05$ , degrees of freedom  $V$  (number of objectives) = 23 ( $V = n - 1 = 24 - 1 = 23$ ). The table value of Pearson's criterion is  $\chi^2 = 190.44$  (i.e.,  $190.44 > 35.6$ ), which is greater than the table value, meaning that expert agreement was not accidental and is reasonable [13, p. 26]. Thus, expert consistency was confirmed.

**Stage 3.** Based on the results of the expert assessment, 15 of the 24 strategic objectives were identified as the most important.

The list of strategic goals, as assessed by the experts, is shown in Fig. 1.

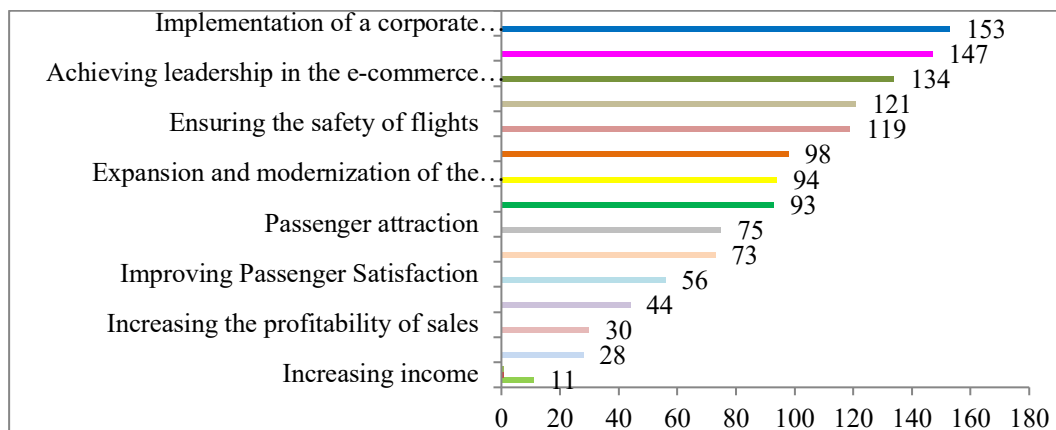


Fig. 1. Rankings of the strategic objectives in terms of importance (Note: Created by the authors)



## 5. CONCLUSIONS

Expert analysis is increasingly being used in different sectors of the economy—for example, in the development of economic and social programs and in solving individual management problems—while assessing the current situation in order to choose among several alternatives the most rational solution. Bringing together specialists who are knowledgeable in different fields and who act as experts greatly increases the scope for multi-disciplinary analysis and increases the reliability of decision-making methods. There is great variety in the methods of expert interviews and in how the results are presented and processed. In all areas of expert analysis, there is constant development and improvement. In this paper, we have highlighted only one method that has been rarely used.

Regardless of the direction chosen by a company, the expert assessment process requires a number of procedures to be carried out in order to produce the final result. Processing expert data, calculating consistency measures, determining group opinions, and assessing the validity and reliability of results require calculations at various stages of the expert review process. Therefore, computer technology is widely used in research on expert judgments.

In this research, we propose using expert judgments to select the strategic goals of a company. The interview-based individual assessment method and the simple ranking method were applied. The experts selected 15 important strategic goals out of 24 strategic goals by means of ranking. The authors wanted to show that, in cases of difficulties selecting important strategic goals, expert judgments can be utilized, and the consistency of the experts can be checked.

The assessment of the consistency of expert opinions showed a positive trend. The experts' visions of the most significant strategic goals of the company were generally the same. However, given the participation of a small group of experts regarding only one company, further research will involve other stakeholders (consumers of the company's transport services, partners and suppliers of the company, and representatives of the supervising ministry) as experts. After such additional research has been conducted, a comparative analysis with this work can be carried out. Another possibility for a follow-up study is to conduct a peer review using multi-criteria decision-making methods.

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