

# THE HIGHLIGHTING OF THE DECISIONS IN THE MANAGEMENT PROCESS

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## *Abstract:*

*If it is considered that the management process focuses on the development, adoption and implementation of the decisions, and the efficiency of the economic agents' activity depends on the quality of these, it can be said that the decision is the essential moment of the management. The manifestation of the management functions, in all their complexity, involves the elaboration and implementation of a large number of decisions in all fields of activity that take place in an economic entity. A manager's entire activity consists of a chain of decisions, with the indication that their effectiveness depends on the extent to which their development is scientifically based, taking into account many factors which condition the application in practice. Hence the need for full understanding of the entire decision-making process. Based on these considerations, the current paper approaches the concept of decision, emphasizing its importance in the management activity.*

*Keywords: strategy, decisional variant, certainty, uncertainty, risk*

## **1. Introduction**

The decision is an act of thought following the deliberation and precedes the execution. The basic feature of this process is that it involves the uncertainty about the foreseeable consequences. If the consequences of the various possible ways of action were fully clear, the decision-making would no longer be justified. The decision is a solution which is chosen by the manager, from several possible variants, basing on the important information, for the purpose of coordinating, controlling and predicting the subordinate activities.

Based on these arguments, the paper titled The highlighting of the decisions in the management process is focused on the study of the role of the decision in achieving the major goals of an organization.

In the beginning we shall present the most important definitions of the concept of decision as found in the specialty literature. We shall discuss about the three basic factors being necessary to make decisions, namely: the decision maker, the environment and the relations between the decision-maker and the environment.

Concerning the relation between the decision-maker and the environment we shall point out that there are three situations in which the decisions can be made: decisions made in certainty conditions; decisions made in risk conditions and decisions made in uncertainty conditions.

We shall specify the criteria which is important for making the decision in the uncertainty conditions, namely: Pessimistic or Prudent criterion, Optimistic criterion,

Hurwicz's criterion, I.L. Savage's Regret criterion, and the criterion which is important for making the decision in the risk conditions, i.e Bayes-Laplace's criterion.

We shall present the classification modality of the main types of decisions.

We shall also discuss about the issues being related to the stages of the decision-making process. Due to the fact that the decision-making process is very complex and important, the problem of the stages, through which a decision-making process passes, is treated extensively in a different way by many specialists. With the help of a figure we shall present the six stages of the decision-making process.

The paper will conclude with a case study involving the application of the pessimistic and optimistic criteria in the decisions being made by the government, concerning the construction of the power plants.

## **2. The decision concept in the management process**

The experts in the field have formulated the numerous definitions on the concept of decision, some being more broadly expressed, others in a more limited mode.

Puiu A. (2004, 235) considers the decision as "the most representative function of the leadership as well as the most effective tool for adjusting and regulating in a dynamic environment, it involves choosing between two or more possible alternatives, the optimum. The decision represents a person's or people's social, deliberate and rational act through which there are set goals, directions and ways of achieving them, depending on the current needs of economic and social life, on the basis of an analysis and evaluation process of the means, necessary resources and of the consequences of that activity".

According to Verboncu I. (1999, 271) the decision constitutes "the chosen modality from several possibilities in order to achieve an objective. The decision is the condition for the economic, trade and management success of the company and, at the same time, the most important management product of those who lead "The substantiation and the adoption of the management decisions constitute the work essence of the managers of any organizational echelon, resulting in the managers' an appropriate involvement in providing the top-level quality parameters.

In the authors Văcărescu Hobeau L. and Hobeau T.'s opinion (2013, 140) "the decision can be defined as the most important moment in the management activity, which supposes the choice, consciously, through a process of deliberation of an action line of in more possibilities, in order to achieve a goal or purpose, i.e. the choice of the optimal between two or more possible alternatives".

From the mentioned definition it appears that the management decision involves the achievement of three conditions: to be chosen, so from several possible actions, to be chosen one of them through the elimination (the existence of a single alternative does not raise the problems of choice); to be conscious, that is, to be preceded by a deliberation; the choice must be oriented to a goal, aimed at achieving an objective.

The decision means the basic action of the management of any economic agent which determines both directly and indirectly throughout the activity results on the ensemble of the unit and on every structural component of this. After Nicolescu O. (1980, 199) "the decision is course of action which is chosen in order to achieve one or more objectives".

The role of the decision in the company management is underlined by the fact that through it there is determined the position of every organizational link of the

company, the position of every sub-unit and each employee's position to solving the envisaged tasks.

Also, using the decisions there are coordinated in time and space the resources and there is assured the rhythm in carrying out the tasks of plan. Because the decision must reach the goal it is necessary that the decision answers to the certain requirements: the decision must be scientifically substantiated; be empowered and competent; be rationally coordinated and non-contradictory; it must be taken at time, be clear and simple, be effective.

## **2. The basic factors of the decision**

The complex problem being raised by the adoption of a scientifically substantiated decision requires the knowledge of the elements which must be considered in the development of these.

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To be able to make decisions, there must be some underlying the factors or elements:

- decision-maker or decision factor;
- environment;
- relations between the decision-maker and the environment.

Decision-maker or decision factor is the one who takes the decision, so a subjective element in the decision-making process, which may be an individual or a community, which means that the decisions can be influenced by some features of the decision-maker.

To make decisions, it must meet two conditions: to be invested with the necessary authority in this field and to be competent in the approached field.

The growing difficulties in the decisions adoption, the increasing of the complexity degree of the problems which must be resolved, require increasingly more that the decision-maker be a professional in the management.

The decision-maker must have some qualities like: competent, personal identification of own aspirations with the employees' and economic agents' objectives, responsiveness to the new, ability to make decisions in the operative way but well thought-out, continuous and quick self-improvement for counterbalancing the wear process of the gained knowledge, it must know to behave with the collaborators and the subordinates and it must draw them into the work and they must have the responsibility of leadership.

The environment consists of all internal and external conditions of the unit, the conditions which influence and are influenced, directly or indirectly, by that decision. The environment represents, therefore, the framework in limits of which the decision maker acts through its had information.

The environment can be: internal (from the unit) and external (national and international).

Among the influence factors on the decision belonging to the environment inside of unit, there are: managers' competences; performers' professional and cultural level; used management techniques and methods; information system which is used in the unit; degree of technical equipment etc.

The influence factors of the external national environment are: government economic policy: of investments, credit, foreign trade, etc.; the legal framework settling the economic agents' status; relationships with other units and with the state; socio-cultural environment; the standard of living, consumers' tastes; technological environment; the rhythm of renewal of the products and technologies, etc.

In terms of external international environment it exerts on the unit an important influence by: currency fluctuations; blockages and embargoes; obligations imposed by international treaties; rates; wars etc.

In the present conditions, the main environmental trend is to be always more complex and more dynamic as a result of the changes in its components, of the growth of the number of variables that must be taken into account the elaboration and adoption of the decisions.

The relations between the decision-maker and the environment are expressed in terms of the nature of the relations between the decision and its economic, political, social implications or other nature implications.

In connection with this report there are mainly three situations, namely:

decision-making in conditions of certainty;

decision-making in conditions of risk;

decision-making in conditions of uncertainty.

The decisions being made in terms of certainty means that the existence of complete information on the problem in question which allows the removal of uncertainties. The decisions being made in such conditions may be met in the situations when we suppose that we are dealing only with a single state the objective conditions and we choose a single solution, the decision has all the chances to be exactly achieved, in the case when there are used the methods and the suggested measures are taken. The elements which are involved in making these decisions are of controllable variables type, with the known characteristics and whose evolution can be accurately appreciated. The decisions made in terms of certain conditions can be met especially at the lower levels, the operative management of the production.

The decision-making in terms of risk conditions implies the existence of several states of the objective conditions. These decisions are met when the fixed goal is possible, but the probability of its achievement cannot be specified, being a big uncertainty concerning the most appropriate modalities, in order to achieve it.

The features of the decisions which are made in such conditions are that a big part of factors which conditions the achievement of the proposed objective belongs to the category of the uncontrollable variables in the given situation.

The probabilities theory has the best field of action in this type of decisions; the essential element in the adoption of these decisions is the degree of accuracy in the approximation of the appearance probability of a phenomenon.

The difficulty is in the fact that in the phenomena appreciation we work with the estimations and the average values are often based on the statistical methods.

The decisions made under the uncertainty conditions are those whose effect depends entirely on the action of the unforeseen factors, which cannot be estimated, neither even with a low degree of probability. Each of the three categories of the decisions requires the specific methods of substantiation.

The decisions which are made in the certainty conditions can be substantiated by very precise means, leaving from simple calculations, of elementary mathematics, until the use of the modern mathematical methods of operational research.

In terms of the substantiation methods of the decisions made in conditions of risk and uncertainty, they are the result of researches from a relatively new branch of a mathematics which is called 'the theory of strategic games'.

The characteristic elements of the theory of the strategic games are: game, match, strategy. The game is a competitive process which takes place between more participants called players, of which at least one is intelligent and prudent, namely he can analyse the situation and decide on his future actions which put him to advantage. The games with two participants have a special importance in shaping the economic processes. The match is the performance of the players' actions, after the certain rules. Every match has an initial state and a final state, the latter causing, basing on the rules, a gain or a loss for each player.

The strategy is a player's collection of actions sequences, every sequence being prepared as a reaction against the strategy of the opponent (which can sometimes be nature), in order to achieve the proposed objective, namely the final state to which the game rules associate the maximum of possible profit.

The representation of a game with two players (partners) can be done in the matrix form (Table 1.).

**Table 1**

**Representation of a game with two players**

Players' strategies						
player B-		B <sub>1</sub>	B <sub>2</sub>		.....	B <sub>n</sub>
-player A -						
	A <sub>1</sub>	a <sub>11</sub>	a <sub>12</sub>		.....	a <sub>1n</sub>
	A <sub>2</sub>	a <sub>21</sub>	a <sub>22</sub>			a <sub>2n</sub>
	.	..	..		.....	.....
	A <sub>m</sub>	a <sub>m1</sub>	a <sub>m2</sub>		.....	a <sub>mn</sub>

Source: Văcărescu Hobeanu L., Hobeanu T. (2013, 142)

In this table A represents one of the players (natural or legal persons) and B represents the opponent (which can sometimes be "nature").

$\bar{A} = \{A_1, A_2 \dots A_m\}$  is the crowd of the A strategies of A

$\bar{B} = \{B_1, B_2 \dots B_n\}$  is the crowd of the strategies of B,

and  $a_{ij}$  ( $i=1,2,\dots,m; j=1,2,\dots,n$ ) is the appropriate consequence of the adoption of the  $A_i$  strategy by the player A and of the adoption of strategy  $B_j$  by the player B.

$i$  represents line;

$j$  represents the column.

In this game one of the partners is the decision-maker and the other is "nature" that can represent the different states or phenomena which do not depend on human being such as: floods, drought, earthquakes, underground riches, territorial or international waters, at which the economic agent has access etc.

The various nature states will be considered the strategies of this.

The easiest strategic game is "the game with zero sum between two partners" or "the game point to" in which one of the players loses exactly what the other wins. The rules of this type of game can be found in the activity of economic agents, both in the relations between them as well as in the so-called "game against nature." In

the latter game one from the partners is the decision-maker and the other "nature" that can represent the different states or phenomena which do not depend on human being such as: floods, drought, earthquakes, underground riches, territorial or international waters, at which the economic agent has access etc.

The various nature states will be considered the strategies of this.

In the game against the nature there is particular the fact that the "nature" is not an aware opponent that could have the benefits from his partner – the human being's wrong decisions. The decision-maker, in the case of the wrong orientation, he strongly reproached himself he did not work enough to know sufficiently well the "nature".

Starting from a simple way of putting the problem of the decision, the creators of the theory of strategic games made a series of criteria after that there may be led the game partners in the adoption of most convenient decision.

Making decisions in the uncertainty conditions has at the base the following most commonly used criteria:

a) Pessimistic or Prudent criteria formulated by A. Wald, according to which in adopting the decisions we must start to take into account the most unfavourable situations, when all the involved factors would be hostile, which require the provision of minimal results.

Considering that the player A is the decision-maker and B is its opponent which may even be the nature, using a matrix of gains in the conditions of the pessimistic criterion there will be determined the minimum utilities (values) on the matrix lines, choosing between these the maximum utility. If in the matrix there are the achievable gains in the different states of the nature, then there will be chosen the strategy which will ensure the maximum of benefits from the minimum benefits permitted by the nature, hence the name which is sometimes used for the maximum criterion.

b) Optimistic criterion, proceeds contrary to the Pessimistic criterion, believing that the situations, conditions and factors of influence are favourable, choosing the strategy which ensures the getting of maximum benefit from the greatest possible benefits (the maximax criterion).

c) Hurwicz's criterion. According to the author, the pessimistic criterion is too cautious, and the optimistic criterion is too risky, so it seems more logical that at the choice of the strategy there be adopted a compromise position, through the orientation towards a benefit which must be between the maximum benefit and minimum benefit hence the name of criterion of Prudent Optimum.

According to this criterion, the strategy (Ai), which should be adopted, can be according to the equation (1), maximizing the function:

$$f(A_i) = \alpha C_i + (1-\alpha)c_i \quad (1)$$

where:  $C_i$  and  $c_i$  – the maximum earning and respectively the minimum earning corresponding to the strategy  $A_i$ ;

$\alpha$  - the coefficient expressing the optimism of the one who decides.

The  $\alpha$  coefficient can take values between 0 and 1. It is obvious that if the  $\alpha=0$ ,  $f(A_i)=c_i$ , which means that decision-maker is led after the pessimistic (maximin) criterion and it will choose the strategy which provides the maximum from the lowest possible benefits, and if  $\alpha = 1$ ,  $f(A_i) = C_i$ , the orientation is done after the optimistic (maximax) criterion. As a rule, for  $\alpha$  there will be chosen a intermediate value ( $0 < \alpha < 1$ ).

d) I.L. Savage's regret criterion leaves from the idea that decidentul after taking a particular decision, finds that the result obtained (benefit) may be greater than if it had chosen another strategy. Hence derives the requirement that minimize regret in the future through a better understanding of the conditions and situations (as well as the opportunities arising therefrom) which allow choosing the best strategies and thus enhancing the results (the benefit).

Savage's criterion consists of esență, in the application of the severe maximax so-called "matrix of remorse" or "alternative" loss matrix.

This is made up by comparing the outcome expected according to a certain strategy with the strategy which should be adopted if you would know with certainty the State of nature.

e) Bayes-Laplace criterion is used to making decisions in terms of risk, i.e. the conditions under which the various possible States of nature can be appreciated with a certain degree of probability.

The risk, as it considers a range of quantifiable uncertainty represents researchers.

If the equation (2) there is noted with  $p$ -the probability of the appearance of a certain nature states, then:

$$p_1 + p_2 + \dots + p_n = 1 \quad \text{or} \quad \sum_{j=1}^n p_j = 1 \quad (2)$$

With these probabilities there is weighted each of the values corresponding to the possible states of the nature, determining in this way" the hope" Mathematics ( $E_i$ ) of the expected result when applying the  $A_i$  strategy, as well as in the equation (3).

$$E_i = \sum_{j=1}^n c_j p_j \quad (3)$$

where:  $c$  - the result which is appropriate to  $A_i$  strategy, if the state of nature is  $B_j$ ;

$p$  – the probability of the apparition of the  $B_j$  state.

### 3. Classification and characterization of the main types of decisions

The optimal decision making process, its shortening, the determination of the hierarchical level of competence to which there have to be made the certain decisions and the specific problems that arise in each type of decision make the knowledge and the classification of these be necessary.

In the framework of the economic units there is taken a number of decisions, which differ by: sphere of including, the perspective at which it refers, the hierarchical level at which the decision are made, the scope of analysis and thought process that it requires, the amount of required information, etc.

The best-known classifications are as follows:

a) After the management level at which the decisions are made (the management echelon), the decisions can be classified into:

- top level decisions, adopted by managers in the superior echelon;

- middle level decisions, adopted by managers of the certain operational and functional compartments;
  - lower level decisions, adopted by managers from the inferior sample of the management.
- b) After the degree of temporary pressure there are:
- pressing or alert decisions;
  - decisions which can be approached in time intervals with more flexible limits.
- c) After the frequency with which the decisions may be made, there are:
- random decisions, decisions being adopted according to the emergence of the problems requiring the manager's intervention;
  - unique decisions, decisions being made once in life of the company;
  - regular decisions, decisions being adopted at regular intervals.
- d) After analyzing the degree of effectiveness:
- possible decisions;
  - optimal decisions.
- e) After the number of decision-making criteria, the decisions may be:
- multicriterial, when the decision-making problem which must be solved has at the base a multitude of criteria;
  - uni-criterial, when the decision is made according to a single decision making criterion
- f) After the extent of the decision-maker competences, we have two types of decisions:
- approved, which may not be operationalized without some managers' consent from at a higher level in a hierarchical structure;
  - unauthorized (independent), specific to the manager, the individual or group, with the full decision-making autonomy
- g) After the extent of the decision-maker, we have:
- individual decisions made by individual managers, located on different hierarchical levels;
  - decisions of group, adopted by the participatory management bodies
- h) Depending on the nature of the involved variables and the anticipation possibilities of the results, or in other words after the degree of knowledge, the decisions are:
- certain;
  - uncertain;
  - of risk
- i) After the time horizon and the implications on the company:
- strategic decisions, with the big time horizons, low degree of detailing of the goals and impact directly upon the company, as a whole, contribute directly to the achievement of the fundamental objectives;
  - tactical decisions, with variable time horizons, from one month to one year, detail degree of the objectives which is in inverse proportion with the time horizon, contribute directly to the achievement of the derived objectives;
  - current (operational) decisions with small time horizons and impact on a procedural or structural components of the company, contribute to the achievement of specific individual objectives.
- j) After their orientation, the decisions can be classified as follows:
- decisions on risk-taking objectives;



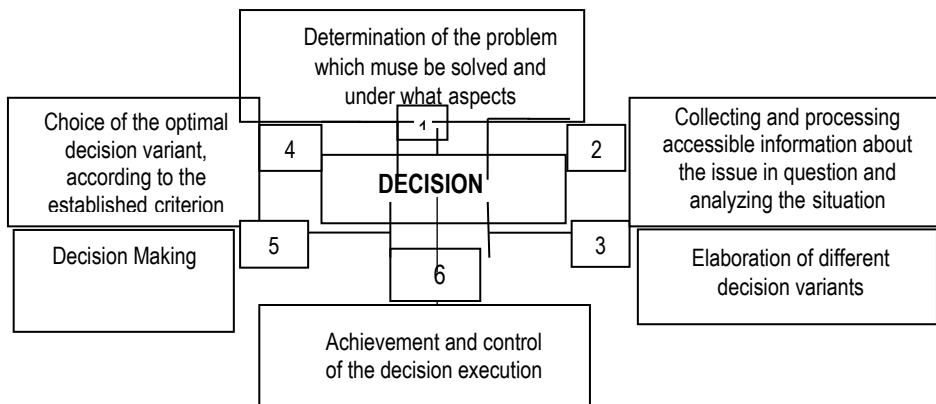
- decisions on the attainment of the objectives;
- preparatory decisions in order to adapt permanently the unit to the conditions that occur in the environment (the decisions of correction).

This classification orientates the leadership to pay attention to those problems, depending on the resolution of this the ability to adapt to the internal and external market requirements, the competitive ability in dealing in the foreign markets with the other units which offer the similar products, accounting for the frequent changes which occur in the environment conditions.

#### 4. The stages of the decision-making process

That the logical stages of the decision-making process are as follows (figure 1):

- determination of the problem which must be solved and under what aspects;
- Collecting and processing the accessible information about the issue in question and analyzing the situation;
- elaboration of the different decision variants;
- choice of the optimal decision variant according to the established criterion;
- making of the decision;
- achievement and control of the decision execution.



**Figure 1. Stages of the decision-making process**

Source: Author

a) *The first stage, the determination of the problem which must be solved and under what aspects*, consists of finding out and specifying the problem which must be solved and under what aspects, as well as establishing the goal and the rules which must be observed. In the establishment of the problem, there is important the direct, conscious character which is oriented to a goal of the management.

- The manager's attention must therefore be channeled into knowing the real and essential problems that need to be solved in order to achieve a particular goal
- A sufficient time must be devoted to this stage. In reality, it is not performed in this way. In order to properly solve the problem which must be solved, it is necessary to start by researching the "critical factor", that is to say the main cause that determines it.

This is done through a series of questions about the pursued purpose. It is important to correctly differentiate the goals of the means of achieving them. In the economic field, we are dealing with a true goal-means chain, in that the partial goals are only means for achieving higher-level goals. We can conclude that the first stage in the decision-making process is to find the real problem which must be solved and under what aspects.

*b) Collection and processing of the accessible information and the analysis of the situation.*

The problem of the information is an essential issue in making and achieving the right decision. The best decision-makers are usually the best-informed.

It is particularly important to establish with the highest precision: what are the essential data that characterize the phenomenon; what information is valid, ie it reflects the essence of the problem; what additional information is required. It is necessary to evaluate the possibilities that the unit can support, the resources it has to make the decision.

Parallel with the use of all the available information at this stage of the decision-making process, there must be taken in consideration proposals, suggestions, solutions which can be given by the counselors, the consultants, the specialists who know very well the problem. It is advisable there be consulted both the followers and those who disagree with the final goal of the discussed problem.

The successful achievement of this stage also depends on the information system of the unit, its degree of endowment with the modern means of collecting and processing information.

*c) The development of the multiple solutions variants*

In order to choose the optimal variant of decision, logically, there must be several possible variants or solutions, because only in this case there is the problem of choice.

Their careful examination, the evaluation of each and the comparison of their consequences are an essential moment of the decision making.

At this stage the decision maker has the opportunity to prove to what extent the problem is mastered, which are its creative ability and the degree to which it is sufficiently objective.

*d) The choice of the optimal variant of decision.*

The notion of optimal variant refers to the best possible solution to achieve; it aims at the practical realizable goals, not at the ideal perfections which are impossible to achieve under the existing conditions.

Appreciated as the decisive stage of the decision-making process, it also depends on how the specific tasks have been resolved in the previous stages.

To analyze the decision variants, it is necessary to know the main factors of influence within each variant, to have as much data as possible on these factors.

The taking into account of the several variants complicates the decision problem, makes it harder and more expensive. But the choice of the optimal variant from a larger number of possible solutions usually reach to a more advantageous result than when the choice is made from a smaller number.

When there are several criteria for one and the same solution, it is necessary to rank them using a "matrix of the option or selection criteria" for this goal, according to the following model (Table 2)

Table 2

Matrix of option or selection criteria

Criterion	A	B	C	D	Sum of points	Order of importance
A	0	1	1	1	3	1
B	0	0	1	0	1	3
C	0	0	0	0	0	4
D	0	1	1	0	2	2

Source: Văcărescu Hobeanu L., Hobeanu T. (2013, 173)

There is compared, for example, the criterion A with B. If A is more important than B, the A line and in the column B, there is the number 1, and on the B line and in the column A, number 0.

The figures thus indicate the report of importance between the compared criteria. Then there is continued the comparison of the Criterion A with the other criteria C, D and then it proceeds with Criteria B, C and D.

At the point of intersection of the line with the corresponding column to each of the criteria (A with A, B with B and so on), the whole number 0 or 1 passes without any influence on the result.

Finally, the points obtained by line of each criterion are summed up and, depending on their size, the criteria are ranked according to their importance, and the most important criterion, in our example A, will become the rule of decision.

In choosing the optimal variant of decision, the use of modern statistical and mathematical methods and electronic computing technique has a particular importance for the quantitative aspects.

It is recommended that there be considered the following elements which ensure that the optimal variant selection from the possible variants:

- the risk which is involved in every decision-making: a good manager must know how to weigh the risks of each line of action according to the benefits he expects;
- economy of efforts: it is considered as optimal variant the one that offers the obtaining of the best results, with the least effort;
- time factor: the variant that leads to the achievement of the goal in the shortest time is preferred;
- use of the available resources.

e) *The making of the decision*

Being established all the possible ways of action, the manager, the respective problem being from his tasks, is called to make the choice for one of them. The decision making by choosing the optimal solution, from many possible variants, is the most commonly used method.

The method of the choice of the optimal variant from several possible solutions only has the role of stimulating the scientific and analytical thinking. However, it must be taken into account that the adopted optimal solution is optimal in relation to others which are taken in the analysis, and if they are below the existing possibilities and the "optimal" solution will be inferior.

One way to reduce the risk, in the decisions of major importance, is to experiment, on a smaller scale and then to generalize the adopted solution, if the experiment leads to the positive conclusions

f) *At the stage of the decision making*, the following activities are usually carried out: firstly, the decision will have to be legalized in the form of a provision or an order.

Only after this operation the decision becomes normative. The next activity is to prepare the psychological climate, the explanation of the decision role to the team of execution, how to fulfill it, so that it is widely supported.

If the decision is made at the level of the management of the unit and it establishes the tasks of importance for the sections, then it is necessary to elaborate in the programs of technical-organizational measures being meant to ensure the realization of the decision, the programs in which there are showed how the tasks are accomplished, by what means, when and where there should be begun the action to achieve the decision immediately and when this action should be completed.

The results, that the economic unity will obtain, are dependent on the way in which the decision is made, the content and clarity of its formulation. In conclusion, the decision-making process with the presented stages should not be a rigid model of practical action; each process which is applied in the concrete conditions involves the adaptations to the solving features of the problems.

## **5. Case studies**

The pessimistic or prudent criteria being formulated by A. Wald, respectively the optimistic criterion, can find their applicability in the next case study.

Within the European Union there was the question of the realization of joint energy programs. Our country has agreed to discuss the program, taking into account the possibility of constructing the various types of power plants, namely:

A1- the thermal power plants basing on the inferior coals

A2 – the hydroelectric power plants with the dam on the inland rivers of the country

A3- the hydroelectric power plants with the sluices on the Danube

A4- the nuclear power plants

The effectiveness of each of the four types of power plants depends on the various factors, such as climatic conditions, amount of coal, extracted radioactive ore, their composition, their price, transportation costs, etc. We admit that there can be off, at least indicatively, four different cases, each of them representing a particular factors combination which influences the effectiveness of the future energy targets. Therefore these will be the four states of nature that we note the symbols B1, B2, B3 and B4.

The economic efficiency of the construction of the different types of power plants which is determined under the form of the percentage increase of the national income in relation to the sum of the investment expenditures changes according to the state of nature, according to the data from the Table 3.

Table 3

**The economic efficiency of the power plants construction**

State of the nature	B1	B2	B3	B4
Types of power plants				
A1- The thermal power plants basing on inferior coals	8	3	5	9
A2- The hydroelectric power plants with the dam on the inland rivers of the country	6	8	2	10
A3- The hydroelectric power plants with the sluices on the Danube	4	6	8	5
A4- The nuclear power plants	3	9	12	4

What type of plant will be preferred by the government under the criterion pessimistic application? But applying the optimistic criterion?

According to pessimistic or cautious criterion being formulated by A. Wald, in the adoption of the decisions we must start from considering the most unfavorable situations when all the involved factors would be hostile, which requires the provision of the minimum results.

Considering that player A is the decision maker and that his adversary B, which may be the nature, using a matrix of winnings under the **pessimistic criterion** conditions, there will be determined the minimum utilities (values) on the matrix lines, and the maximum utility is chosen between them (4). If in the matrix there are included the achievable gains in the various states of nature, then it will be chosen the strategy which will assure the maximum of the benefits from the minimum benefits which are allowed by the nature, hence the name the maximin criterion, if in our case, we choose the highest value from the lowest values on the column with  $\min a_{ij}$ , so the pessimistic criterion is the maximum from the minimum, i.e. the value 4 on the  $\min a_{ij}$  column.

The **optimistic criterion** proceeds contrary to the pessimistic criterion, ensuring the obtaining of the maximum benefit from the maximum possible benefits (maximax criterion), determining the maximum utilities (values) on the matrix lines, choosing from these the maximum utility (12), in our case there is chosen the highest value from the highest values on the column with  $\max a_{ij}$ , so the optimistic criterion is maximum from the maximum i.e. the value 12 on the  $\max a_{ij}$  column.

Table 4

**The application of the criteria in choosing the type of power plants**

State of the nature	B1	B2	B3	B4	<b>min a<sub>ij</sub></b> We choose the lowest value on each line	<b>max a<sub>ij</sub></b> We choose the highest value on each line
Types of power plants						
A1- The thermal power plants basing on inferior coals	8	3	5	9	3	9
A2- The hydroelectric power plants with the dam on the inland rivers of the country	6	8	2	10	2	10
A3- The hydroelectric power plants with the sluices on the Danube	4	6	8	5	4	8
A4- The nuclear power plants	3	9	12	4	3	12

It follows that in the conditions of the pessimistic criterion application there will be preferred the hydroelectric power plants with the sluices on the Danube (A3), and applying the optimistic criterion there will be preferred the nuclear power plants (A4).

## 6. Conclusions

The paper captures the main aspects of the decision-making concept at the level of the economic units.

In the first part of the paper we presented the definitions which are given to this concept by many authors. Then, we talked about the three basic factors which are necessary for in the decision making process: the decision maker or the decision factor, the environment, the relations between the decision-maker and the environment.

We stressed that the relations between the decision-maker and the environment are expressed in the nature of the relations between the decision and its economic, political, social implications; there are three situations in relation to this report: decision-making in the conditions of certainty, risk and uncertainty.

We emphasized the criteria underlying the decision making in the uncertainty conditions, namely: the pessimistic or cautious criterion which was formulated by A. Wald, the Optimistic criterion, Hurwicz's criterion, I.L. Savage's Regret criterion. We also described the Bayes-Laplace criterion that is used to make the decisions in the risk conditions.

In the next chapter we described the classification modality of the decisions. By approaching the classification of the decisions and presenting the main types of decisions one can find the complexity and the different nature of the decisions that the leader, at any level, has to make permanently, the importance of some of these decisions to others, the specific problems of these.

In the final part of the paper we discussed about the six stages of the decision making process, being graphically reproduced by a paper.

The decision has a strong operational character through the profound and efficient involvement of the staff of (execution and management) in the accomplishment of the tasks. Depending on the level at which it is exercised, the decision represents the leader's conscious intervention, depending on this the future evolution of the managed system. After a thorough analysis of a significant information base, a good manager chooses the most favorable decision to achieve the goals of his organization.

Any economic agent's manager must make the decisions that determine the results of the activity on the whole of the unit and on each structural component thereof. As a decisive moment of the management, the decision must be scientifically grounded, appropriately adopted and appropriately, creatively applied.

The decision process is a process of knowledge, a rational process, a process of preparation and decision-making. The decision is considered to be the main instrument for the operationalization of the management process, as the result of the decision-making process is found in each management function.

The conclusions that come out of the present paper emphasize that the decision is an essential element of the management being its most specific instrument of expression. The qualitative level of the unit management is best manifested by the elaborated and applied decisions.

To emphasize the possibility of the pessimistic or optimistic criteria application, in the final part of the paper, we made a case study that can be useful for the decision factors at the governmental level, in the assessment of the different situations with which they can confront in the management activity.

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