

## CONCEPTUAL APPROACH FOR METHODS AND TECHNIQUES UNDERLYING THE DECISION – EFFECTIVE MANAGEMENT TOOLS

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### **Abstract**

*In today's society, one of the social subsystems, education, involves educational influences not easy to predict and to assess. The adapting problems of schools to the requirements of a good development are because, education integrates pedagogical, scientific, cultural progress and increasingly those in psycho-pedagogy concerning the balance between the scope and content of the objectives, assessment methods etc. An important role in managerial success in higher education institutions is the university's strategy on how to develop on short, medium and long term.*

*The decision may be synthesized from the set of definitions as an option and will act for a certain course of action, several alternatives / strategies available, aiming at achieving a certain goal based on an evaluation process, on the means necessary and the consequences of its realization that generates a particular change in the behavior of those involved.*

**Keywords:** *Methods, management, decision, substantiation, techniques.*

**JEL :** *M40, M41*

### **1.Introduction.**

The first half of the twentieth century meant the period in which there were created most management techniques such as: economic value analysis, benchmarking, reducing staffing, restructuring, etc.

Management, in essence, aims at taking decisions of action and then implementing these decisions with people, which means that as the central resource for managers, are people, and with their help he will manage all other resources: materials, equipment, knowledge, finance etc. Managers face two main issues: "How to do it?" But also "what shall we do?". In the management process, it is natural for a leader to be faced with situations where decisions must be made quickly and effectively. An ad hoc decision making is not only a consequence of driving skills, education and specific experience or a native sense that many managers have. [1]

By another wider definition management is "what to do and then implement the decision through the efficient use of resources". The purpose of a management process, whatever it may be, is the decision. From this aspect, it is natural that the efficiency of business, a company, an organization and thus a higher education institution to be directly proportional to the quality of the decision.

Effective decision making, appropriate, given the action plans must respond correctly to questions such as: What actions should be taken? When every action must be done? What is the place of each action? Who should participate in the implementation of each action? What are the stages of each action? What resources should be used?

From an epistemological approach, the word education is the systematic and conscious influence system of shaping the development of intellectual faculties, moral and physical aspects of children, youth and so on, or all methods used for this purpose (enlightenment, methodological raising of the ideological, cultural, professional level) or the fact to develop moral, intellectual and physical faculties of a human, of a nation. [2]

Any organization is set up to achieve certain purposes in relation to which it directs its activities within. Outside purposes, there is no organization, as they constitute its very reason for being. Changes in higher education in Romania, as well as throughout Europe and other parts of the world, were many and radical, imposing continuous essential transformations of the educational process. Initiating and implementing various reforms and EU or international processes are especially relevant for Romania, as the national education system is in a process of profound reform. [3]

In the management process of any university, its decisional component occupies a very important position. Decision is the element that has a management specificity and high impact in all areas activities fathers and results of any companies, organizations, authorities or public institutions. Substantiation of decisions by objectively processing relevant information to decision-making centers have as a natural consequence, their better quality, and this requires methods and techniques that facilitate the optimal choice, indicating that for this one has to fit into a certain decision model.

Also, based on the idea that, in content, nature and role, the decision is the "vital nerve" of the manager of the economic unit, if we transfer this proven statement in higher education, we find, without fear of error, that the decision occupies the same central and indispensable place in the economical management of any university.

## **2. Methods and underlying techniques of decisions.**

Monitoring and evaluation of results is the last step in the decision making process. At this stage, managers can evaluate the effectiveness of decision, the degree of achievement of the objective and whether or not the alternative chosen had the expected consequences.

This is actually the most important moment of decision-making. In the event of negative or opposite to the prospective, the manager has more possibilities of action, depending on the cause ascertained. [4]

Using methods and techniques of decision determines an increase in the degree of severity and efficacy of decisions, differentiated in relation to the type of involved decision situations.

### **2.1. Substantiation methods of decisions under certainty conditions.**

In general, typical framed decision problems in the situation of certainty-dominated controllable variables and results of each variant can be easily anticipated - call multicriteria, multidimensional, which greatly hampers or make impossible taking a decision in an empirical manner ("seeing and making "). In most cases it is necessary to call on the services of methods and techniques with mathematical foundation, able to take into account many decision criteria and the consequences of using specific algorithms. [5]

Decisions under conditions of certainty are characterized by the fact that the decision maker knows all possible alternatives and all the associated consequences and can be optimized by using a single criterion or multiple criteria. In the first case, we use the most important criterion for decision making in that situation, his choice involving a prior hierarchy through a selection matrix.

Under these conditions, the variables are controllable by the decision maker, with the possibility of their predictors. If a university, for example, decides to buy a land vehicle, large capacity, full option, and has only a few options: Volkswagen, Mitsubishi, Jeep, etc. Although knowing all the alternatives, each of these companies offer their land vehicle characteristics, price and delivery time. We know all consequences and decision can be taken easily.

To Neumann and Morgenstern we owe the utility theory that is the base of optimization methods and techniques of multidimensional decisions under conditions of certainty.

The Method of global utility makes easy to select the optimal and logical support for anticipating benefits of various courses of action possible. By this method the best choice is determined by different criteria and important factors, with the statement that the usefulness of one options is calculated based on the economic consequences of a decision as a criterion

Electre method (Elimination et Choix Traduisant la Relaité), which in translation means "Ranking and selection method in the presence of multiple views", was designed by Bertrand Roy in 1967 and is based on choosing the optimal version that outperforms other variants. To do this, you have to calculate utilities for each decision optimization criterion, importance coefficients are assigned and calculate the coefficients of concordance and discordance. Choosing the optimal matrix is performed using upgrade matrix that is anticipated by two other types of matrices: discrepancy matrix and matrix differences

Onicescu method allows rationing decisions in multi criteria in terms of certainty. It is designed by O. Onicescu in two versions:

- First - the optimal choice criteria are echi-important,
- Second - important criteria are differentiated.

Topsis method. In the case of Topsis method the cardinal preferences known on the criteria. Therefore, the development of decision making under conditions of certainty requires maintaining a regular flow of information considered, the elements involved are controllable variables and their evolution can be predicted accurately. In this case the decision maker is certain that events will evolve so that once the action started, it will coincide perfectly with some model information that he acquired before the onset of the action.

### **2.2. Methods for substantiating of decisions under risk.**

They are characterized by the fact that the decision maker knows all decision alternatives but their consequences are associated as estimates. Specifically, an alternative may have at least two consequences, the decision maker must calculate based on previous experiences probability of each of them can happen. Suppose, for example, that a company is in a position to launch a new product on the market, this launch is vital for the company. Without this launch, the company could close in six months. A successful launch would save the company. Meanwhile, in case of failure of this release, the costs involved would hasten the company's end in only three months. [6]

The decision maker is the one who must make the decision. The decision maker is a generic concept, because it can be represented by a single person, group of persons, of the whole organization and the entire community in a locality, region or country. [7] Decisions under risk occur when the probability of a state of nature is known that it is more than zero and less than one's superior.

Decision makers, advocates of extremely prudent decisions are characterized by a tendency to avoid the lowest risk and resorting only to procedures known to be very safe or to remove entirely initiative, decision makers who are overly risky in decisions are diametrically opposed, characterized by the acceptance of high risks, although ultimately reach the same results by not taking into account the probability of occurrence of different states of nature, overestimating their skills, knowledge, opportunities etc.

Global utility method involves preparing an economic matrix, of basic utilities and synthesis utilities and the best option is considered the version that is "preferred" to the other. Mathematical hope method is applied differently depending on the number of decision criteria considered. In this case the synthetic utility variants are calculated by the criteria set by state objective conditions. Best option will be determined by synthetic utility and probability of certain states in objective conditions.

Simulation involves decisions based on models. In this case we "make" some models, which are simplified reality systems, so that we can choose of the most effective lines of action in the simulation area. For this the decision maker must measure the economic phenomena and processes, but also to experience, fact that which involves a great risk in case if the pattern will not behave the same as in real situation it represents.

### 2.3. Methods for substantiating of decisions under uncertainty.

As the reality underscores, in most cases the effective manager profession depends to a great extent on the quality of decisions. [8] We are in a situation of uncertainty when we do not have enough information to determine the manifestaion probability of the states of objective and variable conditions that are uncontrollable. If you do not know the possibilities of achieving the state of nature, decision making under uncertainty occurs and can no longer be used as guidance in choosing the optimal expected value.

To solve such a model there are required two stages:

- a) examination of the matrix whether or not it has an equilibrium (and others);
- b) selection of criteria for solving the decision matrix.

We know five rules of decision-making:

- Pessimistic rule, called rule of prudence (developed by Wald A.), sets up the best option as most unfavorable objective conditions.
- Optimistic rule sets up the best option as most favorable states of objective conditions.
- Optimality rule (developed by Hurwicz L.) is a combination of the two above and sets the best choice as a maximum variance of maximum-minimum economic consequences and economic consequences variance.
- Rule of proportionality or balance (developed by Bayes-Laplace) involves the optimal variant where the average impact is greatest.
- Regret minimization rule (developed by Savage L.) determines the best option as the option for the regret of not being chosen the best being the lowest.

Decision-making methods and techniques can be grouped according to the type of decision involved in three categories:

- Methods and techniques to optimize decisions under certainty: Electre, the global utility method, additive method, Deutch-Martin's algorithm, decision table, decision simulation;
- Methods and techniques to optimize decisions under uncertainty: technical optimistic, pessimistic technique (A.Wald) technique optimality (C.Hurwicz) technique proportionality (Bayes-Laplace) technique to minimize regrets (L.Savage);
- Methods and techniques to optimize decisions under risk: decision tree method, mathematical expectancy.

Decision table is an advanced form of block diagrams used by computer scientists. The table can be used both in automatic processing of information also when mechanized and manual processing.

## 5. Conclusion.

The use of decision methods and techniques, universal or specific, considering the situation to be resolved facilitates the foundation of managerial decision. Using methods and techniques of decision determines an increase in the degree of severity and efficacy of default decisions, differentiated in relation to the type of decision situations involved. Calling in a greater extent in decision trees and other probabilistic methods, the methods and techniques based on utility theory, methods and techniques of economic analysis was, significantly increases the degree of substantiation, and the applicability of decisions . Development of decision-making techniques was due to the necessity of obtaining good decisions.

Each manager has available a set of means (methods and techniques) that assists in making decisions. In light of these issues, it was found that higher education, each university has developed and perfected a type of decision making based on which works and which finally came to depend. Therefore, adopting a technical / new, is a change and a major challenge for managers who use them in extreme cases, when using the old ones, find a bug that consequential decision on the organization.

Such process knowledge, and decision making starts in practice and get finally all the practice, therefore, a decision designed, transposed document and its beneficiaries not put in practice is almost nonexistent. Result of the application so binding decision, following the decision maker to worry about exercising control on its creation, in order to ensure the conditions for achieving the goals of judgment. During prosecution and enforcement of the decision, the decision maker can make some corrections on its option, to put it in full compliance with their objectives and to remove, if possible, some negative consequences, which could not be predicted and removed in version chosen.

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