

IMPROVING DECISIONAL PROCESS ON STRESS MANAGEMENT IN THE WORKPLACE - THE DECISION TREE MODEL

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The main objective of the present article is to improve the decisional process on stress management using the decision tree model.

The organizational stress has been defined in different ways as people are different and the feelings, the behaviour; the physical symptoms and so on are so different. In fact, the decision trees are used to select the best course of action in situations where uncertainty occurs about the ways to choose the best management regarding stress level of employees. The cost of employee problems due to stress at work is currently extremely high. During the research we have noticed that stress can be minimized when the role of employees in an organization is clearly defined and if management steps are based on good model, such as the decision tree model.

In order to achieve the objectives that have been set, we offered an explanation of the model because several steps are involved in the building of a decision tree. We elaborated a practical application of decision tree analysis regarding stress management in the workplace and we proposed some suggestions to keep stress to a minimum level.

We mention that this article it is just a way to start solid research in stress management at work based on decision tree model.

Keywords: stress, decision tree model, management, solution, organization

1. Introduction

The purpose of this paper is to find a new and improved way of working without stress, based on decision tree model. Absenteeism in the workplace can have a severe impact on organizational management, co-workers and individual, also. Absence from job implies a high cost of replacing the absent worker and the loss of productivity due to this replacement. Finding the best decision, it can be implemented in the management policy to optimize the costs of employee

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absenteeism. The first researcher of the physiological consequences of stress has been Hans Selye. The concept of occupational stress first came up in 1976 and it was described as nonspecific response of the body to any demand [1].

Work can have negative effects when stress occurs. Throughout all the years of research on organizational stress we have heard about a lot of problems that generate stress: excess demands, too much responsibility, time pressures, unclear expectations, deadlines, technological changes, long hours at work, and bad conditions of work, etc. [2].

Job stress can be defined as the harmful physical and emotional responses that occur when the requirements of the job do not match the capabilities, resources, or needs of the worker. According to the National Institute for Occupational Safety and Health view, exposure to stressful working conditions (called job stressors) can have a direct influence on worker safety and health [3].

Stress is a common and inevitable component in the lives of every individual, regardless of race or cultural background [4].

The decision is the result of the processing of information by a person or a group of people and is the essence of the management function. Decision situation can be characterized by the uncertainty of the consequences of each alternative submitted.

The decision tree is a diagram showing the action options and possible outcomes for each alternative in the decision selection process [5].

To improve the decision - making process regarding the management of stress at work are proposed decisions and allocate uncontrollable events that may influence the outcome of the decision. Decisions may change due to uncontrollable events (states of nature) [6].

A decision tree consists of the following elements: decision points (decision node), alternatives, opportunity points (result/ opportunity node), natural states (uncontrollable events), and earnings [7].

In the view of Herbert A. Simon, management is a continuous process of making rational decisions. This process is structured in three stages: information (problem identification, problem formulation), design (goal setting, formulation and development of alternatives), and selection (choice of action alternative through evaluation). According to Simon's theory, any managerial action is a continuous process of decision making [8].

A problem is defined by the existence of decisional alternatives, some states of nature (events), and some tables of results obtained by selecting an alternative in a specific state of nature [9].

In our everyday lives stress appears sometimes in excess quantity and can cause a lot of effects on our body, our mind and can affect us psychological. According to Beehr & Newman (1978) "Stress is a condition arising from the interaction of people and their jobs and characterized by changes within people that

force them to deviate from their normal functioning". Causes of stress at workplace are: job insecurity, control at work, working hours, over load of work, managerial style, job expectations, unclear tasks jobs, lack of supervisor support, and so on [10].

2. Methodology

The present case study is an application of the decision tree model.

This case study consists of an application of the decision tree model to improve the decision process on stress management in the workplace we proposed the following decisions (decision alternatives):

- the role of employees is clearly defined (D1)
- the 8h / day schedule to be observed (D2)
- monthly bonuses for motivation (D3)

The uncontrollable events that can influence the results of the decision-making process are:

- changes at the top management level - another manager (E1)
- restructuring due to a global crisis (E2)
- favourable economic conditions (E3)

For the application of the decision tree model in the case study on improving the decision process related to organizational stress management, the following application was proposed below. The values were proposed based on the research in the field and on our experience concerning the studies carried out on the basis of the stress questionnaires that highlighted in particular the characteristics mentioned below.

In order to improve the decision-making process regarding the management of stress at work, 3 decisions and 3 events were proposed.

Using the model of the decision tree we will find out which is the optimal decision by applying: the maximum-minimum criterion, the maximum-maximum criterion and the minimum-maximum criterion (if the probability of occurrence of each event is $P(E1) = 30\%$, $P(E2) = 20\%$ and $P(E3) = 50\%$).

3. Results

In order to find the best decision using the maximum-minimum (max-min) criterion, the minimum values of each decision must be determined as showed in table 1. To find the best solution according to this criterion, the highest value in the table must be found. For example, for decision D1 $\min(3, 3, -4) = -4$ and the same calculated for others two decisions. We can observe that the maximum value of -3 corresponds to decision D2. So, the optimal solution is D2.

Table 1.

Dates for maximum-minimum (max-min) criterion

| DECISIONS | EVENTS THAT CAN INFLUENCE THE RESULTS | | | Max-min criterion |
|-----------|---------------------------------------|----|----|-------------------|
| | E1 | E2 | E3 | |
| D1 | 3 | 3 | -4 | -4 |
| D2 | 0 | 2 | -3 | -3 |
| D3 | 2 | 5 | -7 | -7 |

The next step is to find the best decision using the maximum-maximum (max-max) criterion, so the maximum value of each decision is chosen as per table 2. For example, for decision D1 max (3, 3, -4) = 3 and similar calculated for decisions D2 and D3. We can observe that the maximum value of 5 corresponds to decision D3 which is the optimal solution.

Table 2.

Dates for maximum- maximum (max-max) criterion

| DECISIONS | EVENTS THAT CAN INFLUENCE THE RESULTS | | | Max-max criterion |
|-----------|---------------------------------------|----|----|-------------------|
| | E1 | E2 | E3 | |
| D1 | 3 | 3 | -4 | 3 |
| D2 | 0 | 2 | -3 | 2 |
| D3 | 2 | 5 | -7 | 5 |

Another step is to find the best decision using the minimum-maximum (min-max) criterion, so the maximum value of each uncontrollable event is determinate as per table 3. For example, for event E1 (3-3=0, 3-0=3, 3-2=1); E2 (5-3=2, 5-2=3, 5-5=0); E3 (-3-4=1, -3-3=0, -3-7=4).

We can observe that the minimum value of 2 corresponds to decision D1 and in this case the optimal solution is D1. The results are showed in table 3 from below.

Table 3.

Dates for minimum- maximum (min-max) criterion

| DECISIONS | EVENTS THAT CAN INFLUENCE THE RESULTS | | | Min-max criterion |
|-----------|---------------------------------------|----|----|-------------------|
| | E1 | E2 | E3 | |
| D1 | 0 | 2 | 1 | 2 |
| D2 | 3 | 3 | 0 | 3 |
| D3 | 1 | 0 | 4 | 4 |

Using the given probabilities allocated to nodes 2, 3 and 4 the values can be calculated:

$$\text{Node 2: } 0.3 \times 3 + 0.2 \times 3 + 0.5 \times (-4) = -0.5 \quad (1)$$

$$\text{Node 3: } 0.3 \times 0 + 0.2 \times 2 + 0.5 \times (-3) = -1.1 \quad (2)$$

$$\text{Node 4: } 0.3 \times (2) + 0.2 \times 5 + 0.5 \times (-7) = -1.9 \quad (3)$$

The results show that the optimal decision is D1. To solve the application we used the Lucidchart - online software to generate the diagram of the decision tree as per figure 1. [11]

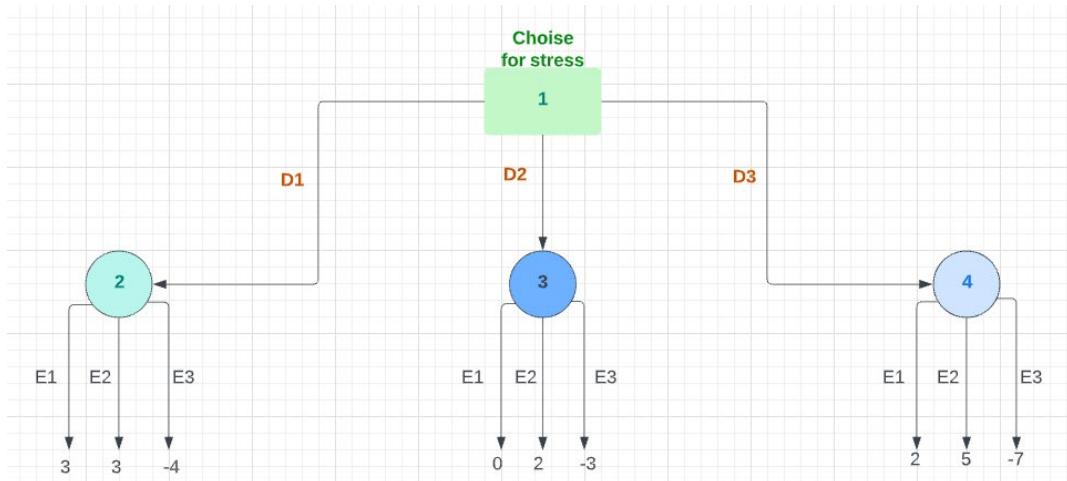


Fig. 1. Diagram of the decision tree

In our opinion, if the role of employees is clearly defined, as per results of decision tree model, we can deal with stress at work.

Stress is an important factor for the employees in any organization because it affects the productivity and the performance. We can combat stress with simple steps like: talking to a close one, avoid habits, get more sleep, facilitating training in stress management to teach how to maintain the work-life balance, etc.

As per figure 2 we can see the factors of stress at work and the factors of stress in our private life. [13], [14]



Fig. 2. Factors of stress

The solution selected based in the decision tree model will improve the decisional process on stress management because we found out which are the best solution (regarding costs, human resources, etc.) to combat stress. For example, applying the decision tree, we found that the option that can minimize stress is if that each employee has clear tasks and work strictly on them to avoid stress. Therefore, the decision tree, in this case, helps us in taking the best decision that leads us to achieve the proposed goal.

The cost of employee as per Colonial Life survey [15] related that 20% of employees spend more than five hours a week thinking about stressors, others 50% about 1-5 hours and on a larger scale, costs billions. A report from Towers Watson said that the most obvious cost is that with absenteeism and low productivity. [16], [17]

4. Conclusions

The study is a novelty because it is about of new proposed application (using decision tree model) to find solutions in maintaining the level of stress among employees at a low level.

This study is a new step in finding such a solution on the enterprises. As per decision tree model the best solution for this case is the decision D1.

The cost of employee problems due to stress at work is currently extremely high. Therefore, we try to find solutions to solve this problem at work.

The decision tree results allow cost reduction because the diagram helps us in choosing the option that employees stress affect the organization and trying to manage the situation and to ensure that the people can perform without stressful conditions.

There are many ways to reduce stress and to work in non-stressful conditions, if we refer to physical, social, mental and workplace conditions. According to the management policy, we have to propose a lot of decisions, analyse them and choose the most advantageous one.

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