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ANALYSIS OF DECISION-MAKING SKILLS DURING DISASTER MANAGEMENT OPERATIONS

DÖNTÉSHOZATALI KÉSZSÉGEK VIZSGÁLATA A KATASZTRÓFAVÉDELMI MŰVELETIRÁNYÍTÁSBAN

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Abstract

Damage elimination operations carried out by disaster relief interveners – whether the task is fire extinguishing, technical rescue, flood control or civil protection intervention - depend on the managers, in other words, on the preparedness of those who are entitled to make decisions. Decision-making skill is one of the most important skills in controlling damage elimination tasks, which also strongly influences the efficiency of execution. In Hungary, firefighting and technical rescue intervention tactics and management within organized frames has been developed based on a 150-year experience, furthermore, it has been largely shaped by technical, social and economic changes over the last few years. The skills of decision-makers have also undergone a continuous development as a result of continuous growth of the requirements imposed on them. Developing decision-making skills, managing challenges caused by ongoing changes, both are important, current tasks. The authors investigated the possibilities for developing decision-making skills. By publishing their results, their aim is to contribute to the efficiency of decision-making in operation management.

Keywords: *disaster management, operation management, decision-making, skills, training*

Absztrakt

A katasztrófavédelmi beavatkozó egységek által végrehajtott kárfelszámolási műveletek – legyen az tűzoltás, műszaki mentés, árvízi védekezés, vagy lakosságvédelmi beavatkozás – sikere nagyban függ az irányítást végzők, másképp fogalmazva a döntések meghozatalára jogosult személyek felkészültségétől. A döntéshozási képesség az egyik legfontosabb képesség a kárfelszámolási feladatok irányításában, amely erősen befolyásolja a végrehajtás hatékonyságát is. Magyarországon a szervezett keretek közötti tűzoltási és műszaki mentési beavatkozási taktika és irányítás 150 év tapasztalatai alapján került kialakításra, amely a technikai, társadalmi, gazdasági, változások hatására nagymértékben formálódott az elmúlt évek során. A döntéshozók készségei is folyamatos fejlődésen mentek át, a velük szemben támasztott követelmények folyamatos növekedésének hatására. A döntéshozatali készségek fejlesztése, a folyamatos változások által okozott kihívások kezelése, fontos, aktuális feladatok. Jelen cikk szerzői kutatásaik során a döntéshozatali képesség fejlesztési lehetőségeit vizsgálták. Céljuk, az eredményeik közreadásával hozzájárulni a műveletirányítás során meghozott döntések hatékonyságának növeléséhez.

Kulcsszavak: **k***atasztrófavédelem, műveletirányítás, döntéshozatal, döntési készségek, képzés*

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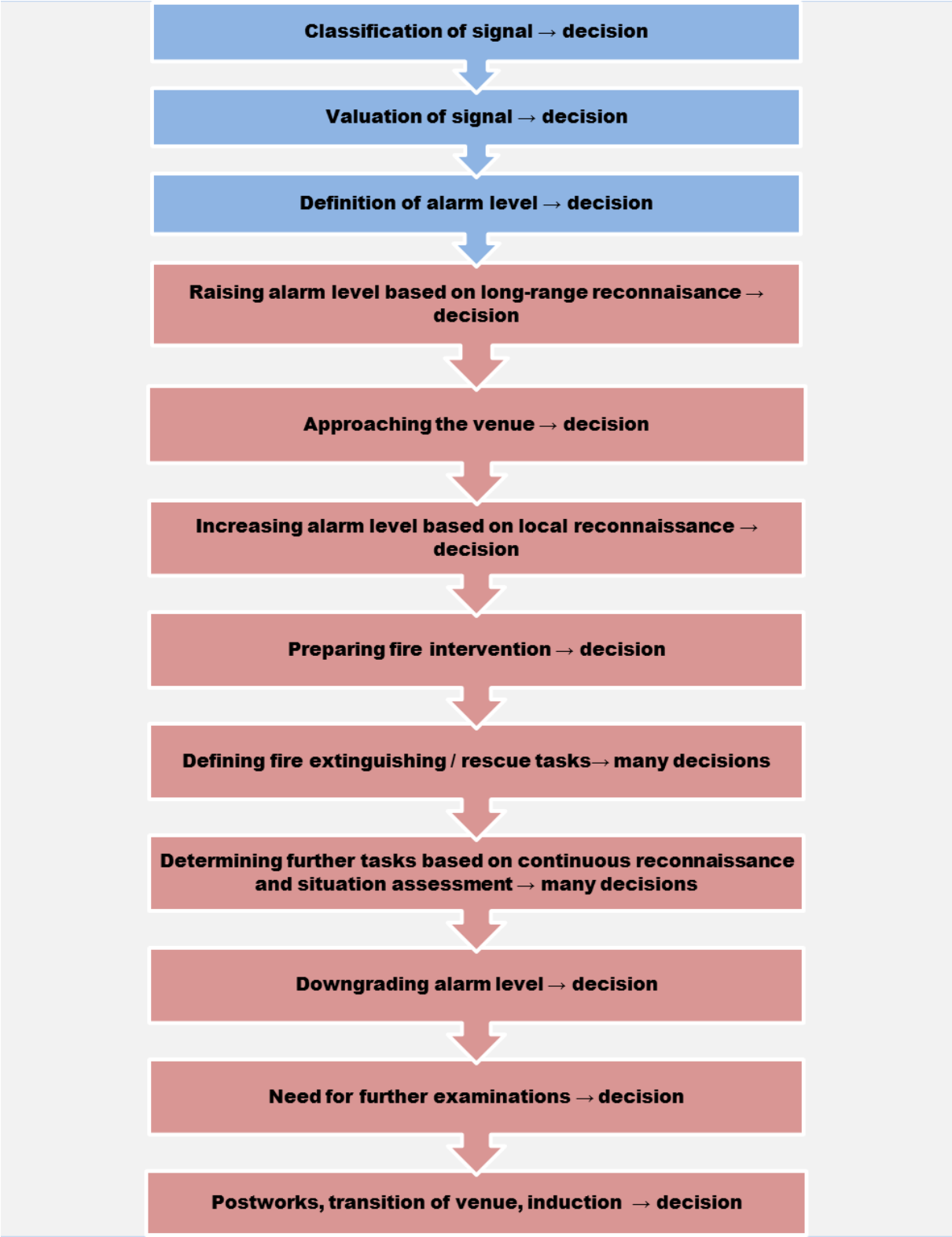
INTRODUCTION

In Hungary, an average of 40-60,000 interventions are being carried out by firefighting units of disaster management. In 2016, they had to handle 63,319 events [1]. Professional management is required in order to perform these complex tasks in a fast, efficient, and professional way – including in the presence of hazardous substances [2]. Therefore, the continuous development of decision-makers' decision-making skills is indispensable for maintaining the efficiency of damage elimination operations, so the subject is a current task. Decision theory, as a part of management and leadership sciences, has only a few decades in research history. The fact that it became a separate discipline, was redounded by the economic sector's need for reducing economic loss. Basically, former studies have investigated areas where decision-makers have more time to make long-term decisions than fire-extinguish and rescue managers who are under constraint of decision-making in few minutes [3]. The scope limits of this article do not allow us to examine all decision areas, so we analyze only decision-making skills associated with disaster management operations.

DECISION AS SYSTEM COMPONENT

During fire-extinguishing and rescue operations, people who take control of their work do not have enough time to prepare the appropriate decision. Normally, major decisions are made by decision management [4]. The operation management system is closed from the decision-making point of view, decisions are based on the decision-maker's preparedness, knowledge and experience. When deconstructing a damage, decisions combine a chain, the impact and outcome of each decision can greatly influence the next decision or decisions. Therefore, it is important to consider decisions and chain of decisions as a system, since the use of system approach and system-based thinking facilitate decision-making. In our case, a decisive factor is the experienced and well-qualified firefighter in evolving system approach. His decision would even be strongly supported if he could identify the likely consequences within a definable time. An important element of decision-making process related to system approach would be the assessment of consequences, but this can be realized only during and after damage elimination. Analysis of events and evaluation of implemented decisions should always be carried out in order to be able to use the gained experiences in future decision-making [5].

In Hungary from the 1st of January 2012, an integrated, nation-level disaster management system was established. Prior to 2012, Local Government Fire Departments which provided direct rescue services, operated as an institute maintained by local government. Fire alarms were handled here, the authorized person evaluated and decided about alert of forces and devices by himself, furthermore, he made fire-extinguish and rescue manager's decisions as well. In the new, integrated disaster management system, the evaluation of fire alarm and the determination of alarm levels are performed by the operation management service. After the alert of forces and devices, the actions to eliminate damage events are still managed by fire-extinguish and rescue manager and normally, he takes the related decisions also [6]. The following figure shows a more simple decision chain of a fire event. The blue-marked decisions are made by the central operation management, the red-marked decisions are made by fire-extinguish manager. There is a lot more to do in a complex damage elimination process, so it is worth thinking about how complex thought and concentration is needed to make the right decision.



1. **Figure**: Schematic diagram of decision chain (Source: Composition of the authors)

The person who directs damage elimination is also a determining element of the system, he perceives the event's complexity and he is able to recognize and influence the dynamics of system characteristics. Nevertheless, one of its prerequisites is a broad knowledge and decision-making ability. The essence of system approach is to understand exactly how the rescue manager affects the whole system and the units managed by him with his own attitude,

behavior, and problem-solving ability. In system approach, it is important for fire-extinguish and rescue managers to know tools and solutions which might support interveners' work, in addition, to use available resources in order to carry out effective damage elimination. The most important aspects of system approach are deep level of self-knowledge and high level of awareness in the perception of changing environment, both can be shaped by training and exercises [7]. Situation exercises, managing unexpected situations, coordinating multiple units simultaneously, all these improve system-based thinking.

CONNECTIONS BETWEEN DECISION-MAKING AND THE DECISION-MAKER'S PERSONALITY

The personality of the one who is managing damage remediation operations greatly contributes to the person's own skills. These skills and the manager's personality need to be developed parallel to the way of thinking. Personality development should be applied consciously instead of traditional training. In our opinion, the efficiency and effectiveness of decision-making are primarily determined by his personality, thinking, attitude; besides, his special skills will be based on these actors also. For this reason, becoming a better and more effective rescue manager is primarily the development process of personality, and the development of skills and knowledge is just the second step [8].

The key to personality development of leaders lies in raising awareness and evolving some basic attitudes and approach. The most important ones of these are system approach, responsibility, and decisiveness. Moreover, self-knowledge is one of the most important determinants of personality development. If self-knowledge needs to be defined with one word, self-knowledge is nothing more than self-understanding. It gives outstandingly significant questions about "who I am?" and "what I am?". According to Carver, self-knowledge is nothing more than the "individual's overview of components, boundaries, and possibilities of its own personality, an insight into the background and motive system of its own behavior, its ability to correctly judge its role and effect in human relationships" [8].

Self-knowledge can take place at different levels:

- The first superficial level is the level of knowledge about skills and abilities. This means acquired knowledge about our willpower, interest, stress, failure tolerance, etc.
- The second level is a deeper historical level and refers to experiences gained earlier (such as early childhood) about what they were and how they influenced the individual's current aspirations, feelings, intentions, and behaviors. This also concerns the harmony of behavior and intention, whether our actions fit our deeper desires, our goals.
- The third level is the social level of self-knowledge, about how we can meet the expectations we face in our various social roles, what others see, and how it matches our own image about ourselves [8].

Self-knowledge and personality development are the two sides of the same thing. Namely, personality development methods aim at enhancing self-knowledge of healthy people, as well as improving the individual's emotional and communicational skills [8].

SOME QUESTIONS ABOUT DECISION-MAKING AND RESPONSIBILITY

A conscious fire-extinguish and rescue manager is always responsible for his actions. As soon as the action is completed, it is immediately removed from his control and becomes the part of the outside world. All actions are precedents at the same time, as we create various precedents

during our actions. We have to be responsible for precedents we create which means obligation of taking responsibility.

Responsibility in the context of leadership personality development means that rescue managers are always responsible:

- For their own decisions, actions, and for the effects they have caused, for any negatives caused by bad decisions.
- For intervention units managed directly by him, and beyond the intervention, for caring about wider environment of his organization. He has to know that fire-extinguishing and rescue tasks do not stop at the level of deployment, as they are parts of a complex organization.
- Last but not least, he takes responsibility for his own improvement, consciously searches for feedback, for controls, and for all situations, for all damages, for practices and challenges which are considered as an opportunity for learning.

Recent research results explain the decision-making mechanism of those who face dilemma, thus, it is useful to investigate the issue for fire-extinguish and rescue managers as well.

Decisiveness means the ability to make "real decisions", which needs to be continuously developed through special training [9]. Real decisions can bring about decisive changes in units controlled by fire-extinguish and rescue manager, which can greatly assist or obstruct the successful elimination of the damage. Basically, being a fire-extinguish and rescue manager means taking on the responsibility of own decisions and their risk. Mechanisms of fire-extinguishing and rescue preparation can be planned for special training and exercises, it is advisable to investigate practices applied abroad, and through special comparative analyzes, to utilize the experience in domestic practice [10].

IMPROVING OPPORTUNITIES OF DECISION-MAKING SKILLS

Persuasion and personality development are the basis which skills, decisions and solutions should be built on during operation management. Today, there is a wealth of knowledge theory and a concrete tools, where their application is a key factor. In order to deepen the knowledge of fire-extinguish and rescue managers, starting points can be:

- Performance evaluation, feedback-based development, analysis of work performed during damaging events,
- Organizing motivating and inspiring trainings,
- The accurate knowledge and high-level application of support-developer IT tools (IT decision-support systems)
- Community-building of action groups, improving the intervening staff (knowledge of tools and systems for firefighting and technical backup)
- Conflict management and problem solving among the service group,
- Increasing the number of situational exercises and theoretical courses.

It would be important to create fire-extinguishing and rescue trainings which resemble actual situations of firefighting interventions, so that skills, tools and tactical steps actually used in later works, can be practiced, re-tried and mastered [11]. A fire-extinguish and rescue manager is able to develop his most intense resources, to use his internal resources, to reach the maximum of his creativity, efficiency and performance, only if a realistic intervention situation is performed, which will be analyzed and evaluated professionally. It is also important to handle unforeseen and sudden emergencies. We believe that situational exercises held on field can also be cited, and by treating and resolving them, the problem-solving skills can be improved of those who control waste management operations.

CONCLUSION

For processing and implementing the experience, the development of decision-making capabilities of persons managing damage elimination operations is an important task in disaster management's task system. The main purpose of fire-extinguishing and rescue trainings and practical courses would be to highlight events, experiences, decisions that may be of great professional interest. In our opinion, one of the biggest risk factors is the outcome of fire-extinguish and rescue manager's decisions during damage elimination.

In the case of special courses, it is expedient to investigate foreign trainings, development practices, special forms of education, and to carry out a comparative analysis, furthermore, to adapt and utilize the experience in domestic practice. Persuasion and personality development are the basis for building skills, fire-extinguish and rescue managers' decisions and solutions in a gradual manner.

SUMMARY

The world around us is constantly evolving, the damage elimination of disaster relief units is becoming more complex and difficult. The efficiency of damage elimination is largely influenced by the preparedness of operators and their decisions. The disaster management training is also continuously changing, together with its legal background which has been created recently. Trainings and further trainings should be, as far as possible, continuously broaden with the knowledge-based on precedents and related to the management of conscious and environmentally-friendly professional interventions. The increase in the requirements for decision-makers is also inherent in our social-economic development. Today, there is a wealth of knowledge theory and evident tools, their application makes an effective and key leadership. With our research, we would like to contribute to this process.

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