

UNDERSTANDING AND IMPROVING SAFETY CULTURE AS A PART OF THE OVERALL PROCESS OF TRANSPORT SAFETY MANAGEMENT

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Abstract: *Transport is a vital component of contemporary life. We cannot fulfill our daily routine without using cars, trucks, trains, planes and other means of transport. But at the same time many problems arise from transport. Perhaps the most important of them is connected with safety. There can be no doubt that the human factor in the shape of driver, pedestrian or manager is a key factor and a principal cause of many accidents and incidents all over the world. This article is concerned with problems associated with human behavior on the roads and streets and the relevant safety culture.*

Key words: *Transport, Safety, Safety culture, Traffic accident*

1. SOME FACTS AS AN INTRODUCTION

Transport is a vital component of contemporary life. We cannot fulfill our daily routines without using cars, trucks, trains, planes and other means of transport. A requirement for transport is one side of the coin. The other side is a problem that is simple to understand but not to solve - the increase in transport requirements and its effect on society.

It is well known that the world's population is increasing at an alarming rate. The world's car population is increasing more alarmingly. In 1970, there were 200 million cars in the world and in 1997, almost 600 million. Today there are more than 625 million motor vehicles in the world. If present trends continue this number will double in the next 30 years and will exceed 1.2 billion in 2030[1]. This enormous growth in the number of cars leads to many problems. One of the most serious is traffic safety which this article considers.

Statistics show that worldwide, every year, approximately 1.2 million people die as a result

of car accidents and more than 50 million are seriously injured [3]. The estimated annual cost of world road accidents is in excess of \$500 billion [2].

In the USA there are more than 40,000 traffic fatalities annually, almost 5 every hour. The injuries are around 2.5 millions, almost 300 every hour).

Every year in the EU, more than 40,000 citizens (43,000 deaths during 2007) lose their lives and other over 1.2 millions are injured. The total social costs exceed €160 billion. In the UK, the total number of deaths and serious injuries in road accidents are respectively around 3,000 and more than 25,000.

In Bulgaria the situation is similar. Each year nearly 1,000 people die and around 10,000 are injured in road accidents. Unfortunately, almost 50% of those injured become disabled for the rest of their lives. This is equivalent to almost three fatalities per day due to road accidents. With close to 125 road crash deaths per 1 million inhabitants, Bulgaria is 2 to 2.5 times higher than the best safety performing EU Member States

and 10 to 12 percent above the EU average. Compared with the average of other 11 new Member States (without Romania) Bulgaria is lower. The problem is that risk on Bulgarian roads has not decreased over time as it has in the other states.

2. INFLUENCING FACTORS AND MAIN CAUSES

There are many methods for the collection and reporting of traffic safety information and there are many approaches to classify the factors affecting safety and the causes of crashes. Although dependent on research aims and the issues to be resolved, a general classification of influencing factors can be made as follows:

- Human (subjective) factor;
- Technical factor;
- Environment factors (traffic organization and management, weather, etc.).

The immediate manifestation of a factor may be taken as cause of accident. It can be shown by statistics (not only about Bulgaria) that over 80 percent of road accidents are due to the human factor. The most frequent instances of the human factor, which could be identified as causes of accidents can be summarized as follows:

-*Driver distraction*, for example: fiddling with technical devices (mobile phone), talking with passengers, eating in the car, dealing with children or pets in the back seat, attempting to retrieve dropped items, reading, etc;

-*Driver inadequacy*: tiredness, illness, alcohol or other drugs, etc;

-*Driving errors (bad driver behavior)*: errors associated with inquiring about and reacting to traffic conditions and features, weather, road signs and obstacles, speed choice errors, errors connected with car controlling, etc;

-*Bad pedestrian (cyclist) behavior*: crossing roads or streets on non-allowed places, crossing intersection at a red traffic light, improper movement along the road and so on.

The errors mentioned above are an immediate manifestation of the human factor but the last has also an indirect influence over traffic safety having a certain effect on the technical factor. This effect is primarily related to:

-*Reliability of vehicles*. Here the efforts of the subjective factor are aimed at preventing mechanical failure (all activities associated with the repair and maintenance of vehicles to keep them in good working order). The passive means to ensure safety should not also be forgotten (air bags, seat belts, etc.);

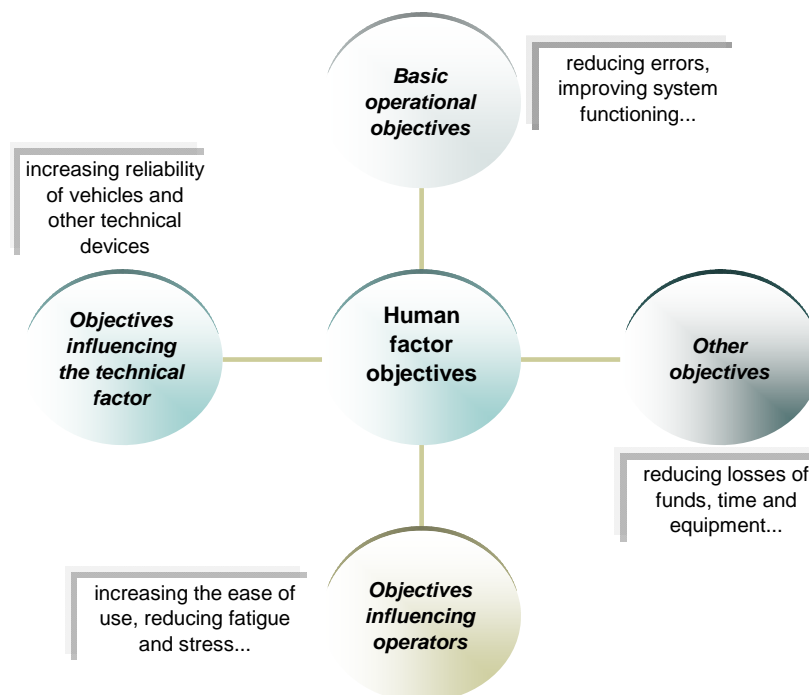


Fig.1.Human factor objectives

-*Road conditions.* Here are all activities in respect of both the active and passive road safety: road design and layout (road markings, road signs, visibility, etc.), road conditions (obstacles, holes, icy surface, others).

Of course, a similar classification in respect of main factors influencing safety (and human errors) could be done not only for road transport but also for other modes. Generally, the human factor has a significant role in safety management. This key factor has many objectives in the field of transport safety, the most important of which can be divided into four groups (Fig. 1). It is usually said that an individual has not enough understanding of safety when by certain actions or inactions or an inadequate relation to the groups mentioned above is shown. Recently, the term safety culture is very often used when speaking about human behavior concerning safety.

3. WHAT IS SAFETY CULTURE AND WHY IS IMPORTANT?

Before attempting to comment on traffic safety culture and its importance for daily life it is useful to consider briefly the meaning of the word culture. Of course, there are a variety of definitions but the next one gives a good idea for this term: "*Culture is a patterned way of thought and behavior that characterizes a social group, which can be learned through socialization processes and persist through time*" [4]. From this definition it follows that culture is inherently social, providing the system through which we are able to understand ourselves, the things (also events and peoples) around us and our relationship to them and the effect we may have on them. Generally speaking, it should be recognized that each social group has its own unique culture that consists of some general or special beliefs, values and norms of behavior. This is because the different groups differ in their geographical, ethical, educational, professional (occupational), linguistic, etc. nature.

There are two main trends in the examination of culture. The first one considers the culture as a *model of behavior*: the directly observed behavior of members of a society, including the outcome of their activities (performance, architecture, institutions, procedures, etc). The second trend indicates the culture as a *model for behavior*: a combination of socially transmitted psychic preconditions (socially shared knowledge and fundamental convictions) for the activities of

members of a society, required for making decisions and acting. At first sight there is only a theoretical distinction between the two trends. But from a practical point of view when management wishes to influence the culture it must change social structures and behavioral models, i.e. a *model for behavior perspective* would imply the change of fundamental psychic preconditions.

In the early 1980s the organizational science introduced the term *organizational culture*. Today it is assumed that a given organizational culture manifests itself in an organization's formal structures and processes, in the official and unofficial actions of its members, and in its culture supporting symbolic systems and concrete products [4].

Now, what can be said about safety culture?

The term safety culture was first introduced in 1986 after the nuclear reactor incident at Chernobyl. Nowadays, a proactive safety culture management is recognized as a priority in most highly regulated asset intensive industries. One of the most popular and most commonly used definitions about safety culture is the following: "*Safety culture is a set of values, shared by everyone in an organization, which determine how people are expected to think about and approach safety*". There are three interrelated key aspects in respect of safety culture:

-*Individual psychological*: related to individuals' (staff) safety attitude (understanding, perceptions, values, etc.);

-*Organizational*: associated with safety related activities, actions and behavior of staff;

-*Operational (situational)*: connected with organizational policy, standards, management systems, procedures, etc.

There are very few cases of serious accidents where the immediate cause can be uniquely and directly identified, for example: technical failure, faulty design, human error, insufficient or improper training, etc. However, each more detailed investigation usually finds the organizational safety culture to be an underlying cause connected not only with the accident but with many other safety problems within the system (organization) concerned. There is no doubt that organizational safety culture is of great importance. It takes into account how individuals within any group think, discuss, understand and act to ensure safety. Furthermore, there is no doubt that within an organization or social group, safety culture is a shared responsibility. But who is responsible for its creation and management?

The answer is that it is the leaders' responsibility. The leader can be any manager (associated with safety) for a "closed" system (for example: a company) or even for an "open" system (for example: road traffic safety).

4. TRAFFIC SAFETY CULTURE – ESSENCE AND PROBLEMS

For many people traffic safety culture is one of those terms that seems too abstract to be correctly understood. Traffic safety culture is a very serious and, at the same time, a very complex problem. It is connected with the correct behavior of each member of society to ensure safety when driving, cycling or simply walking on roads and depends on feelings, knowledge, skills, experience and even emotions. The point here is that most members of society feel much more satisfied and comfortable when talking about new cars and their features instead of improving their ability to behave safely. The result is obvious: an enormous number of accidents with so many deaths and injuries involved. With all this as a foundation let us identify some key features of the traffic safety culture and problems related in Bulgaria.

Profound indifference about traffic safety problems. The longstanding very low level of traffic safety appears to have put society and state to sleep. Accidents involving death and injury occur and media inform us about them. This seems to make little or no difference to peoples' attitude to road safety. As if intentionally drivers continue at high speed, pedestrians cross the intersections at red lights and the state does not seem to care about road condition and other safety problems.

Lowered control. Principally the law has always been a basis for a good culture because it expresses society's values and expectations. In respect of road traffic, it establishes formal rules for the safe use of public roads and infrastructure and defines both organizational and individual responsibility. It can be said that traffic law in Bulgaria is good but at the same time the control carried out by the traffic police who are associated with its upholding deserves criticism. Incompetence, indifference, corruption, etc, are usual and obviously provide a poor educational example (behavioral effect).

Weak training. There are many companies in Bulgaria which specialize in driving training. But the education (both theoretical and practical)

is not qualitative enough and this is a general public opinion. Future drivers are not provided with education concerning safety philosophy and culture. A knowledge of traffic rules and some information in respect of the automobile as a technical device is considered to be enough for a driver. But it is not and the large number of accidents proves it.

Specific Bulgarian temperament. Bulgarians are known as hot-tempered people. The history shows that many wars were won thanks to the typical Bulgarian feature of impetuosity. Unfortunately this impetuosity is very often a part of their driving behavior. Thus, sometimes road traffic turns to a very dangerous and senseless war.

Culture variation. The general culture differs across the country and this fact has its own effect on safety culture. For example, as a whole the rural residents are more conservative and uninformed, less educated, more independent, and less willing to accept new ideas or to keep traffic rules than urban residents. This is why seat belt and infant seat use typically is lower in rural than in urban areas. Furthermore, there are many more drunk drivers in rural areas than in urban ones. The safety culture varies in respect of the age of road users. Traffic participants who are around 20–24 years old are less disciplined. This is illustrated by the serious number of accidents occurring to of drivers of this age group.

5. CONCLUSION AND DISCUSSION

Some work has been done by the Bulgarian government in recent years to improve traffic safety. Unfortunately, it is not enough and the road safety level is still very low and there is a widespread opinion that this unchangeable situation exists principally as a result of the very low safety culture of Bulgarian society as a whole. A radical initiative concerning both the understanding and improvement of traffic safety culture is necessary but this will be very difficult. This is primarily due to the need for individuals to change their values, behavior and way of thinking and for organizations to change their policies, practices, priorities and resource allocations. In other words the whole of society needs to change its way of understanding and thinking about traffic safety. The most important and urgent problems can be addressed by the following measures:

-Education and training improvement connected with obtaining a driving license;

- Improvement of traffic laws and rules (including higher fines);

-Increased control implemented by the traffic police and other governmental organizations (including more effective measures against corruption);

-Encouragement of scientific research into traffic safety (including safety culture);

-Information, communication and media improvement associated with safety culture (including adoption of good practice in the area of safety culture in other countries);

-Development of opportunities to encourage citizens to become involved in the improvement of traffic safety;

-Establishment of a long-term strategic plan in respect of traffic safety.

The measures described above will be difficult to achieve and are often underestimated or misunderstood, but they can be implemented and the traffic safety culture can be changed. There are both positive achievements such as

increased use of seat belt and child safety seats, etc, but there are also examples of a lack of progress. Despite measures taken almost nothing changed in respect of driving after alcohol consumption. But the setbacks should be overcome and the foundation for this is a good traffic safety culture of each member of society when is on the road.

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РАЗБИРАНЕ И ПОДОБРЯВАНЕ НА КУЛТУРАТА ПО БЕЗОПАСНОСТТА – КОМПОНЕНТ НА ОБЩИЯ ПРОЦЕС ЗА УПРАВЛЕНИЕ НА ТРАНСПОРТНАТА БЕЗОПАСНОСТ

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ОБЕДИНЕНО КРАЛСТВО

Ключови думи: транспорт, безопасност, култура на безопасността, пътна катастрофа

Анотация: Транспортът е жизнено важен компонент на съвременния живот. Не можем да се справяме с ежедневните си задачи без да използваме автомобили, камиони, влакове, самолети и други превозни средства. Същевременно възникват не малко свързани с транспорта въпроси, най-важният от които е безопасността. Без съмнение човешкият фактор - шофьор, пешеходец или ръководител - е от ключово значение за многобройните катастрофи и инциденти по целия свят. В тази статия се третира въпроси, свързани с човешкото поведение по пътищата и улиците, както и важната култура на безопасността.