

Evaluation of Occupational Safety Culture in Construction Sector in the Context of Sustainability

Mursel Erdal^(✉), Nihat Sinan Isik, and Seyhan Firat

Civil Engineering Department, Technology Faculty, Gazi University, Ankara,
Turkey

{merdal, nihatsinan, sfrat}@gazi.edu.tr

Abstract. Construction sector is one of the sectors where occupational-work accidents are highest. A way to minimize accident ratio in this sector is to manage the subject of occupational health and safety beyond the legal necessities. In this study, necessary precautions that company management has to take are explained for the development of safety culture in construction sector and they are evaluated.

Keywords: Occupational safety culture · Sustainability · Construction sector
Occupational health and safety

1 Introduction

Turkey is a developing country and therefore its requirements are increasing. As in the case of other developing countries, construction sector is the main sector.

All infrastructure and life sustaining structures like dams, energy producing plants, roads, hospitals, airports, city spaces, and factories are built by construction activities. It can be stated that the share of construction sector is about 30% in gross national product if all construction sector and related sectors taken into account. Construction sector is the demand creating sector for sub sectors which are more than 200. Construction sector is the main locomotive sector of economy because no other sector than construction sector can create this much direct or indirect effects [1].

One of the most important problems of construction sector is occupational work accidents. Every year about 1.2 million people lost their lives due to occupational work accidents around the world. Occupational work accidents continue to be one of the main problems in Turkey [2].

In Turkey, a total of 241,547 number of accidents occurred and 1252 people have lost their lives due to these accidents in 2015 according to statistics of Social Security Institution (Table 1) [2].

A lot of legal and institutional arrangements have been made to present occupational work hazard from past to today. However it can be understood from statistics that these arrangements are not successful enough. This situation implies that it is not enough to take occupational accidents as a technical issue alone. It is inevitable that

human factor should be taken into account as much as technical issues in working life. It is stated that 80–90% of occupational accidents are occurred due to unsafe behaviour of working personal. For this reason, in addition to legal necessities, development of safety culture should be considered as an important factor for the prevention of accidents [3].

Table 1. Occupational accidents and death tolls in Turkey in 2015 [2]

Activity code	Groups of activity	Work accident number			Number of death tolls		
					Number of work accident		
		Male	Female	Total	Male	Female	Total
41	Building construction	14,980	85	15,065	239	0	239
42	Construction of structures other than buildings	7861	42	7903	124	0	124
43	Special construction activities	10,301	92	10,393	110	0	110
Total of construction activities		33,142	219	33,361	473	0	473
Total of all sectors		206,922	34,625	241,547	1219	33	1252

2 Theoretical Foundations

2.1 Occupational Safety Culture

Concept of occupational safety culture was first used in a report which was prepared after the nuclear accident occurred in Chernobyl in 1986. This report indicates organizational errors and infringement of working personal play important role [4]. Either in Chernobyl accident or in other important accidents “safety culture” arise as a key factor to explain the role of human factor for providing security especially where risk is high [5–8].

There are a lot of definitions related with safety culture done by various scientists and researchers. However this concept was defined as a product of behavioural, competence, attitude, value patterns of individuals and groups who decide to institution’s efficiency of health and safety programs and their persistence in practices, according to International Atomic Energy Agency in 1991 [9].

According to Cooper [10] safety culture is a product of interaction between individual, work and organization. Uttal [11] defines safety culture as “The interaction between control systems which produce behavioural norm and organization”. According to these definitions safety culture has two dimensions. These are values, attitudes believes related to safety; controls, applications structures which are used to improve safety of organization [12].

Aytaç [13] in her study handled occupational safety as a cultural subject and she remarked the importance of the development of safety culture for the development of safety culture for the prevention of occupational accidents.

Although many companies organize trainings to increase occupational safety and to assign responsible personal they could not reach intended occupational safety standards. Authorities have attributed the reason of not reaching intended-safety levels to lack of safety culture [14].

There are a lot of factors affecting the safety culture. One of these factors is the social culture in which companies are living in. Interest of workers to occupational safety and their sensitivity are affected from the properties of social culture. Creation of organizational culture can be easy or difficult depending on the social cultural properties [15].

If it is thought that occupational accidents create important losses for both country and organizations, one of the most important subject is to develop a safety culture. However there are a lot of factors which should be firstly actualized before developing safety culture in organizations [16].

Basis of creating a safety culture in organizations is the perspective of management to safety culture. According to the article number 5 of “Regulations related with the methods of training of working personal related with occupational health and safety” which was entered into force in 05.13.2013 at 28,648 numbered Official Gazette, management is supposed to take necessary precautions to generate healthy and safe working environment [17].

2.2 Requirements of Management to Improve Occupational Safety Culture

Construction companies in the sector should adopt an understanding in which organizational standards are continuously developed in their applications. Informing employees, sharing information about the changes in legislations using an effective communications system, objectives of occupational health and safety should become a company culture.

Occupational health and safety system should be supported by giving information, control and improvement efforts. Structure of occupational health and safety comities, employee representatives, assignment of occupational health and safety experts and workplace medical doctor, risk analysis, fire drill, emergency action plan issues should be managed according to legal regulations. Aims of occupational health and safety and performance results should be controlled periodically and these should be evaluated in occupational health and safety board’s collective agreements signed in union should cover occupational health and safety subjects because of the importance of personal health and safety. Protective measures, reporting of illnesses and accidents, occupational safety rules to be followed should be organized within the scope of collective agreements. Employer should organize training activities to increase the level of knowledge and consciousness.

Employer should aim zero accident and should aim its sustainability. The most important tool to achieve this goal is systematic site controls. A methodology should be developed for foreseeing employees to take precautions when there a danger in working environment during site control. Improvement methods should be developed against the inconsistencies defected at the end of site controls and they should be

applied as soon as possible. Number of control teams should be determined according to the size of construction site. In this context, it will be important to monitor and record personal occupational safety performance.

Tools and activities such as verbal instructions, training and warning signs must be used, near miss events should be reported, reporting culture should be wide spread, and it must not be forgotten that the creation of safety culture is a long strategy requiring a constant effort and dedication, for developing safe behaviours. It is necessary to clearly explain to all employees the necessity of recording not only accidents but also near miss events. It would be possible to develop a personal profile that shows and sustains exemplary behaviour in environmental and occupational health issue that achieve targets that exceed these set by values that respect environment and environmentally friendly standards that comply with legal legislations.

Employer should be evaluate new practices arising from technological developments in the context of occupational health and safety culture. He has to perform necessary studies in order to remove the risks and he has to adopt corrective and preventive actions against risky situations by evaluating the results. Employer must make analyses for the accidents from occurring according to the results of the accident analysis.

Management should provide a safe, secure and motivating working environment. It has to be proven that it has been acted with the aim of being fair and equitable work place where the best standards are applied in occupational health and safety, where employee rights are protected and supervised, skills are developed.

Management should arrange end of year meetings, should consider the expectations and thoughts of the employees at these meetings. Management should constantly monitor and improve occupational health and safety application by making necessary improvements in line with management organizational needs, technological developments, changing regulations and employees' expectations.

Management has to carry out a series of in house training and education programs to improve talents and skills of employees. These programs should be organized according to defined procedures and policies and employee needs. The program should improve occupational health and safety, improve workforce productivity and should be sustainable. New employees are required to adapt quickly to the organization and be able to get the information they need in a fast and accurate manner with the help of effective guidance process.

A risk management unit should be established to identify and manage the potential risks that company may face. This unit should identify risks related to occupational health and safety as well as investment and business based risks under the context of risks management. Risk analysis should be performed in the context of occupational health and safety, risky subjects should be identified and this process should be managed.

3 Results

Construction companies must ensure that both the employees and the subcontractors contribute to this process by making security cultures as an indispensable part of their working life. Security culture should be made sustainable by integrating employees

into decision making, implementation and business process. Apart from all the efforts that the management has taken to create a security culture in the company and the goals it has taken, it is also very important for the employees to take contribution and responsibility. All personal working in the company will be more interested and involved in health and safety studies in the workplace when they are aware of their responsibilities for preventing accidents and injuries.

References

1. Türkiye İnşaat Sanayicileri İşveren Sendikası (2016) İnşaat Sektörü Raporu, Ankara, Turkey (in Turkish)
2. http://www.sgk.gov.tr/wps/portal/sgk/tr/kurumsal/istatistik/sgk_istatistik_yilliklari
3. Aytaç S (2011) İş Kazalarını Önlemede Güvenlik Kültürünün Önemi (1. Bölüm), Türkmatal Dergisi, 147: 30-33 (in Turkish)
4. The Post-Accident Review Meeting on the Chernobyl Accident (1986) Safety series no. 75-INSAG-1
5. Cox S, Flin R (1998) Safety culture: philosopher's stone or man of straw? Work Stress 12(3):189-201
6. Dursun S (2012) İş Güvenliği Kültürü – Kavram, Modeller, Uygulama, Beta Yayınları, İstanbul, Turkey (in Turkish)
7. Dursun S (2011) Güvenlik Kültürünün Güvenlik Performansı Üzerine Etkisine Yönelik Bir Uygulama. Ph.D. thesis, Uludağ University, Institute of Social Science, Bursa, Turkey (in Turkish)
8. Demirbilek T (2005) İş Güvenliği Kültürü, Legal Yayıncılık, İzmir, Turkey (in Turkish)
9. The Safety Culture (1991) Safety series no. 75-INSAG-4
10. Cooper MD (2000) Towards a model of safety culture. Saf Sci 36:111-136
11. Uttal B (1983) The corporate culture vultures. Fortune 108(8):66-72
12. Reason J (1998) Achieving a safety culture: theory and practice. Work Stress 12(3):293-306
13. Aytaç S (2011) İş Kazalarını Önlemede Güvenlik Kültürünün Önemi (2. Bölüm). Türkmatal Derg 148:36-39 (in Turkish)
14. <http://docplayer.biz.tr/7991499-Peryon-towers-watson-is-guvenligi-ve-isci-sagligi-arastirmasi-2012.html>
15. T.C. Cumhurbaşkanlığı Devlet Denetleme Kurulu (2008) Tersanecilik Sektörü ile İş Sağlığı ve Güvenliği Açısından Tuzla Tersaneler Bölgesinin İncelenmesi ve Değerlendirilmesi, Ankara, pp 356-358 (in Turkish)
16. Akalp G, Yamankaradeniz N (2013) The importance and the role of the management to create the safety culture on the companies. J Soc Secur 3(2):96-109
17. <http://www.resmigazete.gov.tr/eskiler/2013/05/20130515-1.htm>