International Journal of Scientific and Technological Research
ISSN 2422-8702 (Online)
Vol 4, No.9, 2018

Evaluations of Construction Sites by University Students Interning In Construction Sector In Terms Of Occupational Safety

Ramazan Kayabasi (Corresponding author)
Tomarza Mustafa Akincioglu Vocational College, Kayseri University
Cumhuriyet District. Sehit Uz. Cvs. Deniz Aydin str. No: 5 38900 Tomarza, Kayseri / Turkey
E-mail: rkayabasi@erciyes.edu.tr

Ahmet Sener
Tomarza Mustafa Akincioglu Vocational College, Kayseri University
Cumhuriyet District. Sehit Uz. Cvs. Deniz Aydin str. No: 5 38900 Tomarza, Kayseri / Turkey
E-mail: ahmetsener@erciyes.edu.tr

Abstract
The construction sector is a comprehensive and employment-oriented sector with numerous business lines. Construction sites do not resemble fixed workplaces due to the constantly changing working profile. In addition, due to the fact that the business environment in the construction sector has a constantly changing structure, the provision of occupational health and safety is only possible with a professional approach. In this study; surveys were conducted for university students studying in construction associate and undergraduate programs. Students are required to evaluate workplaces or construction sites in terms of occupational safety during the internship period. In this study conducted for 150 students, it is aimed that the participants will be able to monitor the environment, define the danger and risk. They were asked to evaluate their field of work for thirty days. In this context, the current occupational safety at work sites was evaluated with the view of 150 students who took Occupational Health and Safety course. It is understood that students who have occupational knowledge and who have taken Occupational Health and Safety course can conduct workplace environment monitoring, identify hazards and risks. As a result of the studies and evaluations, it is seen that Occupational Health and Safety course provides important contributions to the students' safety culture. It will be beneficial for our country and for humanity to improve the understanding of taking measures before accident instead of paying for the accidents and the negative effects of the results.

Keywords: Occupational Health and Safety, Workplace Environment Monitoring, Work Accident and Occupational Disease

1. Introduction

Mankind has been constantly working on building works to meet the need for housing. In the early ages, the needs of mankind were met by basic and simple self-contained accommodation. From the past to the present, modern construction has started and continues to develop according to the needs of human beings. Due to the developments in the sector, simple and single storey buildings have become complex and multi-storey. Developments in the sector have gained momentum due to economic prosperity. These changes are seen in the housing sector, but also in bridges, tunnels, workplaces and special types of buildings. Depending on the level of development of countries, there are continuous changes and new developments in all branches of the sector.

Countries' construction sectors; when the size and potential of the sector are examined; has a great importance in terms of economy. The construction sector is a locomotive sector that employs more than 200 sub-branches and provides product exchange. The construction sector has a place in the GNP of countries at about 30% levels with the sectors it is affiliated to.

When the construction sector employment data is analyzed; the sector has an important place in terms of the number of employees. Construction sector which has a changing and developing structure has a high

employment potential. Employed employees are employed in various branches of the sector according to their profession and mastery. The working conditions of the workers working in the construction sector have different characteristics than the working conditions of the workers working in the factory environment. Construction sector starting from the beginning of the project; It has a continuously changing workplace environment until the project is completed. The fact that the workplace environment has a variable structure indicates that the workplace environment supervision should be done continuously against the risks that the employees will face.

Due to the seasonal conditions of the construction sector; the number of temporary workers is over 50% of the total of the employees. Therefore, migrant workers are working intensively in the sector. The vast majority of sector employees are male workers. The majority of workers in the construction sector are paid and salaried workers who work for someone else. Due to the presence of subcontractors in the sector, the employees are constantly changing. For this reason, informal employment rate is 55%. The level of education of the employees is low except for those in the management team. Turkey Construction sector employee training status of employees without completing compulsory education rate is 75% according to the data. As the level of education decreases, it is known that the employees are exposed to more risk due to their work [1, 2, 3, 4, 5].

Some of the workers employed in civil works are employed within the company and some of them are employed by using the service procurement method. Employees within the company are fixed registered employees. The persons employed by the service procurement method are constantly changing, although there are no fixed persons. Due to the fact that the employees in the sector are subject to daily changes, dangerous behaviors are more common and it becomes difficult for employees to be aware of the dangerous situations encountered.

Some of the employees in the construction sector are office workers while the other part is field workers. Due to the seasonal conditions in the winter season, field work is at a standstill. The majority of the employees of the field work have to work in temporary status. Therefore, temporary workers working in construction works; they live in places where they work seasonally. Workers who are away from their families and stay in temporary shelter places are affected psychologically and socially due to their negative conditions.

According to data for 18 years between 1992-2009, the total deaths in the construction sector and the accident resulting in permanent incapacity compared with 9.4% for all sectors is observed that corresponded to 26.7% in Turkey. Although a decrease in the number of occupational accidents has been observed in the years, it is observed that the accidents that resulted in death and permanent disability in the construction sector did not decrease compared to the accidents occurring in other sectors [6].

All from accidents occurring in many countries like Turkey can not be recorded. This situation occurs when you compare the accident records of developed countries and developing countries with their population. If you are unsure of the accuracy of work accidents and occupational diseases, you will have difficulty in reaching your goals. Although several million more than the population of Germany from Turkey accident notification ratio is more than 10 times. The fact that the data does not reflect the facts is the problem of the whole world together with the developing countries [7]. Although Turkey has started to grow quickly with the right momentum to the level of developed countries experienced the death rate due to accidents at work are high. According to 2015 data given in Figure 1 as a result of work accidents in Turkey in 1252 working life was losing EU28 countries as a result of accidents at work 3709 employees lost their lives.

Turkey in the field of university education in the graduation requirements of the technical program students; There is an internship application. The students who have higher education in the field of construction take the required internship course and participate in the practices during the period determined in the field. During the internship period, they carry out the tasks given in the fields they work with. During the internship they gain experience and experience in business life in different business environments. Students have duties and responsibilities during their internship. The duties and responsibilities of the students are reminded by the academician in charge of the internship.

The students gained the right to do internship as a result of the 28-hour OHS course and education they received in university education. Internship students have high rates of study in the areas where they receive training after graduation. Therefore, internship practice is an important experience for students in their profession. During the internship, the internship places contribute to the students both in theory and in practice. Students who gain the right to do internship are provided with social security by the state and sent to the establishments they determined as interns. They have all the obligations regarding OHS during the internship. In this context, the strengthening of the gains in the OHS course by the environment surveillance will be beneficial for the security cultures to be permanent. During the internship period they gain experience in workplace conditions and also make observations.

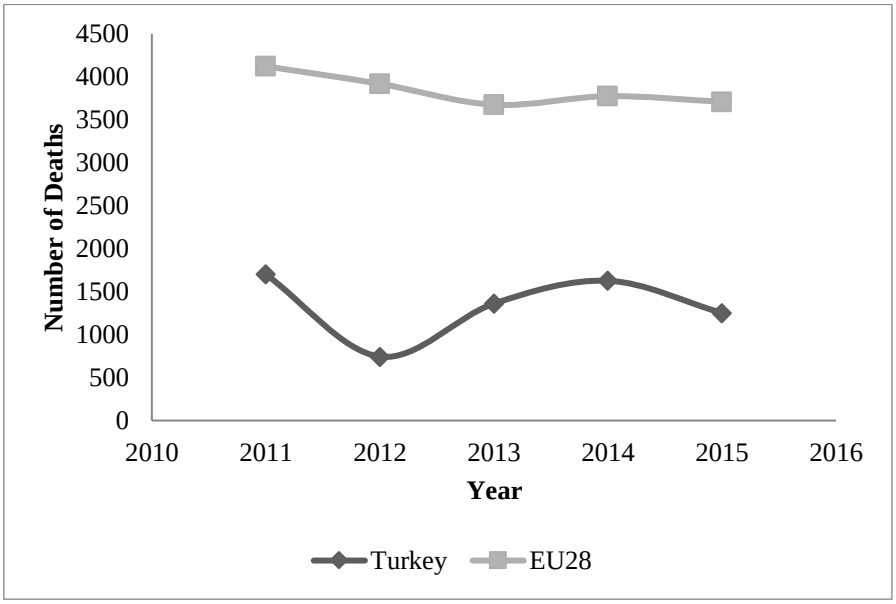

Fig. 1 The number of deaths in Turkey and the EU (EU-28) as a result of work accidents [8]

Table 1. Comparison of L Matrix, Fine-Kinney and HRNS risk results **[9]**

Methods	**L Matrix**			**Fine-Kinney**		**HRNS**		
Main Activity	Unaccept-able	Too High	High	Too High	High	Extremely High	Too High	High
Excavation	4	-	-	4	-	-	1	-
Insulation	14	-	-	14	-	-	4	1
Mold	10	-	-	10	-	-	8	-
Iron	-	10	-	-	10	-	7	3
Concrete	15	-	-	15	-	-	-	-
Wall	-	12	-	12	-	-	7	-
Floor	-	21	-	21	-	-	-	8
Electricity	-	-	18	-	-	-	-	-
Mechanical	-	-	-	-	-	-	-	-
Roof	5	-	-	5	-	1	-	3
Plaster	7	-	-	7	-	-	7	-
Paint	6	-	-	6	-	-	-	1
Door & Window	-	-	4	-	-	-	1	1
General	-	-	10	-	10	-	-	-
Elevator	-	-		-	-	-	-	-
Total	61	43	34	94	20	1	35	17
%	39.35	27.74	21.94	60.65	12.9	0.65	22.58	10.97

2. Concept of Risk in Construction Sector

The construction sector is a comprehensive sector consisting of residential buildings, non-residential buildings and special structures. The construction sector also leads many business lines and provides its infrastructure. The sector, which has an important place in the economy of countries, has a significant market share both in Turkey and abroad. From the economic point of view, the sector has an important share in the economy. When the employment data are examined, the number of registered and unregistered employees has an important place in the number of employees of the countries. The size of the sector is seen as an area with many risks within the body due to the fact that the workflow is action-driven and the work environment is variable. In the risk assessment carried out shows that the construction sector have a high risk score. When the accident statistics are analyzed, the negative picture of the sector is seen.

Among the reasons for the high risk scores, first of all, it is to carry out the works of the sector under high conditions in the open conditions. The fact that there are moving machines and parts in the working areas makes it difficult to provide a regular work environment. Due to technological developments, manpower cannot be abandoned due to the cost of implementing automation works. The fact that the workplace conditions are constantly changing and the employee profile changes daily in the sector causes the workplace risk scores to be high. Keeping the risk levels at acceptable levels will benefit the workplace, employee and all stakeholders. Providing safe working conditions in the sector and gaining OHS culture of the employees will be possible by looking at the sector in real terms.

In order for an accident to be considered as an occupational accident, it is necessary to bear the conditions specified in the law and to find a causal link with the reasons of accident. Therefore, the law; occupational accident at the workplace of the insured; if the insured works independently for his own business or his / her duty due to the work being carried out by the employer, or if the insured is working independently of his / her work or working subject; insured due to an employer sent to another location outside the workplace as an employee, the main job without passing the time; breastfeeding women, the time spent to give milk to the child; It defines the insured as an event that immediately or later becomes physically or physically disqualified. [2]

The construction industry is a large, dynamic and complex sector that offers a large number of employment opportunities for millions of people worldwide. The fatal accidents in the construction sector are higher compared to other sectors. According to the results of the accident record in the sector, a high number of fatal accidents have raised the concern of security. Security policies, procedures and practices should be managed professionally so that a construction project can be completed safely. Roadmaps should be established to organize construction activities and to control risks while maintaining OHS activities. Previous studies have shown that most of the accidents associated with construction work; It has been shown that labor force education depends on the lack of proactive and preventive measures such as risk source identification and control, safety awareness and training [10,11,12].

Chinese government departments and industry associations have developed an approach under the name of a harmonious society philosophy. In this approach, not only security is important, but also mandatory rules and codes that regulate safe behavior. Therefore, in recent years the safety culture has increased dramatically. With the organization of activities such as security seminars and security competitions, more organizations participate in the cooperation of security education. These activities have a positive effect on the Chinese construction sector [13].

Various initiatives are in place to ensure compliance with health and safety regulations and to maintain a safe working environment. Despite these initiatives, work accidents continue to occur. Dangerous movements of construction personnel in construction sites and dangerous situations in workplaces continue to be the reasons behind accidents. Therefore, the danger perception of the construction workforce should be re-evaluated. The development of on-site safety management will be an important step especially in developing countries where OHS in the construction sector is not yet achieved [14].

According to 2015 registered employee data in Table 2; Turkey the proportion of the overall number of employees in the construction sector accounts for 9% of employees. When the death data as a result of work accident is examined; Turkey in general the number of deaths as a result of workplace accidents in the construction sector, the ratio of the number of deaths as a result of workplace accidents in all sectors is 37.7%. According to the number of employees, the number of fatal accidents is four times higher. This shows that the current practices in the construction sector should be revised.

Table 2. Turkey number of employees and work accident rates [2]

Year	Turkey General Number of Employees	Construction Sector Number of Employees	% Rate	Turkey's General Business Accident Death Count	Construction Sector Work Accident Result Death Number	% Rate
2015 2016	21.127 mil. 22.286 million	1.916 million 1.84 million	9.06 8.25	1252 1405	473 496	37.7 35.3

When the accident types in the construction sector are examined, it is seen that most of the accidents occurred as human drop. Sector workers often face accidents such as material falls or material shocks. When the results of numerical distribution of accident types are examined, it is seen that the mortality rate in accidents is very close to the injury rate. The construction sector is generally in the first place compared to other sectors in terms of fatal occupational accidents. Work accident in the metal sector is higher than the construction sector. Metal sector is a sector where injuries are generally experienced. Therefore, the mortality rate is low compared to the construction sector.
According to the 2015 Social Security Institution in Turkey; 1740787 is the number of business units around the number of workers is 13999398 people. When the unregistered employment data are analyzed, it is seen that the total number of employees is high. According to the records of the Social Security Institution of 2015, 2572 people were employed; The number of registered employees is 1228 and the number of unregistered employees is 672 persons. The rate of informal employment is 64.6% [2].

3. Method

The questionnaire survey conducted in this study was applied to the students who continue their education in associate degree and bachelor's degree programs. One of the university students who participated in the mandatory internship with the survey questions; the internship application of the construction business, OHS was asked to evaluate. The interns who participated in the study were selected according to the demanding sampling method. In the survey of mixed surveys for 150 construction students; environment observations data of students in construction enterprises were examined. The questionnaire questions were evaluated in four categories including total safety and health signs, personal protective equipment (PPE) and inspection, control measures and personal survey questions and thirty questions in total.

Table 3. Numerical distribution of accident types in construction sector [15]

	Main Groups	Death		Iinjuries		**Total**	
No.	Accident Type	Number	%	Number	%	Number	**%**
1	Human Fall	1028	42.9	934	32.9	1962	**37.4**
2	Material Drop	251	10.5	278	9.8	529	**10.1**
3	Material Jumping	10	0.4	211	7.4	221	**4.2**
4	Immersion of the Excavated Edge	138	5.8	53	1.9	191	**3.6**
5	Collapse of Building Part	167	7.0	73	2.6	240	**4.6**
6	Electric shock	293	12.2	80	2.8	373	**7.1**
7	Explosive Material Accidents	50	0.2	82	2.9	132	**2.5**
8	Building Machine Accidents	206	8.6	97	3.4	303	**5.8**
9	Extension caught	1	0.0	604	21.3	605	**11.5**
10	Extension Jam	1	0.0	200	7.0	201	**3.8**
11	Handling with Hand Tools	0	0.0	42	1.5	42	**0.8**
12	Pointed Sharp edge Wound.	0	0.0	75	2.6	75	**1.4**
13	Traffic Accidents on site	168	7.0	38	1.3	206	**3.9**
14	Other type accidents	85	3.5	74	2.6	159	**3.0**
	Total	**2398**	**100.0**	**2841**	**100.0**	**5239**	**100.0**

The students were asked questions about the risks and occupational risks they would be exposed to in various field conditions during their internship. Since 150 students completed the internship experience in different workplaces, 150 different construction companies were examined. Construction sites were evaluated with 30 questions from the perspective of the intern students, such as the current situation of the construction sites for emergency situations, whether the safety and health signs were adequate, whether the employees were insured or not. Survey data are used for scientific purposes only and all rights reserved. The survey data does not include the names of the enterprises. The credentials of the students participating in the survey are reserved. The survey data businesses are not legally and legally binding. Based on the survey data, the current situation of the construction sector was determined. Data are used in the analysis to determine the deficiencies and safe aspects of the sector.

Table 4. General information of survey participants and businesses

Age Range			**Education Status**		**Gender**		**Work Experience (Year)**			**Number Of Employees In Business**			**Workplace Type**				
0-20	20-30	Over 30	Associate	License	Male	Female	0-1	1-5	Over 5	1-49	50-250	Over 250	Housing	Workplace	Tunnel	Bridge	Other
37	108	5	48	102	122	28	130	15	5	114	26	10	102	16	6	4	22

4. Results

According to the answers of the participants who participated in the survey, age ranges, educational status, gender and work experiences of the students were given in Table 4. The age range of internship students is mostly between 20-30. 69% of the participants in the survey are undergraduate students. 68% of the participants are male and 32% are female. Construction department associate degree and bachelor's degree programs consist of majority male students. Business lines in the sector generally consist of professions preferred by male individuals.

The year of experience of the participants is low due to being a university student. The number of employees is generally between 1 and 49 in the internship. When the construction types of the enterprises where the trainees do their internship are examined, the housing construction is at the top.

In the study, five questions were asked from the safety and health signs category given in table 5. I strongly disagree with the questions and the percentage of respondents who do not agree is 19%. The ratio of those who remain unstable is 21%. I agree with the questions and definitely agree that the respondents are 59%. According to the results of observations made during the internship in terms of safety and health signs, the current situation was below the expected level. Safety and health signs have an important place in the workplace. Due to high risk scores in construction companies, safety and health markings should be given importance. With the trainings to be given to the employees, the necessity of marking and protection and the meanings of the signs should be reminded. OHS professionals and supervisors should perform checks from time to time in the workplace. Markings should be reviewed according to new changes in workplace conditions. Security marks that have become obsolete and incomprehensible should be replaced with new ones.

In the study, ten questions were asked from the PPE and audit category given in table 6. I strongly disagree with the questions and 21% of those who do not agree. The ratio of those who remain unstable is 17%. I agree with the questions and definitely agree that the respondents are 60%. According to the results of observations made during the internship with the PPE and supervision aspect, the current situation was below the expected level. The use and control of PPE has an important place in the construction sector. In construction companies, due to frequent accidents such as working at height, falling or crashing of materials, importance should be given to PPE. The types of accidents experienced in the sector and the results should be shared with the employees in the in-service trainings. The necessity of using PPE should be explained. It should be reminded that there are criminal responsibilities for employees who do not use PPE. The awareness that not using PPE means sabotaging the workplace safety and jeopardizing the security of life and property should be vaccinated.

Table 5. Questionnaire and distribution of answers in terms of safety and health signs

No.	Questions	I Strongly Disagree	I Do Not Agree	Undecided	I Agree	I Totally Agree
		%	%	%	%	%
1	Are there emergency plans at the workplace or on site and are the emergency meeting places marked?	16	12	22.6	13.3	36
2	Occupational safety or hygiene measures are warranted to warn employees of workplace or site entrance.	7.3	7.3	20.6	27.3	37.3
3	In the workplace or construction site, warning signs, imperative, prohibitive, emergency security sheets for the emergency are sufficient.	7.3	10	18.6	32.6	31.3
4	The workplace or site is restricted from outside to prevent unauthorized entry.	12	10	20.6	20	37.3
5	If a dangerous situation has occurred; The job is stopped until the dangerous condition has passed. Employees are kept safely until the hazardous situation ends.	8.6	4	24	25.3	38
	Total% Values	10.24	8.66	21.28	23.7	35.98

Table 6. Questionnaire for PPE and supervision and % distribution of answers

No.	Questions	I Strongly Disagree	I Do Not Agree	Undecided	I Agree	I Totally Agree
		%	%	%	%	%
1	There are enough parachute type safety belts for those working at the workplace.	20	16	22.6	16	25.3
2	There is a possible safety net against tehdidine for those working at the workplace.	8	7.3	18.6	22.6	41.3
3	The workplace is surrounded by potholes, safety lanes around the gaps	6.6	11.3	19.3	22.6	40
4	There are enough helmets for employees.	7.3	8.6	8.6	19.3	56
5	Rest breaks and breaks are provided at the rates stipulated by law.	9.3	9.3	16	26	39.3
6	Food, rest and break places are designed according to hygiene conditions.	16.6	12	21.3	20.6	29.3
7	Employees are supervised by a job security specialist or site supervisor.	2.6	10	13.3	23.3	50.6
8	Work machines comply with site speed limit.	4	8.6	14	28.6	44
9	There is a work machine path for the work machines and the work machines use this path.	9.3	18	22.6	23.3	26.6
10	Loads of over 25 kg are carried by mechanical systems, not by hand.	19.3	14	18.6	18.6	29.3
	Total% Values	10.3	11.51	17.49	22.09	38.17

In the study, ten questions were asked from the personal category given in table 8. I strongly disagree with the questions and 19% of those who do not agree. The percentage of those who remain unstable is 20%. I agree with the questions and certainly agree that the respondents are about 60%. It is understood from the results that the ratio of insured employees is low. The rate of people who feel safe when working in construction sector is 55%. The rate of people who are aware of the fact that mortal work accidents are high in the sector in which they work is 68% as accidents occur in construction companies such as working at height, falling or crashing. 61% of the employees are aware that the sector they work in is in a very dangerous sector class.

According to the general survey results; Figure 2 shows that the sector does not reach the level of security and health acceptable. The percentages of the answers to the thirty questions were calculated. 20.1% of the participants strongly disagree or disagree that the sector is not safe. 20.4% of the participants were hesitant about the general situation. The percentage of those who agree and agree completely is 59%.

OHS satisfaction is available in workplace conditions with a rate of 59%. 0.5% of the participants chose to leave some questions unanswered. As the rate of participants who missed was less than 1%, they were not included in the tables.

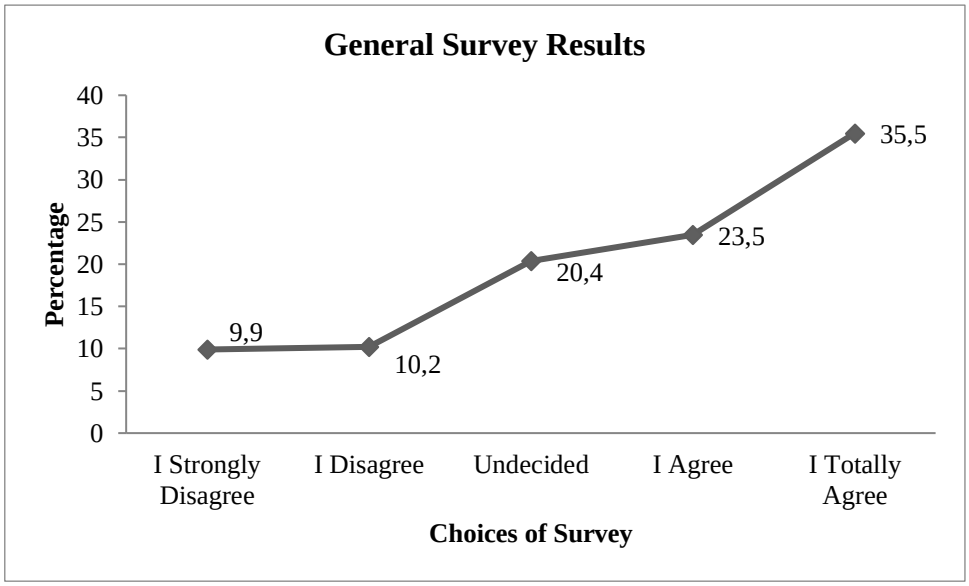

Fig. 2 Overall results of survey

According to the general survey results; Figure 2 shows that the sector does not reach the level of security and health acceptable. The percentages of the answers to the thirty questions were calculated. 20.1% of the participants strongly disagree or disagree that the sector is not safe. 20.4% of the participants were hesitant about the general situation. The percentage of those who agree or agree completely is 59%. OHS satisfaction is available in workplace conditions with a rate of 59%. 0.5% of the participants chose to leave some questions unanswered. As the rate of participants who missed was less than 1%, they were not included in the tables.

In the construction sector, systematic and comprehensive studies should be carried out to prevent occupational accidents and consequently heavy costs. Necessary warnings should be made by the state and business stakeholders to ensure that employers take their responsibilities in the workplace. Employee awareness; recognizing the rights and responsibilities is an important issue. It should be known that all stakeholders who make up the workplace will have a common OHS culture and awareness and that continuity will be ensured through the operation of control mechanisms. In order for the high-risk sector to continue to work safely, the motto of life must first be taken under the slogan of sanctity. The studies carried out within this scope should be done by establishing a programmatic and cause and effect relationship.

Table 7. Questionnaires for the control measures and% distribution of answers

No.	Questions	I Strongly Disagree	I Do Not Agree	Undecided	I Agree	I Totally Agree
		%	%	%	%	%
1	The scaffolds are visually checked periodically every day.	14.6	12	28	17.3	26
2	Electric vehicles and equipment do not threaten the health and safety of employees.	6.66	6.6	24	33.3	29.3
3	Extension cables are carried through the cable ducts and do not pass directly through the vehicles.	9.3	12	26	20	32
4	Electrical panels are located in sheltered places, there are no missing on panels.	4.6	5.3	30.6	26	33.3
	Total% Values	8.79	8.975	27.15	24.15	30.15

Table 8. Personal survey questions and % distribution of answers

No.	Questions	I Strongly Disagree	I Do Not Agree	Undecided	I Agree	I Totally Agree
		%	%	%	%	%
1	Since the OHS measures are not taken and the OHS culture is not acquired, the employees are thinking about leaving.	38	16	18	16.6	11.3
2	Jobs that require vocational training are made by individuals who have vocational training.	4	8.6	18.6	32.6	36
3	Employees are employed as insured.	0	2.6	14	14.6	68.6
4	Children and young workers (those who have not attained the age of 19) are not employed in the workplaces.	14	5.3	14	15.3	50.6
5	In terms of Management OHS ; the opinions and suggestions of employees are taken into account .	5.3	12	29.3	24	27.3
6	Employees at work feel safe.	7.3	6.6	21.3	35.3	29.3
7	Employers and employees have the necessary OSH culture.	12	14	22.6	30.6	20.6
8	Sector employees Know that the construction sector is among the most dangerous sectors .	4	8.6	26	24	37.3
9	Sector employees are aware that the construction industry is at the forefront of mortality incidents	4	8.6	18.6	34.6	34
10	OSH required for employees trainings are given.	9.3	18.6	20	19.3	32.6
	Total% Values	9.79	10.09	20.24	24.69	34.76

5. Suggestions

Many countries in the world; OHS lessons are compulsory when vocational education is continuing. This situation increases the quality of vocational education. In addition, students gain an OSH culture. Introduction to the profession before the beginning of business education maintains its importance. This training, which is given to the employees before the beginning of the work, enables workers to obtain OHS gains. Besides these trainings; the provision of in-service trainings at the intervals specified in the law will help employees gain the OHS culture. A worker working in the construction sector will be subject to the ever-changing conditions of the sector throughout his working life. Due to the changes in the conditions of the workplace, the training subjects of the employees should be kept up to date. Permanent behavioral changes in employees can be achieved by the effects of environment monitoring. Hence, OHS awareness in the workplace should be kept alive.

Internship reports are given to university students who are in attendance. It will be useful to ask the OHS

report from the student in the internship report. The OHS report will be monitored, evaluated and interpreted for safety and health observations throughout the university student internship. This will provide OHS gains for the university student. Dangerous situation and dangerous movement are among the causes of work accidents. It is known that dangerous movements are due to human defect and cause a large plurality of accidents. University students will be managers and employees of the future. Achievements in students will lead to a decrease in hazardous movements and will enable the spread of OHS culture.

The number of people working in many countries of the world is more than 50% compared to the population. Therefore, it is not always easy to convey health and safety messages to the masses. It will be useful to use the visual tools that are becoming more and more common today in order to increase the awareness and awareness of OHS culture. Besides traditional OHS training materials; Using public spots, transferring messages with cartoons and videos showing accidents will be useful. Traffic accident simulators such as; work accident simulators should be used. The violence and psychology of the accident must be transferred to society without damaging people.

Occupational accidents and occupational diseases in the world should be evaluated by experts in the field of statistics in the sector. The cause and effect relationship should be established in accidents. Events should be evaluated proactively and shared with the public. New targets should be determined by observing annual changes according to the targets determined as a result of the analyzes.

OHS trainings should be given while the vocational training of the workers working in the sector is continuing. The safety culture of individuals who will work in the sector should be questioned. The acquisition of security culture requires a process. The basis of this process is education. In order to ensure social change-development, national interests and social welfare objectives should be determined in every period of life. When determining OSH targets, decisive steps should be taken to keep risk scores at acceptable levels in all sectors. Considering the sectoral differences, analyzes should be made on accidents and occupational diseases based on realistic data.

It would be useful for organizations authorized to conduct audits to establish a safety report for their workplaces. Employers who continue their work in compliance with security measures should be encouraged. Safety notes of workplaces that do not provide a safe working environment and do not use a safe working method as a result of inspections and complaints should be reduced. Safety notes of the workplaces should be decisive for public procurement or incentives.

References

[1] Turkey Construction Industry Employers' Association (Intes). [Internet] [cited 2018 June 8] Available from : http://www.intes.org.tr/

[2] 2. Social Security Institution, [Internet] 2012 Statistical Yearbook. [cited 2018 July 1] Available from : http: //www.sgk.gov.tr/

[3] Gürcanlı E. Situation in the World and Turkey in the Occupational Safety and Construction, Ölçü Bulletin, 2008;February:90-99.

[4] [Internet] Labor Force Statistics, [cited 2018 July 12] Available from : http://tuikapp.tuik.gov.tr/isgucuapp/isgucu.zul

[5] Aslan A. Assessment of Occupational Accidents in a Construction Company Gazi University, Institute of Health Sciences, Department of Occupational Health and Safety, 2008

[6] Dikmen SÜ, Akbıyıklı R, Aytekin O, Baradan S, Integrated Evaluation Of Labor And Construction Supervision Laws With Respect To Occupational Health And Safety, Journal of Engineering and Architecture Faculty of Eskişehir Osmangazi University 2011;XXIV:2

[7] Ceylan H, Analysis of Inbound Work Accidents in Construction Sector in Turkey, International Journal of Engineering Research and Development,2014;6

[8] [Internet] [cited 2018 August 6] Available from: http://ec.europa.eu/eurostat/web/health/health-safety-work/data/database http://www.sgk.gov.tr/wps/portal/sgk/tr/kurumsal/istatistik

[9] Bilir S, Gürcanli E, A New Risk Assessment Method in Construction: HRNS, 5. Occupational Health and Safety Symposium , 2015,5-6 November, İzmir

[10] Rostami A, Sommerville J, Wong IL, Lee C, Risk management implementation in small and medium enterprises in the UK construction industry Eng. Constr. Archit. Manag., 2015;1:91-107,

[11] Zhou Z, Goh YM, Li Q. Overview and analysis of safety management studies in the construction industry, Safety Science, 2015;72:337-350, 10.1016/j.ssci. 2014.10.006

[12] Zhou Y, Ding LY, Chen LJ. Application of 4D visualization technology for safety management in metro construction, Automation in Construction. 2013;34:25- 36

[13] He Q, Dong S, Rose T, Li H, Yin Q, Cao D. Systematic impact of institutional pressures on safety climate in the construction industry, Accident Analysis & Prevention 2016;93:230-239

[14] Abbas M, Mneymneh BE, Khoury H. Assessing on-site construction personnel hazard perception in a Middle Eastern developing country: An interactive graphical approach, Safety Science, 2018;103:183-196

[15] Müngen U. Major Types of Work Accidents in the Our Construction Sector, Turkey Engineering News Journal 2011;5:32-39