

**Analysis of Current Occupational Health and Safety Situation and
Needs of SMEs in Turkey**

***İř Saęlıęı ve Güvenlięi Açısından Türk KOBİ'leri Mevcut Durum ve
İhtiyaç Analizi***

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İş Sağlığı ve Güvenliği Açısından Türk KOBİ'leri Mevcut Durum ve İhtiyaç Analizi

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Abstract

The aim of this paper is to examine the current state and needs of SMEs in Turkey regarding OHS. A survey was conducted with a participation of 200 SMEs in the Marmara Region consisting of both employees and employers. The survey includes sections related to OHS management and training systems that currently take place in SMEs such as policies, procedures, difficulties in OHS applications, costs, and issues regarding training. The survey results confirmed the previous work prepared by international and EU authorities in this area, and showed that there is still great need and demand on further training and lack of new learning applications. However, the findings of the survey also indicate that with regard to some aspects of OHS management and training systems, there are some variations across the industries that can be of potential use and benefit for the decision makers in Turkey.

Keywords; Occupational health and safety in SMEs, Turkish occupational health and safety, Occupational health and safety training, Occupational health and safety status and needs

Özet

KOBİ'lerde iş sağlığı ve güvenliği alanında mevcut durum ve eğitim ihtiyaçlarının tespit edilmesinin amaçlandığı bu çalışmada, Türkiye'de en fazla KOBİ barındıran Marmara bölgesinde toplam 200 işveren ve çalışan üzerine bir anket yapılmıştır. Anket temelde; İş sağlığı ve güvenliği yönetimi (iş sağlığı ve güvenliği uygulamalarındaki politikalar, prosedürler, uygulamadaki zorluklar ve maliyetler), iş sağlığı güvenliği eğitimlerindeki mevcut durum ve gereksinimler ile bu alandaki beklenti ve yönelimlerden oluşmaktadır. Bu inceleme, daha önce Avrupa Birliği otoriteleri tarafından hazırlanmış çalışmaları doğrular nitelikte olup, iş sağlığı ve güvenliği eğitimlerine hala büyük bir gereksinim ve talep olduğu görülmüştür. İncelemedeki bulgular, iş sağlığı ve güvenliğinde yönetim ve eğitim sistemleri açısından bazı sektörel farklılıklar olduğunu ve bu çıkarımların Türkiye'deki işletmeler ve karar vericiler açısından faydalı olabileceğini göstermektedir.

Anahtar Sözcükler: KOBİ'lerde iş sağlığı ve güvenliği, Türk iş sağlığı ve güvenliği, İş sağlığı ve güvenliği eğitimi, İş sağlığı ve güvenliğinde mevcut durum ve ihtiyaçlar

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Introduction

Occupational health and safety has been considered to be one of the top priority topics by several authorities such as trade associations across the globe and International Labour Organisation (ILO). In fact, establishing a health and safety management system in workplaces is believed to have positive effects on the competitive and economical/financial status of many companies including SMEs (Muniz at al., 2009: 980-991). Many international statistical reports highlight the needs of employers and employees regarding occupational health and safety (OHS) in order to avoid occupational accidents in SMEs, the difficulties that they have experienced and the associated educational requirements. The share of SMEs in a nation's overall economy is, by and large, similar to other nations and a special attention has been given to them due to their importance in those economies. It is a known fact that a great majority of the companies in Turkey are SMEs (around %99) and greater attention and care is required in the field of OHS (Mungen and Gurcanli, 2005: 299-322). Particularly, financial difficulties that the companies are facing associated with managing and improving OHS related activities have been of great importance.

According to a research conducted by the ILO, the ratios of occupational accidents decrease as the companies become larger and the figures associated with workplace accidents are higher for SMEs. This generalisation which is approved by other international statistics and reports can also be considered to be valid for Turkey. However, in the current literature there is a lack of studies related to a detailed examination of SMEs in Turkey. Therefore, the aim of this paper is to investigate the current situation and the needs of Turkish SMEs with regards to OHS-related activities. Within the scope of this study, a preliminary investigation on both employers and employees work for the SMEs in Turkey is accomplished in order to determine their current situation and the needs regarding OHS. In this context, a literature review of previous work performed on the SMEs in Turkey is presented in the next section. The methodology followed in the study is given in Section 2 while the results of the investigation are provided in Section 3. The paper is concluded with discussions based on the findings obtained from the investigation in the last section.

1. Literature Review

The current literature points out that the leading sectors in which occupational accidents occur intensely in Turkey are Manufacturing, Construction, Metal, Transportation and Mining & Quarrying (Unsar ve Sut, 2009: 614-619; Zeng at al., 2008: 1155-1168). This may stem from certain characteristics associated with these sectors including high employment ratio. The companies operating in those sectors are at a greater risk regarding OHS in comparison with others. In fact, this is also supported with statistics provided by the Social Security Institution (SSI, 2009) of Turkey as illustrated in Table 1. According to the table, Manufacturing has the highest percentages in terms of the number of occupational accidents that have occurred during 2005-2009. However, with regards to the number of fatal accidents Construction appears to take the first place in the same period. The SSI in Turkey states that about 176 occupational accidents occur, three employees die and five employees become incapable of working as a result of occupational accidents every day in Turkey.

Therefore, it can be said that working conditions for many occupations in Turkey still involve a "distinct and severe hazard to health that reduces wellbeing, working capacity and even the lifespan of individuals" (SSI, 2009). It should also be noted that not

every accidental incident is recorded by the employers and reported to the related authority in Turkey.

Table 1: The distribution of occupational accidents and fatal occupational accidents in Turkey by Sectors (%)

Year/ Sector	Mining& Quarrying		Metal		Construction		Transportation		Manufacturing***		Other sectors		Total	
	OA*	FA**	OA	FA	OA	FA	OA	FA	OA	FA	OA	FA	Number of Occupational Accidents	Number of Fatal Accidents
2005	9	11	14	2	9	27	5	15	24	10	39	35	73,923	1,072
2006	10	5	14	2	9	25	6	10	22	7	40	51	79,027	1,592
2007	9	7	14	4	9	34	6	14	22	9	40	31	80,602	1,043
2008	9	8	15	6	8	34	3	14	20	8	45	30	72,963	865
2009	14	2	19	1	11	13	4	3	19	4	34	77	64,316	11,171

Source: Turkish SSI (period of 2005-2009)

*Percentage in total number of occupational accidents

**Percentage in total number of fatal accidents

***Textile, machinery, food and furniture industries are incorporated in Manufacturing sector

There are also some academic studies that have been performed related to Turkish OHS even though the total of number of current research can be considered scarce compared to the ones that are implementation/practise oriented. Some of these studies are sector-specific (construction, mining, etc.) investigations and evaluations; while others are related to the connections between productivity, safety, and modernization; and the rest are about the costs related with occupational health and safety. Nevertheless, the focal point of the current research is the necessity of certain trainings needed by employers and employees in order to prevent risks at their workplaces.

A stream of research associated with cost and productivity is observed in the studies that have been done for Mining sector. Sari et al. (2004: 675-690) analysed the occupational accident records of two different companies one of which uses traditional methods while the other utilises modern technology. They investigated the effects of the methods on productivity and safety. Their results emphasized that productivity and safety are improved via modernisation. Yukcu & Gonen (2009: 933-953) examined the quality costs under four categories namely prevention, assessment, internal and external costs. They indicated that even though companies bear with prevention and assessment costs, occupational accidents may still occur at the workplaces due to several reasons and that these accidents may result in defective products or malfunctions in product lines. Another study performed by Ural & Demirkol (2008: 1016-1024) focused on the statistics of occupational hazards in the quarrying industry in Turkey. Their work also underlines that employees in the mining sector are at great risk and require training on OHS.

The studies conducted by a particular researcher attract the attention when the research associated with Construction sector is reviewed. Mungen & Gurcanli (2005: 299-322) investigated the statistics of the occupational accidents in the Turkish Construction sector and their possible causes. They argued that employees should go through a training certificate programme, which could be made compulsory, before starting to work at construction sites. Gurcanli et al. (2008: 375-388) claimed that development of comprehensive training programmes for the operators who are responsible to use modern equipment in order to adopt themselves to the technological advancements may prevent the loss of lives at

construction sites. In another study, Gurcanli (2009: 364-373) examined the injuries and deaths of third persons and children either at the construction sites or nearby places and highlighted the responsibilities and obligations of employers, employees and third persons. He also emphasized that the acquisition of safety culture is not a duty only for employers and employees but also for manufacturing companies, relevant governmental institutions and individuals (Gurcanli et al., 2008: 375-388; Gurcanli, 2009: 364-373). The current literature also has a sophisticated work conducted by Gurcanli & Mungen (2009: 371-387) which utilises rule-based fuzzy sets in order to analyse the uncertainty and risks associated with occupational health and safety.

It is possible to find OHS-related research for sectors other than Mining and Construction. Uysal et al. (2005: 439-451) examined the industrial accidents that occur at furniture manufacturing firms, determined the factors causing occupational accidents through statistical analysis and explained the necessary actions that should be taken by the companies in order to prevent those accidents. Nesar et al. (2006: 350-358) focused on the provision of raw materials for steel and other metallurgical operations through ship disassembling and they also presented the damages caused by the nature of the disassembling process directed to both employers' health and to coastal environments. Sari (2009: 1865-1870) drew attention to the development of regular training programmes which are of great importance in ensuring the health of employees and society through an investigation in the Accommodation sector. A study conducted by Esin et al. (2005: 431-436) focused on the health problems and work-related risks of under-aged workers and according to their study 26.4%, 32.3%, 43.1% of those children work in jewellery stores, automobile repair-shops and hairdressers, respectively. Based on their findings they proposed a basic training regarding prevention of accidents to be provided to them during their school period.

Consequentially, the common point of all reviewed studies is the need of informing employees and employers about OHS-related issues by provision of training for them regarding best practices. However, the conclusions of these studies were drawn based on investigation of a specific sector or a company. Therefore, it can be argued that the literature seems to lack a comprehensive examination covering all sectors and an evaluation of the current OHS status and needs of the SMEs within a systematic framework. Within this context, this study will address all OHS related activities including legislation, training and implementations as well as the establishment of an OHS management system for the SMEs in Turkey.

2. Methodology

The aim of this study is to investigate the current OHS status of SMEs in Turkey. To achieve this objective, this study presents the results obtained through surveys conducted on 200 participants in the Marmara Region, which has the highest percentage of SMEs in Turkey. The instruments of the surveys were adopted from the existing literature (Health & Safety Executive UK, 2002; ESENER ER Questionnaire, 2009; ESENER MM Questionnaire, 2009). The surveys consist of the following parts:

- Management of occupational health and safety,
- Training system (OHS policies and procedures, difficulties and costs associated with the implementation of OHS systems)
- Current situation, difficulties and needs of existing OHS trainings

The data collection method was based on judgement sampling. The surveys were distributed to the SMEs within Marmara region of Turkey. The main reason behind this is the fact that Marmara Region can be considered as substantially representative of the total

population. Two channels were used to distribute the surveys. The first channel was in collaboration with the associated authorities including the Chambers of Commerce and Industry and Sector Representatives (e.g., unions) of the region and The Directorate General of Occupational Health and Safety in Turkey. The second channel was having the surveys accessible for the target participants via internet. The necessary data was acquired from both employees and employers via surveys and the data was pre-processed (aggregating the acquired data into a single database, consolidating the variables, and transforming the values of some variables into categories) before the analyses. During the data analysis stage, MS-EXCEL and IBM-SPSS software application packages were utilised in order to obtain some descriptive statistics and to test the hypotheses.

3. Results of the Analyses

The results of the analyses are presented under five categories which are as follows: (1) Descriptive results, (2) Current status of OHS training and needs on further training, (3) OHS management practice, (4) Future directions and recommendation on OHS, and (5) The results of tested hypotheses. The subsequent parts provide the details of these categories.

3.1. Descriptive Statistics

The results of the analyses were conducted for 86 employers and 114 employees. The following table represents the descriptive statistics of the questionnaires including job positions, the sectors in which the survey participants have been working, experiences of these participants in these sectors and the number of employees in the workplaces.

Table 2: Descriptive Statistics

Descriptive Variables	Employees		Employers	
	Frequency	Percentage	Frequency	Percentage
Job positions				
Administrative staff	31	27.2	21	24.4
Management staff				
Medical staff	20	17.5	45	52.3
Supportive staff	7	6.1	1	1.2
Technical staff				
Training staff	17	14.9	5	5.8
Total	27	23.7	9	10.5
	12	10.5	5	5.8
Sectors				
Construction	21	18.4	11	12.8
Manufacturing				
Metal	55	48.2	38	44.2
Mining & Quarrying	16	14	14	24.4
Service				
Total	9	7.9	6	16.3
	13	11.4	17	7.0
Number of employees in the workplaces				
1-10	21	18.4	17	19.8
11-50				
51-250	44	38.6	36	41.9
251-500	30	26.3	16	18.6
> 500				
Total	7	6.1	11	12.8
	12	10.5	7.0	18.6
Experiences of the employee(r)s in the sector				
<5 years	35	30.7	18	20.9
5- 10 years				
>10 years	43	37.7	33	38.4
Total	36	31.6	35	40.7

For the employees, the highest percentage in job position categories were found to be the administrative staff (27.2%) while for the employers this was management staff (52.3%). With regards to the distribution of the sectors of the participants, sectors were classified as accommodation and food services, automotive, chemistry, construction, electricity, gas,

steam and air conditioning supply, manufacturing, metal, mining and quarrying, transportation and storage. Since the surveys were conducted in the Marmara Region, the sectors with the highest rates were manufacturing, construction and metal as expected. As far as the number of employees in the companies of which the participants are members is concerned, the largest share was the category of “between 11-50 employees” (41.9% for employers and 38.6% for employees). Should one look at the number of experiences of the participants s/he can observe that the percentage of employees with experience of 5 to 10 years for employees and employers are almost equal. Also, one expected result is that overall, employers are more experienced than employees.

3.2. OHS Training (Current and Needs)

Current training status and needs on further training were investigated. Table 3 and Table 4 indicate the training topics that the employees were taught and the topics they need for further training, respectively. According to the results, 43.95% of the total employees were found to have had training on at least one of the OHS topics provided in Table 3. Prevention of accidents (77.8%), first aid (68.4%), fire safety (51.8%) and emergency evacuation (51.8%) were the four leading OHS topics (with more than 50%) on which employees had been trained. The answers of respondents showed that the employees were mostly trained on general issues of OHS such as prevention of accidents or first aid. However, more specific topics like chemical, biological, radiation or dust hazards and ergonomics were the topics with the least percentages. Although the distribution of these topics at sectorial level is not very diversified, there are some differences in the priority of the topics for the sectors.

Table 3: Current Status of Training for Employees (% of Yes)

Training Topics Situation	Construction	Manufacturing	Metal	Mining-Quarrying	Service	Total
Prevention of accidents	71.4	74.5	81.3	77.8	77.8	77.8
First aid	61.9	69.1	68.8	55.6	84.6	68.4
Fire safety	42.9	56.4	50.0	55.6	46.2	51.8
Emergency evacuation procedures	66.7	52.7	56.3	44.4	23.1	51.8
The use of personal protective equipment	47.6	49.1	43.8	55.6	15.4	44.7
OHS policy including responsibilities	42.9	38.2	43.8	44.4	23.1	38.6
Manual handling	33.3	27.3	37.5	33.3	23.1	29.8
Chemical, biological, radiation or dust hazards	14.3	23.6	25.0	22.2	7.7	20.2
Ergonomics	19.0	18.2	25.0	22.2	7.7	18.4

Regarding sufficiency of the trainings, more than half of the employees (55.26%) were found to be in need of more training, which means that a substantial amount of the employees could be exposed to OHS-related risks in their work places. The employees wanted more training at most on the following topics with an average rate of 37.03%: chemical, biological, radiation or dust hazards, ergonomics and OHS policy including responsibilities. The topics they indicated as demanding relatively less training were found

to be first aid, prevention of accidents, and fire safety. As far as sectorial differences are concerned, the most prominent issue was that for almost every topic (except ergonomics and emergency evacuation procedures) the requirement for the metal sector is higher than the average. For other sectors, also some similar differences exist in comparison with the average figures.

Table 4: Training Needs of Employees (% of Yes)

Extra Training Need	Construction	Manufacturing	Metal	Mining/Quarrying	Service	Total
Fire safety	38.1	29.1	56.3	11.1	30.8	33.3
Prevention of accidents	38.1	29.1	50.0	22.2	23.1	32.5
Chemical, biological, radiation or dust hazards	52.4	45.5	68.8	66.7	69.2	54.4
Ergonomics	61.9	49.1	50.0	66.7	30.8	50.9
First aid	33.3	21.8	50.0	33.3	46.2	31.6
Manual handling	33.3	18.2	50.0	33.3	53.8	30.7
Emergency evacuation procedures	42.9	27.3	37.5	33.3	30.8	32.5
The use of personal protective equipment	28.6	25.5	50.0	22.2	38.5	30.7
Prevention of falls	28.6	25.5	50.0	22.2	38.5	30.7
OHS policy including responsibilities	52.4	34.5	62.5	44.4	38.5	43.0

Employers were asked about how often they provide OHS training for their staff (see Table 5). 45.9% of the total employers indicated that the training they provide is on regular basis. This could be seen an inadequate level of awareness in embracing or internalizing the importance of regular OHS training especially for a developing country like Turkey. More importantly, almost 10% of the employers could be considered to follow a dangerous and improper strategy in providing OHS training who stated that they provide training only after an incident has occurred.

Table 5: Training Occasions by Sector (%)

Sector Group / Training Occasions	Incident occurred	Legal change	Once	Pre-audit	Regular	Other
Construction	9.1	18.2	18.2	9.1	45.5	0.0
Manufacturing	13.2	7.9	5.3	7.9	57.9	7.9
Metal	0.0	0.0	14.3	21.4	57.1	7.1
Mining and Quarrying	7.1	0.0	14.3	0.0	21.4	0.0
Service	0.0	5.9	11.8	0.0	76.5	5.9

3.3. OHS Management Practice

From employers' perspectives current OHS management was investigated through six dimensions. The first one is related to current OHS practices. Regarding this issue, the answers given by the employers for the question of whether they provide or carry on any occupational health & safety services have been presented in Table 6. Surprisingly, nearly one-third of the employers did not know or were not concerned about what the current practices related to OHS in their workplaces are. 34.9% of the employers replied by stating

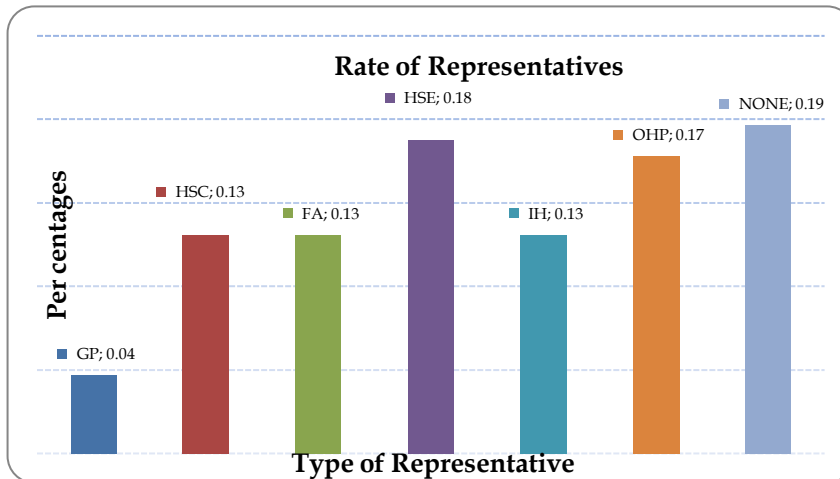
that they do not want to modify the workplace or activities as a result of OHS surveillance. Obviously, the most important result extracted from the employers' answers was the fact that 96.5% of the employers indicated that they provide training for the staff specifically on OHS. The table also highlights some sectorial differences. For example, health checks for specific hazards for construction sector; hazard identification and OHS provision, health checks for specific hazards and modifying workplace/activities for metal sector; and formal risk management for mining/quarrying sector were found to be the practices currently being applied more often than the average. On the other hand, there are some topics that are in practice less than the average for some sectors such as service and mining and quarrying.

Table 6: Current OHS Checklist (% of Yes)

OHS Checklist Situation	Construction	Manufacturing	Metal	Mining/Quarrying	Service	Total
Hazard Identification	45.5	47.4	64.3	33.3	35.3	46.5
Formal Risk Management	36.4	36.8	35.7	50.0	23.5	34.9
Measuring workplace hazards	54.5	47.4	50.0	33.3	52.9	48.8
Provision of information on OHS-related issues	45.5	36.8	71.4	16.7	23.5	39.5
Training of staff specifically on OHS-related issues	100.0	94.7	92.9	100.0	100.0	96.5
Health checks for specific hazards such as noise	45.5	28.9	50.0	16.7	17.6	31.4
Modifying workplace or work activities as a result of OHS surveillance	9.1	26.3	57.1	0.0	5.9	23.3

As the second dimension, employers from different sectors were asked about the safety representatives they employ including ergonomics expert (EE), first aider (FA), general practitioner (GP), health & safety consultant (HSC), health & safety expert (HSE), industrial hygienist (IH), and occupational health & safety professional (OHP) as shown in Figure 1. 24.4% of the employers specified that they have no safety representatives working at their companies. The remaining respondents (76.6%) employed at least one safety representative. The most and the least employed safety representatives in the latter group were first aiders and ergonomics experts with 20.9% and 1.5%, respectively. According to the employers, occupational health & safety professionals (OHP) constituted 15% of the all representatives.

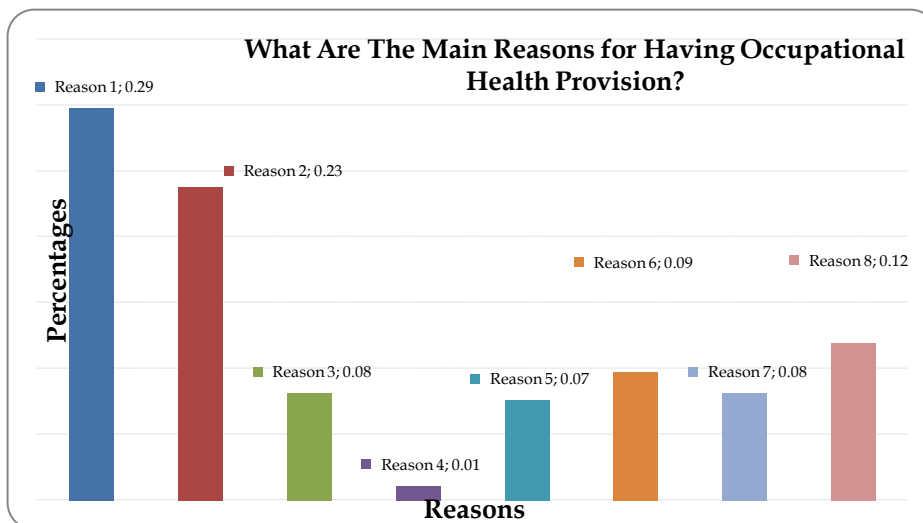
Figure 1: The distribution of safety representatives by type



With regards to the third dimension, the question of why the companies have OHS provision (see Q5 in Appendix 2 and Figure 2) was examined. Based on the results more than half of the employers specified the following two reasons:

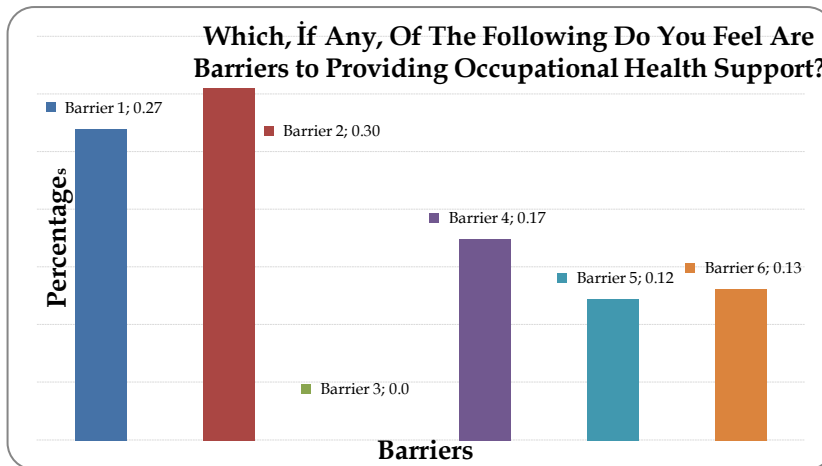
- The responsibility of the company for the health and safety of the staff (29.56%)
- The fulfilment of the legal obligations (23.65%).

Figure 2: The reasons of OHS provision



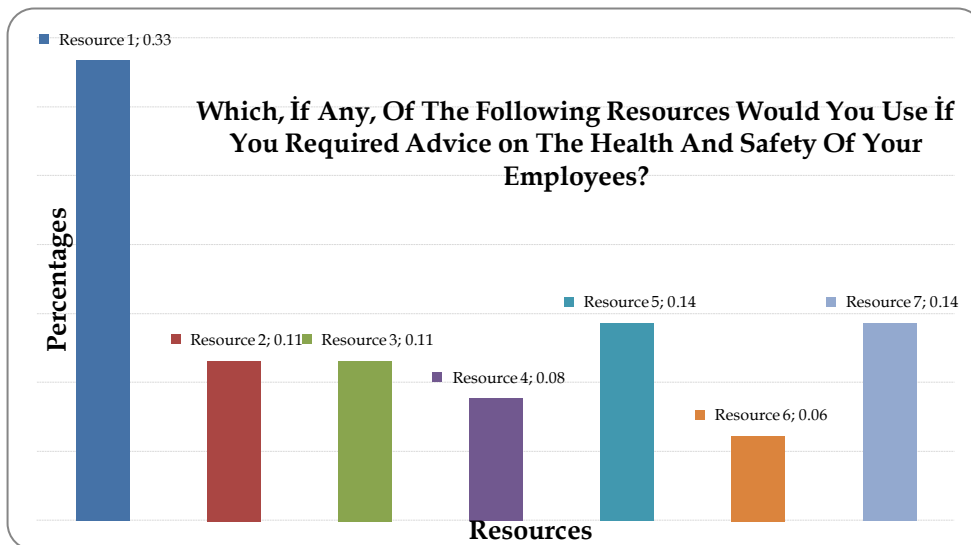
As far as the encountered problems that the companies have been facing are concerned, the fourth dimension is that the employers chose different barriers to support OHS activities including lack of resources (time/staff/money), lack of technical support or guidance, the culture within the establishment, lack of awareness, lack of expertise and the sensitivity of the issue (see Q6 in Appendix 2 and Figure 3). Almost 90% of employers indicated at least one barrier of which the lack of technical support or guidance was found to have the highest percentage (30.7%). The second one in the barriers list was the lack of resources such as time, staff and money (26.31%). Surprisingly, none of the employers specified the lack of awareness as a barrier, which means that all employers are aware of the importance of supporting OHS activities.

Figure 3: The barriers of OHS support



The fifth dimension was about which resources (official institutions for OHS, local authority or labour inspectorate, trade associations, employers' organizations, insurance providers, in-house health and safety services, OHS advisors) the employers wish to use when they need advices on their employees' health and safety issues (see Q8 in Appendix 2 and Figure 4). Nearly one-third of the employers seemed to rely on official institutions which are followed by the resource of OHS advisors with a rate of 14.58%.

Figure 4: The resources for OHS support



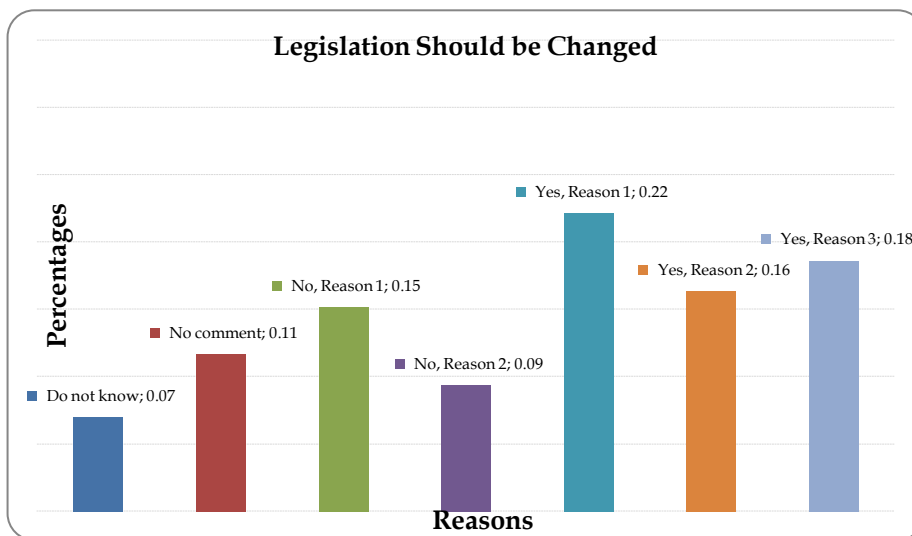
The final dimension was with regards to having a documented policy/established management system or action plan on health and safety in companies. The results showed that around 55% of the employers gave a positive answer to this question. However, having a documented policy on OHS seems to be a problem for some sectors such as mining and manufacturing.

3.4. OHS Future Directions & Recommendations

OHS future directions and recommendations were investigated through different aspects including thoughts on current legislation, motivated suggestions for learning more about OHS, recommended innovative strategies for OHS training and the job positions with lack of OHS training.

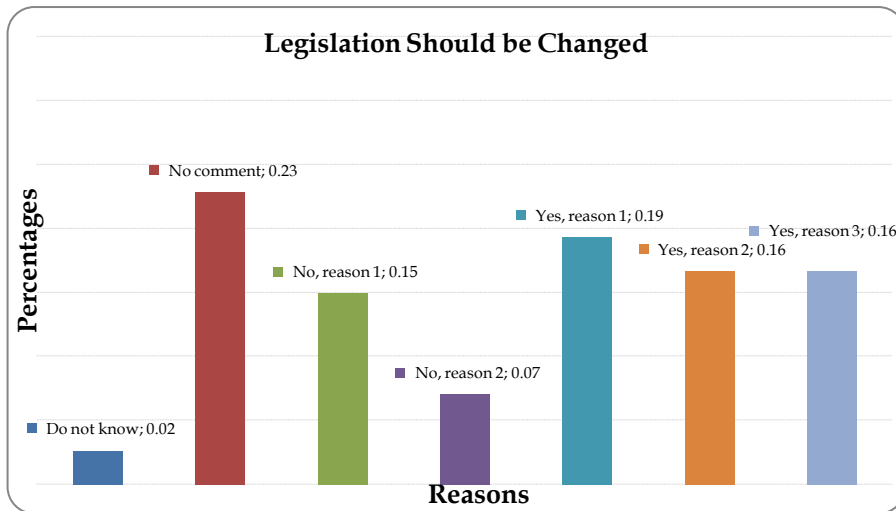
The employees' perspective on current legislation is presented in Figure 5. As can be seen from the figure, the employees who thought the legislation regarding OHS should be adjusted were found to be 52.7% of the whole participants. This group mentioned the following reasons for legislation change: complexity of the legislation (reason 1), application difficulty (reason 2), and not meeting their needs (reason 3). On the other hand, the employees who do not want the legislation to be changed had a rate of 37.7% and they also specified different reasons (not sufficient-reason 1; becoming difficult-reason 2). The remaining group (with 22.8%) did not make any comment on the legislation which may stem from the fact that either they indeed have no idea on that issue or they refrained to explain their ideas.

Figure 5: Legislation adjustment according to employees



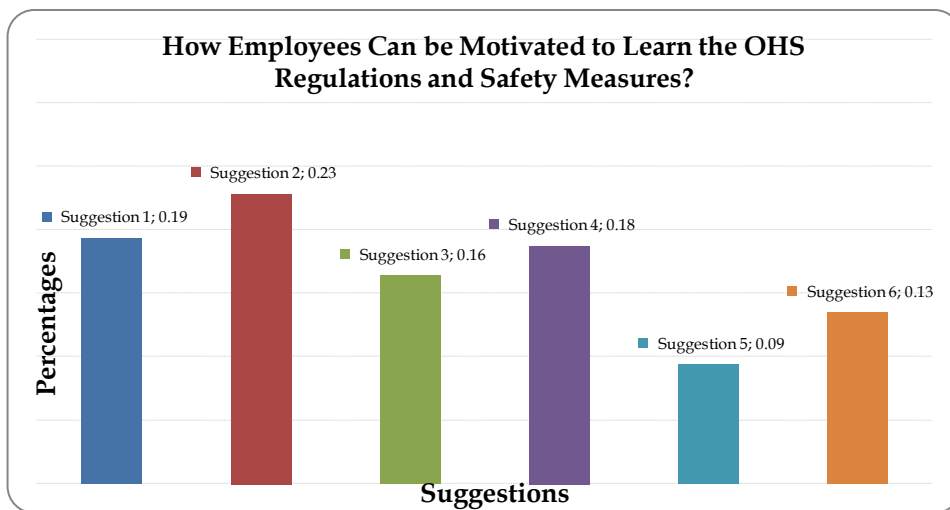
A similar question was asked to employers and they were also expected to select some reasons (see Q17 in Appendix 2 and Figure 6). According to their responses, it can be said that nearly one-fifth of the employers were not interested in the adjustment of the legislation of OHS. 22.1% of the employers specified that the legislation should be adjusted because they found it complicated while 18.6% of them wanted the legislation to be adjusted due to the fact that it does not cover their needs. The rate of the employers who thought the legislation is sufficient and no adjustment is required was only 9.3%.

Figure 6: Legislation adjustment according to employers



Employers were asked a question regarding how employees can be motivated to learn OHS regulations and safety measures and they were given some suggestions (see Q13 in Appendix 2 and Figure 7). The employers selected all of the suggestions with nearly equal rates (19%), except the options of rewarding the employees (9.46%) and presenting the education as a part of employees' working hours (13.6%).

Figure 7: Suggestions for motivation of employees



As shown in Figure 8, employers were also asked whether they have any applicable innovative strategies (see Q16 in Appendix 2) related to OHS training or not and how these strategies could be applied should they have any. The majority of the employers voted for the option of subsidizing OHS training partly (23.63%). The other strategies such as advising on organizational design regarding OHS, free OHS assistance/consultancy and measuring and publicizing organizational performance were preferred by the employers with an average rate of 15%.

Figure 8: Innovative strategies according to employers

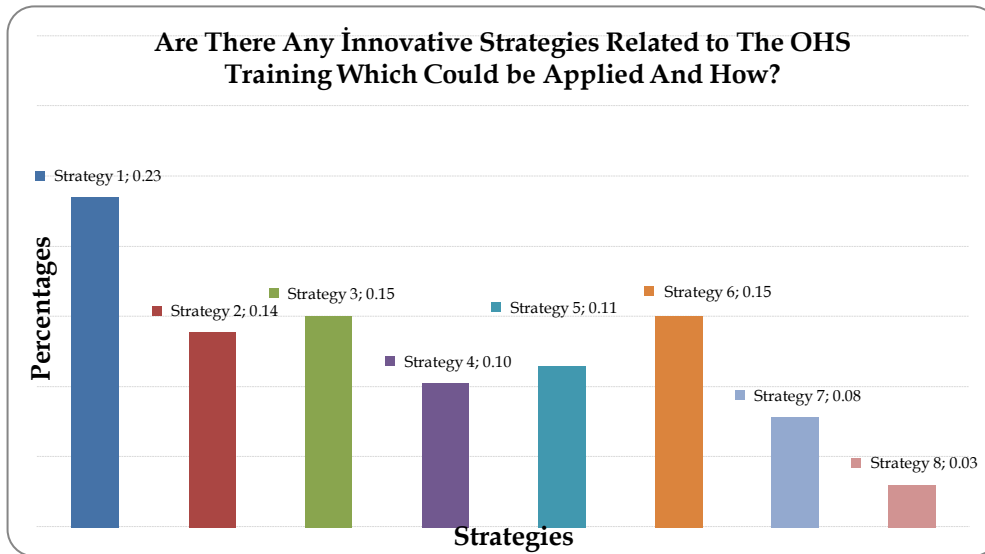


Table 7 shows in which job positions require more training with respect to different sectors. Regarding job positions that the companies exhibit a lack of training for, 32.43% of the employers specified the technical staff. As it was expected the least stated job position was medical staff with the rate of 2.7%. The other job positions including administrative, management, supportive and training staff were also selected with a rate of more than 10%. It may be understood from these figures that the employers believe that almost all employees need extra training regarding OHS.

Table 7: Job positions with a lack of training by sector

Sector Group / Job Positions with a lack of training	Administrative Staff	Management Staff	Technical Staff	Training Staff	Supportive Staff	Medical Staff
Construction	1	2	7	2	3	1
Manufacturing	17	13	21	7	8	2
Metal	8	5	11	3	3	0
Mining and Quarrying	1	3	2	1	2	0
Service	4	6	7	3	4	1
Total	31	29	48	16	20	4

3.5. Hypotheses Testing

A cross-tabulation analysis was conducted and the results of related chi-square values were obtained for employees as shown in Table 8. For almost all hypotheses the results were statistically significant at 0.05 alpha-level. According to the survey results, more than 85% of the employees require an up-to-date training. This percentage can also be considered valid for the employees who had already received some training when recruited. In fact, should one like to scrutinize the requirement of having up-to-date training with the knowledge level of OHS, it is possible to observe that the employees consider themselves informed on OHS requirements and up-to-date training. The issue of requiring an up-to-date training does not purely depend on being trained when recruited and the current knowledge level on OHS. Because, for the employees having a training long time ago or considering

them very well informed on OHS, there is indeed a certain level of up-to-date training need as the developments such as technological and pedagogical advancements in delivering training courses are still in progress. Also, employees think that their previous training is not sufficient and efficient therefore they require more training on OHS. With regards to the topics that were considered as insufficient, training regarding dealing with accidental situation was found to be very ineffective. This means that the majority of the employees have currently been working under OHS risks. Another result is that employees' knowledge on the current legislation is limited even for the employees who consider themselves informed on OHS. In addition, the results show that year of experience in the sector is indeed an important factor for complying with safe OHS practices; however it may not be adequate alone. With regards to the issues above mining sector was found be the most problematic one amongst all.

E-learning awareness of the employees was found to be slightly lower than average (%60) for construction, mining and metal sectors. This is an important level because there might always be some resistance against new ideas and applications. Despite the fact that e-learning is a fairly new training delivery method compared with the others such as on-paper, workshop or lecture types, it is still accepted with a relatively high percentage. The employees were asked if they want their companies to provide OHS training via e-learning and a vast majority (67.5%) of them responded the question with "Yes". As far as the employers are concerned, the majority of them (66.3%) accepted that e-learning would be an applicable training method. Particularly, construction managers are more aware of this issue than the others. With regards to providing online training courses mining managers are more eager than the others.

Table 8: Chi-Square Results of Hypotheses for Employees

Tested Hypotheses	Chi-Square (X ²) Results	Cramer's V Results	Significance Value
Would you like to participate in up-to-date training regarding OHS issues? * Do you think that the e-learning method will be applicable for you to learn more about OHS?	15.088	0.364	0.001
Would you like to participate in up-to-date training regarding OHS issues? * Do you want to be involved in online training?	17.810	0.395	0.000
Have you been trained on OHS issues when recruited? * Do you know how to work safely during your work process?	24.328	0.462	0.000
Have you been trained on OHS issues when recruited? * Do you know how to proceed in case of accident with you or with a colleague?	48.833	0.654	0.000
Have you been trained on OHS issues when recruited? * Regarding occupational safety and health regulations, risks and measures at the workplace; do you consider yourself informed?	38.133	0.578	0.000
Have you been trained on OHS issues when recruited? * Is this training sufficient or would more training in any of these fields be desirable?	13.569	0.345	0.001
Do you know how to proceed in case of accident with you or with a colleague? * First aid_situation	5.908	0.228	0.052*
Do you know how to proceed in case of accident with you or with a colleague? * Prevention of accidents_situation	26.437	0.482	0.000

Do you know how to proceed in case of accident with you or with a colleague? * Prevention of falls_situation	16.900	0.385	0.000
Regarding occupational safety and health regulations, risks and measures at the workplace; do you consider yourself? * Do you think that the legislation regarding OHS should be adjusted?	20.618	0.425	0.002
Years of experience in the sector * Do you know how to proceed in case of accident with you or with a colleague?	7.381	0.254	0.025

*Not significant at 0.05 alpha-level

The employers who accepted (or not) e-learning as applicable (or not) in OHS training were also asked the reasons behind it. The following table shows the top answers for both cases (see Table 9).

Table 9: Chi-Square Results of Hypotheses for Employees' Survey

Questions	Top Answers
Why e-learning is applicable	<ul style="list-style-type: none"> Lack of familiar structure and routine may take time getting used to Some courses such as traditional hands-on courses can be difficult to simulate
Why not e-learning is applicable	<ul style="list-style-type: none"> Learners may have the option to select learning materials that meet their level of knowledge and interest Learners can study wherever they have access to a computer and internet

A similar cross-tabulation analysis was also performed on some questions in the employer survey (see Table 10). For the tested hypotheses the results were found to be significant. The results indicated that companies with high number of employees tend to possess a documented health and safety policy and these companies provide re-training for their employees. Also, the cost of OHS varies across companies with different number of employees. However, overall 40% of companies (for metal and mining sectors the majority of them) spend less than 5,000 Turkish Liras on OHS provision activities.

Table 10: Chi-Square Results of Hypotheses for Employers' Survey

Tested Hypotheses	Chi-Square (X^2) Results	Cramer's V Results	Significance Value
Number of employees * Is there a documented policy/established management system or action plan on health and safety in your establishment?	25.296	0.383	0.001
Number of employees * What is the average cost of Occupational Health provision for the company?	52.461	0.391	0.000
Number of employees * Do you provide re-training?	14.079	0.405	0.007

Conclusion

With regards to occupational health and safety practices in the SMEs in Turkey, the literature provides several studies conducted specifically on certain sectors, such as construction and mining industries. However, contemporary work being done in this area lacks of a detailed examination with particular emphasis on current status and needs of SMEs in Turkey regarding occupational health and safety. This study aims to shed a light on this specific issue. Within this scope, a survey was conducted on participants of the SMEs including both employees and employers. The survey instruments consists of crucial elements regarding OHS management and training systems, which currently take in place in

the SMEs and cover issues such as policies, procedures, costs, barriers and difficulties, and as well as training status and needs. The results obtained through the survey conducted on 200 participants in Marmara Region of Turkey were presented. According to the results of the study the following conclusions can be made:

- The findings of the study confirmed that similar work has been done by EU and other International Authorities, and that the most critical sectors which are exposed to risks associated with OHS were found to be construction, mining and metal.
- Currently, there is indeed a substantial level of training being provided for the SMEs, however, the need for further training is still of great importance even for the employees and the employers who consider themselves trained and informed on OHS.
- With regards to the efficiency and sufficiency of the current training taking place in those companies, it can be concluded that there is a notable problem on transferring the knowledge obtained through this training into practice.
- The topics that should be covered in further training on OHS vary across the industries and therefore the obtained results should be taken into account when designing and planning the training courses in order to meet the expectations.
- In terms of current OHS management practices, certain findings receive particular attention regardless of the sector, which are the followings:
 - lack of awareness of current OHS practices by the employers,
 - following an improper strategy in providing OHS training,
 - not being able to employ a safety representative (especially in small companies),
 - seeing OHS provision as a fulfilment of the legal obligations,
 - the fact that lack of resources and lack of technical support were chosen as the most important barriers in OHS,
 - not being able to see that OHS is a matter of change in culture as there still strong expectations exist on official institutions,
 - the high percentage of not having a documented health and safety policy and management system.
- Regarding the current legislation, although not being comprehended thoroughly, almost fifty per cent of the participants support the idea of certain adjustments in the legislation.
- Different suggestions to increase motivation on learning OHS regulations/safety measures and innovative strategies applicable to OHS training were proposed by the participants.
- A substantial percentage of the SMEs requires trained technical staff in their premises.
- The cost of current OHS practices varies across the companies in terms of the number of employees they possess.
- Overall, awareness of new learning technologies is not very high, but satisfactory, and the realisation of their potential use is an area for improvement.

Considering the above mentioned conclusions of this study, the policy makers in Turkey must review the current legislation and make the necessary changes based on a thorough analysis of the needs of SMEs regarding OHS. Increasing safety awareness in working environments, finding the most effective and appropriate strategies for further training, subsidizing companies for employing safety representatives in their organisations, enhancing the current level of technical support and facilitating access to more resources for the companies, and promoting a safety culture at national education level are some practical actions that can be done within this context.

Although this study provided a certain level of clarification on current OHS status and needs of the SMEs in Turkey, it also possesses limitations or drawbacks which could be considered for future work. An important limitation of the study is the external validity problem. The participation to the survey can be considered inadequate as the survey was conducted in a particular region of Turkey. Should the participation to the survey was extended to the other regions; more concrete results could have been obtained in terms of the generalizability of the findings. A future work extending the survey participation, possibly including some other dimension of OHS, will be of great benefit. Another limitation or deficiency of this study is that the results could have been supported by some qualitative examination therefore a further study covering this aspect will be of potential contribution to the current body of literature.

Appendix 1. Questionnaire for Employees

I. CONTACT INFORMATION

Job Position:

- Administrative staff
- Management staff
- Technical staff
- Supportive staff
- Training staff
- Medical staff

Sector:

- Mining and quarrying
- Metal
- Construction
- Chemistry
- Automotive
- Manufacturing (machinery, textile, tobacco, wearing apparel, leather, wood, paper etc.)
- Electricity, Gas, Steam and air conditioning supply
- Transportation and storage
- Accommodation and food service activities

Years of experience in the sector:

- Up to 5 years
- 5-10 years
- More than 10 years

II. OHS TRAINING & NEEDS

1. Have you been trained on OHS issues when recruited?

- a) Yes
- b) No

If Yes, please describe how:

- a) Workshop
- b) Lecture
- c) Paper materials
- d) Online training
- e) Other, please specify.....

2. Do you know how to work safely during your work process?

- a) Yes
- b) No

3. Do you know how to proceed in case of accident with you or with a colleague?

- a) Yes
- b) No

4. Regarding occupational safety and health regulations, risks and measures at the workplace; do you consider yourself ...?

- a) Very well informed
- b) Fairly well informed
- c) Not very well informed
- d) Not at all informed
- e) Don't know/ no answer

5. On which of the following issues have you or your health and safety representative colleagues received training?

- a) Fire safety Yes/No/No Answer
- b) Prevention of accidents Yes/No/No Answer
- c) Chemical, biological, radiation or dust hazards Yes/No/No Answer
- d) Ergonomics Yes/No/No Answer
- e) First aid Yes/No/No Answer
- f) Manual Handling Yes/No/No Answer
- g) Emergency evacuation procedures Yes/No/No Answer
- h) The use of personal protective equipment Yes/No/No Answer
- i) Prevention of falls Yes/No/No Answer
- j) OHS policy including responsibilities Yes/No/No Answer

6. Is this training sufficient or would more training in any of these fields be desirable?

- a) Training is sufficient
- b) More training would be desirable
- c) No answer

7. Would you need training on any of the following topics?

- | | |
|--|------------------|
| a) Fire safety | Yes/No/No Answer |
| b) Prevention of accidents | Yes/No/No Answer |
| c) Chemical, biological, radiation or dust hazards | Yes/No/No Answer |
| d) Ergonomics | Yes/No/No Answer |
| e) First aid | Yes/No/No Answer |
| f) Manual Handling | Yes/No/No Answer |
| g) Emergency evacuation procedures | Yes/No/No Answer |
| h) The use of personal protective equipment | Yes/No/No Answer |
| i) Prevention of falls | Yes/No/No Answer |
| j) OHS policy including responsibilities | Yes/No/No Answer |
8. Which of the following are the main reasons for receiving no or not sufficient training on these issues?
- | | |
|--|------------------|
| a) Difficulties to get time off for such training | Yes/No/No Answer |
| b) Lack of information about available courses | Yes/No/No Answer |
| c) Available courses are not appropriate for our situation | Yes/No/No Answer |
9. How often do controversies related to safety and health arise between the management and the employee representatives?
- | | |
|----------------------|--|
| a) Often | |
| b) Sometimes | |
| c) Practically never | |
| d) No answer | |

III. OHS FUTURE DIRECTIONS-RECOMMENDATIONS

10. Would you like to participate in up-to-date training regarding OHS issues?
- | | |
|--------|--|
| a) Yes | |
| b) No | |
11. If your answer is "Yes" on the previous question, which format would you prefer?
- | | |
|-------------------------------|--|
| a) Workshop | |
| b) Lecture | |
| c) Paper materials | |
| d) Online training | |
| e) Don't know/No answer | |
| f) Other, please specify..... | |
12. Do you think that the e-learning method will be applicable for you to learn more about OHS?
- | | |
|-------------------------|--|
| a) Yes | |
| b) No | |
| c) Don't know/No answer | |
13. Do you think that the legislation regarding OHS should be adjusted?
- | | |
|---|--|
| a) Yes, because it is too complicated/difficult to understand. | |
| b) Yes, because it is difficult to comply with. | |
| c) Yes, because it does not cover our needs. | |
| d) No, it is sufficient. | |
| e) No, because if changed, it may become more difficult to comply with. | |
| f) I do not know current legislation | |
| g) No answer | |
14. Do you want to be involved in online training in OHS?
- | | |
|--------|--|
| a) Yes | |
| b) No | |

Appendix 2. Questionnaire for Employers

I. CONTACT INFORMATION

Job Position:

- Administrative staff
- Management staff
- Technical staff
- Supportive staff
- Training staff
- Medical staff

Sector:

- Mining and quarrying
- Metal
- Construction
- Chemistry
- Automotive
- Manufacturing (machinery, textile, tobacco, wearing apparel, leather, wood, paper etc.)
- Electricity, Gas, Steam and air conditioning supply
- Transportation and storage
- Accommodation and food service activities

Number of employees

- 1-10
- 11-50
- 51-250
- 251-500
- More than 500

Years of experience in the sector:

- Up to 5 years
- 5-10 years
- More than 10 years

II. OHS MANAGEMENT

1. What types of safety representatives do you employ within your establishment?

(More than one response may be given)

- a. Occupational health physician
- b. Industrial hygienist
- c. Health and Safety expert
- d. General health and safety consultancy
- e. Ergonomics expert
- f. First Aiders
- g. General Practitioner

2. Is there a documented policy\ established management system or action plan on health and safety in your establishment?

- a. Yes
- b. No
- c. No answer

3. Does your company carry out / provide any of the following:

- | | |
|---|--------|
| a) Hazard Identification | Yes/No |
| b) Formal Risk Management | Yes/No |
| c) Measuring workplace hazards | Yes/No |
| d) Provision of information on OHS-related issues | Yes/No |
| e) Training of staff specifically on OHS-related issues | Yes/No |
| f) Health checks for specific hazards such as noise | Yes/No |
| g) Modifying workplace or work activities as a result of OHS surveillance | Yes/No |

4. If yes to (e), for which types of jobs at your company?

(More than one response may be given)

- a) All employees
- b) Only employees exposed to certain hazards
- c) Only certain grades of staff (Management/admin/manual)

5. What are the main reasons for having Occupational Health provision?

(More than one response may be given)

- a) Responsibility for health and safety of employees
- b) Fulfilment of legal obligation
- c) Staff retention and absence management
- d) Pressure from employees and/or their unions
- e) Pressure from the (labour inspectorate)
- f) Concerns about litigation

- g) Economic or performance related reasons
- h) Requirements from clients or concern about the organisation's reputation
- 6. **Which, if any, of the following do you feel are barriers to providing Occupational Health support?**
(more than one response may be given)
 - a) Lack of resources (e.g. time/staff/money)
 - b) Lack of technical support or guidance
 - c) The culture within the establishment
 - d) Lack of awareness
 - e) Lack of expertise
 - f) The sensitivity of the issue
 - g) Never really thought about it
 - h) None of these
- 7. **What is the average cost of Occupational Health provision for the company?**
 - a) Under 1.000 TRY per year
 - b) 1.000 TRY -4.999 TRY per year
 - c) 5.000 TRY -14.999 TRY per year
 - d) 15.000 TRY -29.999 TRY per year
 - e) 30.000 TRY or more per year
 - f) Do not know
- 8. **Which, if any, of the following resources would you use if you required advice on the health and safety of your employees?**
(More than one response may be given)
 - a) Official institutes for Occupational Health and Safety
 - b) Local Authority (or labour inspectorate)
 - c) Trade Associations
 - d) Employers' organisations
 - e) Insurance providers
 - f) In-house health and safety services
 - g) OH or Health & Safety advisors
 - h) Other (specify)
 - i) None

III.OHS TRAINING

- 9. **Which types of job positions could you identify with a lack of training in the field of OHS?** *(More than one response may be given)*
 - a) Administrative staff
 - b) Management staff
 - c) Technical staff
 - d) Supportive staff
 - e) Training staff
 - f) Medical staff
 - g) Other, please specify
- 10. **How often do you provide OHS training?**
(More than one response may be given)
 - a) Once (when someone is employed)
 - b) On regular base
 - c) When an incident occurs
 - d) When the legal framework changes
 - e) Before auditing
 - f) Other, please specify.....
- 11. **In which format?**
 - a) Workshop
 - b) Lecture
 - c) Paper materials
 - d) Online training
 - e) Other, please specify
- 12. **Do you provide re-training for the personnel?**
 - a) Yes
 - b) No

If yes, for which of the following occasions?

- a) It's part of the establishment's routine
- b) When an incident occurs
- c) When the legal framework changes
- d) Before auditing
- e) Other, please specify.....

IV.OHS FUTURE DIRECTIONS-RECOMMENDATIONS

13. Please suggest how employees can be motivated to learn the OHS regulations and safety measures? (More than one response may be given)
- By presenting the benefits of such knowledge
 - By the value of using this information in practice
 - By knowing how to use the obtained knowledge in order to reach certain results
 - By the improved performance as a result of a training session
 - By rewarding them (financially or no)
 - By presenting this education as an integral part of their working hours
 - Other, please specify.....
14. How the training should be designed? Please specify the approach/format/media
- Workshop
 - Lecture
 - Paper materials
 - Online training
 - Other, please specify
15. Do you think that the e-learning approach will be applicable for OHS training?
- Yes
 - No
 - I don't know
- If Yes, why? (More than one response may be given)*
- Class work can be scheduled around personal and professional work.
 - Reduces travel cost and time to and from educational centres.
 - Learners may have the option to select learning materials that meets their level of knowledge and interest.
 - Learners can study wherever they have access to a computer and Internet.
 - Self-paced learning modules allow learners to work at their own pace.
 - Flexibility to join discussions in the bulletin board threaded discussion areas at any hour, or visit with classmates and instructors remotely in chat rooms.
 - Different learning styles are addressed and facilitation of learning occurs through varied activities.
 - Development of computer and Internet skills that are transferable to other facets of learner's lives.
 - Successfully completing online or computer-based courses builds self-knowledge and self-confidence and encourages employees to take responsibility for their learning.
- If No, why? (More than one response may be given)*
- Unmotivated learners or those with poor study habits may fall behind.
 - Lack of familiar structure and routine may take time getting used to.
 - Learners may feel isolated or miss social interaction.
 - Instructor may not always be available on demand.
 - Slow or unreliable Internet connections can be frustrating.
 - Managing learning software can involve a learning curve.
 - Some courses such as traditional hands-on courses can be difficult to simulate.
16. Are there any innovative strategies related to the OHS training which could be applied and how? (More than one response may be given)
- Subsidizing part of the OHS training cost or discounting the corporation's insurance costs
 - Advising on organisational design regarding OHS
 - Measuring and publicising organisational performance regarding OHS
 - Local business network sharing information/experience on OHS issues
 - Free OHS resources/manual/kit for employers
 - Free OHS assistance/consultancy
 - Benchmarks e.g. inspection checklist/flow charts
 - Sample procedures & other documents
17. Do you think that the legislation regarding OHS should be adjusted?
- Yes, because it is too complicated/difficult to understand.
 - Yes, because it is difficult to comply with.
 - Yes, because it does not cover our needs.
 - No, it is sufficient.
 - No, because if changed, it may become more difficult to comply with.
 - I do not know current legislation
 - No answer
18. Do you want to be involved in online training in OHS?
- Yes
 - No

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