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Research Article

RISKS ANALYSIS IN CATERING INDUSTRY

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Abstract: *In recent years, occupational health and safety have become one of the important elements of working life. The importance of contributing to the protection of employee health by preventing occupational accidents and occupational diseases is increasing demand nowadays. The rapid growth of the catering sector with increasing employment and competition turns into a growing problem: an increase in occupational accidents. In this research carried out with the necessity of taking precautions for the solution to this problem; a risk analysis was conducted in a catering company in Uşak to identify hazards and risks in the company. The hazards and risks are evaluated and precautionary actions were determined according to the current situation. At the same time, it is thought to be beneficial in terms of creating awareness for all companies in the sector by contributing to the protection of employee health by reducing occupational accidents and diseases. Risk analyses were done by the L type matrix (5x5 matrix table). In this study, a total of 131 hazards and risks were identified. The identified hazards and risks are grouped according to their risk level (Unacceptable risk: 5; Significant risk: 61; Medium risk: 59; Acceptable risk: 6). It is considered that adopting proactive approaches within the scope of occupational safety practices will accelerate the spread of the safety network and occupational safety culture to all employees.*

Key Words: *Catering, Risk, Analyze, Occupational, Safety*

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1. Introduction

The catering sector in Turkey is the human labor-intensive sector. The number of employees in this sector is increased as the day due to the higher nutritional needs of the public over the years. According to the employment statistics, it is clear that there is a sector that directly and indirectly contacts millions of people [1-2]. The catering sector is listed among the less dangerous sectors according to the list in the legislative regulations in which workplace hazard classes are specified. Nevertheless, employees face many serious risks such as falling, cutting, burning, injury, and death [3-4]. According to the statistics, there has been a significant increase in occupational accidents in the catering sector in recent years. Because of this reason, the precautionary warnings have to be taken in this industry. In the catering industry, a large number of employees can exposure occupational accidents, some of the employees have occupational diseases that can be caused by death [1]. The losses due to occupational accidents that may occur as a result of insufficient or no occupational safety measures are not limited to labor and material losses. The competitiveness and effectivity of enterprises are decreased because of the negatively affected employees. The most important point in the catering industry is to

take precautionary warnings before the occupational accident which can be caused the occupational disease [5].

2. Importance of Risk Analysis in Occupational Health and Safety

The basis of occupational health and safety studies is the risk assessment process. There are the reasons and results of each risk when it occurs. There are internal factors in the workplace that can be caused by risks, besides, the enterprises can be affected by the external factors. Risk analysis focuses on the part where the risk assessment process is integrated into theoretical and mathematical [6]. There are many methods for analyzing risks. Some of these are given in subsection [7].

- Preliminary Hazard Analysis - PHA
- Risk Map
- Job Safety Analysis - JSA
- Preliminary Risk Analysis Using Checklist – PRA
- Preliminary Risk Analysis
- What if..? Analyses
- Degree of Hazard Analyses Method
- Hazard and Operability Studies - HAZOP
- Type of Probable Error and Effect Analyses Method
- Event Tree Analysis - ETA
- Cause and Effect Relationship
- Rapid Ranking Method for the Classification of Unıts
- Safety Audit
- Fault Tree Analysis - FTA
- Risk Assessment Decision Matrix
    - X Type Matrix
    - L Type Matrix

The most important point that separates these risk analysis methods is the differences in the methods they use to find risks. The most commonly used method is the risk assessment decision matrix. The L-type matrix can be used for prompt. The simplicity of the L type matrix is a priority in choosing [8].

One of the most important points in occupational safety is to take precautionary warnings before occupational accidents and diseases occur which is named as a proactive approach. According to the proactive approach, the decrease in occupational accidents and diseases, costs can be distinguished. The enterprises manage their resources better with increasing self-confidence. The risk analyses have to be done for proactive approaches. The risk analysis helps to anticipate potential hazards and risk factors that may occur in enterprises. According to the risk analyses, the impact of the risks can be examined and effective security measures can be planned in detail. The employees play an interactive role to have a safe working condition by the risk analyses. Also, risk analyses help to take quick and accurate decisions by the employer for the elimination of the risks. After the assessment, the importance of the risks in the enterprise is determined and it is decided whether these will be ignored or not, the existing measures in the workplace are checked and the deficiencies are completed. It also provides the

traceability of the results with the help of the documentation during the creation of a safe working environment [8-9].

3. Material and Method

The research was carried out in the catering company with the signing of the permission document by the employer for the risk analysis studies. The time interval of the study was between October 2018 and June 2019. In this study, general information about the catering company, production methods, types of equipment, job groups which are in this sector and the data about occupational accidents and diseases are written. Furthermore, the company was visited at different time intervals for collecting data. The company has 10 employees (7 men and 3 women). The company produces till 1000 meal/person in a day in the company. Some data were collected by visual observation about the company.

In the research, risk analysis was performed by using the 'L type matrix' (5x5 matrix table) [10]. The following steps were followed during the implementation of the risk analysis conducted within this scope [11]. These;

a) Identification of hazards
b) Assessment of hazards
c) Scaling the risks
d) Planning the control measures

stages were applied respectively.

a) For the identification of hazards, the attention has been paid to cover all parts of the company and all work performed by personnel was considered carefully.

b) When assessing the hazards, it has been tried to predict which hazards will affect how much for each of the identified hazards. The damage that may occur after the potential impact was evaluated and also the degree of the hazards was determined.

c) In the scaling of risks, it is tried to predict the harm that hazards will cause in the workplace and the employee. Risks are separated into groups such as low, medium, high risks. High risks mean that it requires immediate action, medium risks do not require urgent action as high risks but medium risks are important for the company and low risks mean that do not require urgent action plans [12]. After this stage, control measures according to risks were tried to be planned. The suitability of the measures was determined for the company and the decrease in the risk level related to the control measures were also taken into consideration [8].

d) While planning the control measures, priority was taken to eliminate the risks. In some cases where this is not possible, priority has been made to reduce the risk level as much as possible [8].

In the study, the probability of an event and the effects of the damage related to the event are tried to be graded together (risk score) using the L-type matrix [13]. To obtain a risk score, the probability of occurrence of an event (Table 1) and the intensity of the damage at the time of occurrence (Table 2) was given a numerical value between 1 and 5, respectively. The risk score is obtained by multiplying the probability and intensity of the event.

$$\text{Risk Score (R)} = \text{Probability} \times \text{Intensity}$$

Table 1. Probability of the Event [8].

Probability Value	**Probability**	**Scaling for the Possibility of an Event**
1	Very Low	The event does not occur anyway.
2	Low	The event occurs rarely.
3	Medium	The event occurs occasionally.
4	High	The event occurs frequently.
5	Very High	The event occurs very often.

Table 2. The intensity of Damage Caused by an Event [8].

Intensity Value	**Intensity**	**Scaling for the Intensity of an Event**
1	Very Low	Events do not result in a loss of working hours.
2	Low	Events do not result in a loss of working days.
3	Medium	Events cause mild injuries.
4	High	Events cause serious injuries
5	Very High	Events cause the death or inability to work permanently.

In the risk score matrix (Table 3), the value of risk was tried to be determined the risk level by multiplying two values as the probability on one side and intensity on the other side of the matrix. In the matrix table, the vertical column indicates the intensity value and the horizontal row indicates the probability value.

Table 3. Matrix of the Risk Score [8].

Matrix of the risk score	**Probability**				
Intensity	1 Very Low	2 Low	3 Medium	4 High	5 Very High
1 Very Low	Senseless 1	Low 2	Low 3	Low 4	Low 5
2 Low	Low 2	Low 4	Low 6	Medium 8	Medium 10
3 Medium	Low 3	Low 6	Medium 9	Medium 12	High 15
4 High	Low 4	Medium 8	Medium 12	High 16	High 20
5 Very High	Low 5	Medium 10	High 15	High 20	Very High 25

The decisions were made to take preventive actions according to the acceptability of the risk level (Table 4).

Table 4. The Acceptability of the Risk Level [8].

Acceptability Value	Preventive Actions
Unacceptable Risk (25)	- The ongoing activities should be stopped immediately. - Activities should not be begun until the risk level is decreased to an acceptable level. - If the risk level does not decrease even if the precaution is taken, the activities should be canceled.
Significant Risk (15-16-20)	- If there are ongoing activities, it should be stopped immediately. - The activities should not be started until the identified risk level is decreased. - If the risk persists with the activity, precautions should be taken quickly.
Medium Level Risk (8-9-10-12)	- The precautions should be taken to decrease the risk level. - The precautions taken to decrease the risk level may take time.
Acceptable Risk (2-3-4-5-6)	- The precautions may not be needed to eliminate risks. - The sustainability of the precautions should be checked.
Insignificant Risk (1)	- It may not be necessary to take precautions for the risks or the records of precautions may not be maintained.

In this study, the hazards and risks were indicated separately, and assessments were made according to the precautions which can be taken, the intensity values, the risk score and the level of acceptability.

4. Results

In this study, a total of 131 hazards and risks were identified. The identified hazards and risks are grouped according to their risk level (Unacceptable risk: 5; Significant risk: 61; Medium risk: 59; Acceptable risk: 6) and shown in Table 5, Table 6, Table 7 and Table 8.

The risk score (multiplication of probability and intensity values) of all unacceptable hazards and risks (risk score: 25) shown in Table 5.

Table 5. Unacceptable Hazards and Risks (R=25)

No	Hazard	Risk	Corrective/Preventive Action
1	Electric panel	Electric shock, injury, death	The panel door must be locked and the key must be for authorized persons only.
2	Insulating matting	Electric shock, injury, death	There should be an insulating mat in front of the electrical panel.
3	Electrical devices, switchboards, transformers	Electric shock, injury, death	All devices in contact with electricity should be kept away from wet areas and appropriate ventilation should be provided in humid areas.
4	Electrical maintenance	Electric shock, injury, death	During maintenance, breakers must be closed and labeling-locking procedures should be applied.
5	Leakage relay	Electric shock, injury, death	Electrical panels must be fitted with a leakage relay in accordance with the regulations.

The risk score which calculated by multiplication of probability and intensity values of the significant hazards and risks were found between 15 and 20 and was shown in Table 6. Those whose risk score is calculated as 20 are shown as numbers 1-24, those calculated as 16 are shown as numbers 25-56, and those calculated as 15 are shown as numbers 57-61.

Table 6. Significant Risks and Hazards ($15 \leq R \leq 20$)

No	Hazard	Risk	Corrective/Preventive Action
1	No emergency practices	Employees do not know what to do in case of emergency	Regular emergency practices should be done.
2	Lack of emergency warning and communication system	Late emergency interference, loss of property and death	An audible warning system must be established. The personnel in charge should be informed.
3	Lack of first aid cabinet	Employees can not do anything in case of emergency	The first-aid cabinet should be placed within easy reach.
4	Missing material in the first aid cabinet	Late intervention in emergencies	All necessary first aid materials should be available in the cabinet.
5	Lack of first aid training to the employees	Late intervention in first aid	Employees should be provided with first aid training.
6	An obstacle in front of fire extinguisher	Late fire interference	Obstacles in front of the fire extinguisher must be eliminated and personnel must be informed about this subject.
7	Lack of fire warning system	Late fire interference, injury, death	A fire warning system, emergency button, light, and audible warning system should be established.
8	Untrained employee	Late fire interference, injury, death	Fire training should be provided.
9	Wear of electrical cable insulation	Electric shock, injury, death	Wear electrical cables must not be used.
10	Do not leave unplugged hand tools plugged in	Electric shock, injury, death	Unused hand tools should not be left plugged in, employees should be informed about this issue.
11	The electrical cables are not in the protective cable duct	Electric shock, injury, death	All electrical cables must be located inside the protective duct.
12	Lack of lightning rod	Lightning strike, fire, injury, death	It must be ensured that the lightning rod is inspected by authorized persons every year in accordance with the fire regulations.

No	Hazard	Risk	Corrective/Preventive Action
13	Not wearing personal protective equipment	Electric shock, injury, death	Electrically operated personnel should be provided with personal protective equipment such as insulated gloves and insulating shoes.
14	Untrained and unauthorized persons in charge of electrical works	Electric shock, injury, death	It should be ensured that the electrical works are carried out by trained and authorized personnel.
15	Lack of electrical warning signs	Electric shock, injury, death	Electrical hazard areas must be marked with warning signs and unauthorized persons must be prevented from entering these areas.
16	Lack of static grounding measurement of machines	Electric shock, injury, death	Static grounding measurements of all types of equipment and machines in the company should be ensured to be carried out within the specified periods in accordance with the regulations.
17	Lack of emergency stop buttons of machines	Injury, loss of limb	Emergency stop buttons are required for all machines.
18	Emergency stop buttons of the machines not working or canceled	Injury, loss of limb	The emergency stop buttons of the machines must be in working order and must never be canceled.
19	Lack of machine protections	Injury, loss of limb	The machines without protections must never be operated.
20	Disassembling and canceling machine protection	Injury, loss of limb	The machine protectors must never be removed or canceled.
21	Electrical cables of the machine are placing in the ground	Electric shock, injury	All cables passing through the ground must be passed through insulating lines.
22	Employees who use cutting equipment do not wear protective gloves	Cut, rupture, injury	Employees should wear protective gloves that are suitable for their job.
23	Uneducated employees using cutting equipment	Unconscious use, accidents	Employees should be trained about the risks of the tools.
24	Unstable cutting equipment	Accidents	All cutting equipment in operation must be checked regularly.
25	Placing the electrical cables untidy.	Stuck, fall, injury	The untidy electrical cables should be collected in the cabinet.

No	Hazard	Risk	Corrective/Preventive Action
26	No warning signs for machinery and equipment	Accidents	Appropriate warning signs should be provided.
27	No labeling-locking procedure is applied during machine cleaning and maintenance	Accidents, injury	The labeling-locking procedure should be applied for machine cleaning and maintenance operations.
28	Use of machines by untrained persons	Accidents, injury	Machines should only be used by trained and authorized personnel.
29	Non-Turkish buttons on the machine	Unconscious use, accident	Non-Turkish buttons on the machines should be labeled in Turkish.
30	Hot Surfaces	Burning from hot surfaces	It should be ensured that employees use heat-resistant gloves when working on hot surfaces.
31	Lack of sharpening of cutting tools	Accidents	Cutting tools must be sharpened regularly.
32	Use of cutting tools on non-smooth cutting surfaces	Accidents	Cutting tools must be used on smooth cutting tables.
33	Lack of instruction manual of the equipment	Unconscious use, accident	The instruction manual of the equipment should be prepared and employees should be informed about the instruction manual.
34	Failure to remove cutting equipment after use	Accidents	All cutting equipment should be removed after use.
35	Material stacking at high points	Material drop, injury	Materials do not stack at high points.
36	Paying no attention to height and balance during the stacking of the equipment	Material drop, injury	The height and balance of the equipment should be taken into consideration when stacking.
37	Uncontrolled opening of the lid when cooking in boilers	Accidents	The boiler lid should be opened properly and the employee should not be exposed to superheated steam.
38	Do not use opening apparatus when opening packages such as canned foods.	Accidents	Employees must be used as the opening apparatus for canned foods. Cutting equipment such as nice should not be used for the opening of the packages.

No	Hazard	Risk	Corrective/Preventive Action
39	Maintenance of the range hood.	Fire	The cleaning and maintenance of the range hood must be regularly and records must be kept.
40	Inability to open the door from the inside	Locked in	The doors can be opened from the inside in case they remain locked.
41	Locked in the refrigerator	Freezing	Employees should not enter the refrigerator alone and must be accompanied by one person at the door.
42	No warning system inside of the refrigerator	Freezing	An audible warning system should be installed in the refrigerator and it should be operational.
43	Not wearing appropriate clothing in the refrigerator	Cold exposure, freezing	Appropriate thermal clothing should be provided for personnel entering the refrigerator and personnel should not be allowed to work without thermal clothing for a long time.
44	Slippery ground	Slip, fall, injury	If liquid spills in the refrigerator, the liquid must be cleaned immediately to prevent freezing and falling.
45	Personal protective equipment	Material drop, slip, fall, injury	Employees must wear non-slip shoes for preventing slipping and falling.
46	High stacking	Accidents	There were not made high stacking in the refrigerator.
47	Material drop, overturn	Injury	The shelves inside the refrigerator must be secured against overturned.
48	High stacking	Accidents	There were not made high stacking in the storage.
49	Lack of health report of employees	Lack of knowledge about employees for a suitable job.	Employees must be provided with health reports indicating their suitability before starting the job.
50	Periodic repetition of clinical examination	Failure to follow the health status	The clinical examination should be periodically renewed in accordance with the regulation periods to observe the health status of the employees.
51	Inadequate cleaning of the working environment	Infectious disease	The work environment should be cleaned regularly with suitable cleaners.
52	Biological risks and lack of hygiene education	Unconscious work, infectious disease	Employees should be provided with hygiene training about biological risks.

No	Hazard	Risk	Corrective/Preventive Action
53	Continuing to work with an open wound.	Acquiring an infection, infectious disease	Employees with an open wound must be prevented from working.
54	Pest control and disinfection	infectious disease	Pest control and disinfection should be done regularly.
55	Unhygienic sinks	infectious disease	Sinks should be cleaned regularly and disinfectants should be applied at regular intervals.
56	Slippery ground	Slip, fall, injury	The wetness of the sink surface must be removed after cleaning.
57	Lack of emergency teams	Chaos during emergencies	Employees should be informed about emergency teams and plans.
58	Lack of emergency telephone numbers	Inaccessibility of emergency numbers	Emergency numbers should be posted in an appropriate place in the company and information should be provided to the employees.
59	Difficulties to reach a fire extinguisher	Late fire interference	Fire extinguishers should be placed in easily accessible places.
60	Lack of firefighting training	Lack of fire intervention	Fire training should be given and practices should be done regularly.
61	Unconsciously burning fire	Fire, Injury	The unconscious fire should be prevented and personnel should be informed about it.

The risk score which calculated by multiplication of probability and intensity values of the significant hazards and risks were found between 8 and 12 and was shown in Table 7. Those whose risk score is calculated as 12 are shown as numbers 1-47, those calculated as 9 are shown as numbers 48-52, and those calculated as 8 are shown as numbers 53-59.

Table 7. Medium Level Risk ($8 \leq R \leq 12$)

No	Hazard	Risk	Corrective/Preventive Action
1	Lack of emergency exit	Inability to go out in case of emergency	The information must be given to the employees.
2	No warning sign on the emergency exit	Difficult to find the emergency exit	Signs on the emergency exit must be seen in all situations.
3	The obstacle in front of emergency exit	Inability to go out in case of emergency	There should not be placed any material in front of the emergency exit and information should be provided to the employee.
4	Lack of assembly area	Not being in an assembly area in	The information should be provided to the employee about the assembly area.

No	Hazard	Risk	Corrective/Preventive Action
		case of emergency	
5	No fire extinguisher	Late fire interference	Fire extinguishers should be checked regularly.
6	Unsuitable type of fire extinguisher	Inability to interfere to fire	Fire extinguishers should be selected according to the operation.
7	Lack of periodically maintain the fire extinguisher	Late fire interference, injury, death	The control and filling of the devices must be carried out in accordance with the regulations by the authorized person and within periods.
8	Leaving electrical equipment and devices on the mode	Fire, Injury	The electrical devices should not be left open and the information must be given to the employees.
9	Slippery ground	Slip, fall, injury	Slippery areas in the plant should be identified and indicated with warning signs.
10	Wet floor/residuum	Slip, fall, injury	The warnings should be placed on wet floors and the floor should be cleaned in a short time.
11	Irregular work area	Hanging, falling	The materials used in the company should not be left irregularly, the materials should be replaced after usage.
12	Environmental cleaning	Epidemic Illnesses	The plant must be cleaned regularly. Waste areas should be created.
13	General warning signs	Unconscious movement, inability to foresee danger	The warning signs must be placed at the company.
14	On-the-job training	inability to foresee danger	On-the-job training should be given to the new employee.
15	Pouring slippery substance to the floor	Slip, fall, injury	Slippery materials should be cleaned immediately.
16	Lack of personnel protective equipment usage	Slip, fall, injury	Employees should be provided with non-slip shoes or boots.
17	Slippery ground	Slip, fall, injury	Precautions should be taken to prevent slipping on the floor.
18	Drainage	Slip, fall	The drainage must be made of non-slip material.
19	Lack of vehicle reverse signaling system	Crash, injury, death	All vehicles must have a reverse gear audible warning system.
20	Non-compliance with traffic rules	Crash, injury, death	Training should be provided to employees about the traffic rules.

No	Hazard	Risk	Corrective/Preventive Action
21	Lack of personnel protective equipment usage	Accidents	The information must be given to the employees and the employees should wear personal protective equipment appropriate to the work.
22	Wearing oversized clothes	Accidents	The employees should not wear oversized clothes.
23	Jewelry	Accidents	The employees should not wear jewelry during the operation.
24	Levity	Accidents	The employees should not joke with one another during the operation.
25	Thermal comfort	Discomfort, depression	The maintenance of the ventilation system must be regularly.
26	Unsuitable railings	Accidents	The suitable railings should be used in the company.
27	Lack of clean and tidy access roads and corridors	Stuck, fall, injury	Roads and corridors in operation must always be clean.
28	Cleaning precautions	Slip, fall, injury	Necessary precautions should be taken during cleaning and after cleaning in the cleaned areas and the floor should not be left wet.
29	Unusual increase in temperature	Pathogen microorganism growth, disease formation	In order to prevent food spoilage and to prevent the spread of pathogenic microorganisms, refrigerator temperature controls should be checked regularly and the cooling system should be periodically maintained and calibrated.
30	The material drop	Injury	Shelves in the refrigerator must be secured.
31	Untidy and uncleaned areas	Accidents	The refrigerator should be clean and tidy.
32	Untidy and uncleaned areas	Accidents	The storage should be clean and tidy.
33	Lack of personnel protective equipment	Accidents	Appropriate personal protective equipment should be used in chemical use.
34	Lack of material safety data sheet	Lack of knowledge in case of emergencies	The chemicals must have material safety data sheets.
35	Unsuitable chemical package	Lack of knowledge about chemical	Chemicals must be kept in their original packaging.
36	Suitable storage after usage	Accidents	Chemicals must be removed to the storage room after usage.
37	Wet floor	Slip, fall, injury	The floor should not be left wet after cleaning.

No	Hazard	Risk	Corrective/Preventive Action
38	Lack of personnel protective equipment	Poisoning, tissue damage, allergy	Personal protective equipment such as gloves, mouthpiece, apron, non-slip boots should be used when cleaning.
39	Lack of material safety data sheet (MSDS)	Unconscious use, poisoning	Safety data sheets (MSDS) of chemical materials must be available.
40	Unsuitable chairs, benches, etc. used by employees.	Musculoskeletal disorders	Equipment used by employees such as chair bench should be adjustable according to physical measurements.
41	Lifting of heavy things by hand	Musculoskeletal disorders	Transport equipment must be available for heavy things.
42	Inadequate number of the cabinet for clean and dirty clothes	Infectious disease, theft of personal belongings	Adequate and lockable cabinets are required to put clean and dirty clothing separately.
43	Putting something on the cabinet	Material drop, injury	The materials should not put on the cabinet.
44	Inadequate lightening	Accidents	The lighting apparatus should be arranged according to the existing areas.
45	Inadequate ventilation	Infectious disease	Adequate ventilation should be provided in locker rooms.
46	Inadequate hygiene in the locker rooms	Infectious disease	The cleaning must be done in the locker room regularly.
47	Inadequate hygiene in bathrooms	Infectious disease	The cleaning must be done in the bathrooms regularly.
48	Lack of personnel protective equipment	Accidents, injury	The appropriate personal protective equipment should be used according to the operation.
49	Puddles on the ground	Slip, fall	An adequate number of drainage systems must be provided for puddles.
50	Drainage	Hanging, falling	The level of drainage and ground must be the same.
51	Grid range of drainage	Hanging, falling	The grid range of the drainage must be prevented the hanging.
52	Untidy materials	Hanging, falling	Workplace irregularity should be avoided.
53	Driving license	Crash, injury, death	Vehicles in operation must only be operated by authorized employees.
54	Failure of the vehicle	Crash, injury, death	The maintenance and control of the vehicles should be made regularly and records must be kept.
55	Fire in the vehicle	Fire	The vehicle must have a fire extinguisher.
56	Improper stacking of vehicles	Injury, accidents	The materials should be load in proper design to the vehicle.

No	Hazard	Risk	Corrective/Preventive Action
57	Lack of control after loading of the vehicle	Material drop, accident, injury	Before the vehicles move, the tailgate, etc. should be checked.
58	Employees traveling in the vehicle trunk	Injury, accidents	Employees must not travel in the vehicle trunk.
59	Inadequate number of sitting chair	Falling in the locker room	An adequate number of sitting chairs must be provided for employees in the locker room.

The risk score which calculated by multiplication of probability and intensity values of the significant hazards and risks were found between 2 and 6 and was shown in Table 8. Those whose risk score is calculated as 6 are shown as numbers 1-4, those calculated as 5 are shown as number 5, and those calculated as 4 are shown as numbers 6.

Table 8. Acceptable Risks ($2 \leq R \leq 6$)

No	Hazard	Risk	Corrective/Preventive Action
1	Material stack	Hanging, falling	Materials should not be left in the middle of the floor. Precautions should be taken to prevent hanging and falling.
2	Inadequate lightening	Crash, hanging, falling	The lighting apparatus should be determined according to the areas.
3	Floor fracture, collapse	Hanging, falling	In case of damage such as collapse or floor fracture, these places should be corrected.
4	Broken bounds in the drainage grids	Hanging, falling, injury	The drainage grids should be checked and replaced in case of fracture.
5	locking the emergency exit door	Inability to go out in case of emergency	The emergency exit door must never be locked.
6	Drinking while driving	Crash, injury, death	The training must be given to employees about drinking while driving.

5. Discussion and Conclusion

According to the data obtained from the study, all of the unacceptable risks are related to electrical works. The operations should be stopped immediately and should not be started without taking precautions to reduce the risk level. The high-level risks give very serious damage to the employees such as an inability to work continuously and death. Significant risks are caused by emergencies, fire, electricity, stoves-ovens, and other machinery, cutting-piercing tools, hazardous behavior and situations, working environment, refrigerator, storage, biological factors, cleaning, locker rooms, and bathrooms. It is observed that middle-level risks are caused by emergencies, fire, general operation, floor, vehicle use, hazardous behavior and situations, working environment, storage, refrigeration, chemicals, cleaning, ergonomics, locker rooms, and bathrooms. Acceptable risks are caused by emergencies, general operation, ground and vehicle use.

According to the data in our study, some of the hazards occur due to the nature of the work performed and some of them are caused by the equipment used in the company. It is determined that intense work tempo, lack of training and lack of personal protective equipment increase the risk level.

In other studies, it was determined that cutting materials, slippery floor, cleaning, slip-falling, dangerous behavior, biological materials, storage areas, hot-cold areas, workload, time pressure, stress, lack of education cause risks and accidents [14-15]. Providing occupational safety training and using personal protective equipment will help to reduce the risk level of most hazards. Similar results were obtained at the other study about the opinion about wearing personnel protective equipment [15-16].

It is considered that adopting proactive approaches within the scope of occupational safety practices will accelerate the spread of the safety network and occupational safety culture to all personnel. Otherwise, human-oriented preventive approaches are effective in controlling risks [17]. As a result of this study, the most appropriate approach for the company to start occupational health and safety studies at the installation stage. In this way, it will be possible to reduce occupational accidents and prevent the accident costs and also it helps competition and productivity gains of the company.

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