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# To what extent the System of the Occupational Safety and Health Administration ISO 45001:2018 Prevents Injury

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This research aims to analyse and study the methods of prevention of work-related injuries. Additionally, it seeks to understand how the use of safety tools, rules and regulation as well as employee's participation and programs occurring within industrial organisations and what is to be followed when implementing them. The research concentrates on the measures taken by the organisation in order to manage and reduce the protection of human resources from occupational diseases as well as the risks related to their work and by standing on the reality of the application of the standard of health and safety management system that focuses. This is crucial for organisations to reduce occupational accidents and diseases and the application of health management systems and occupational safety issues and the integration of standard and requirements and examples of good practices, human resources and good technology. The results of the study are represented in the tool business organisation as it wants to implement or update health and safety management system using the professional tool checklist (Checklists) for the application of the standard 45001 ISO.

**Keywords:** *Health Administration, Occupational Safety, ISO 45001:2018, Textile Industry in Iraq.*

## Introduction

The primary role of a health management system and occupational safety at work is as a useful tool to enable a textile factory to improve the quality of internal customer have proactively longer lives, and reduce the risks faced by workers in the workplace and is an effective means for the application of occupational health and safety system, through the use of good knowledge and compliance with the requirements of the system, a full assessment and an updated risk and a strong safety culture within the organisation (Robson et al., 2007). Attention and maintenance of the safety and health of workers to industrial organisations whose work are accompanied by the risk of accidents and occupational injuries to workers in work according to national legislation and the status of safety and improve working conditions (Jones et al., 2018). The organisation's reliance on a global standard is important to enable the organisation to improve its performance through the development and implementation of occupational health and safety policy and objectives and to establish systematic processes that take into account the context and risks of the organisation, evaluate its performance and seek to improve it, ensure that workers play an active role in occupational health and safety issues, and to enable Organizations must achieve a safe working environment from the dangers of different industries and raise the level of efficiency of workers and means of prevention that will lead to the reduction of work accidents and accidents and thus reduce the working hours lost due to absence due to accidents and injuries in the workplace (Amponsah-Tawiah & Mensah, 2016).

The researcher found that there are risks to workers in their field within the textile and sewing factory (Hanson & Boland, 2019). There are increasing rates of work accidents and occupational diseases, (due to lack of ventilation, noise, heat, chemicals, lighting). The problem of work accidents and injuries is present in the company as long as the production wheel and work continues and therefore the organisation must take measures to prevent these risks through regulatory processes, and to minimise the loss of hours of work, according to the researcher it was found that it is necessary to evaluate the occupational safety and health of the company to enable control and control. In the risks to the employees of the company according to an integrated system

of occupational health and safety according to the international standard ISO 45001: 2018 (Wright, Hollohan, Pozniak, & Ruehlen, 2019).

Most industrial organisations provide health units to serve the health needs and requirements of their employees. The main task of these units is to provide curative services against illnesses and accidents to individuals working on the job, often working together with security and occupational safety officials. The health services program should be based on the following principles:

1. Determining preventive and therapeutic policies and conducting periodic checks for working individuals who are exposed to health risks.

2. Preparing and providing consultations, health guidance, equipment and supplies necessary for use in case of emergency.

3. Maintain facilities and equipment to eliminate the possibility of harmful emissions control the use of toxic substances and eliminate radiation hazards.

4. Training workers to avoid risks

5. Conduct regular inspections to ensure that potential health risks are identified in a timely manner.

Figure 1: The Occupational Safety and Health

Trying to use the research results to know and measure the gap to reduce it between the actual reality and the requirements of the international standard ISO 45001: 2018 to ensure the reduction of accidents and work injuries (Shapiro & Tracy, 2018). The factory's desire to establish a system for the management of occupational health and safety to reduce or prevent risks to the company in its work. The achievement of the instructions and regulations stipulated by international laws factory about occupational health and safety (Mohammadfam et al., 2017).

The researcher seeks to achieve the study's goals to assess the reality of health management and occupational safety in factories to detect the amount of effort required to harmonise its practices with the requirements of the standard ISO 45001: 2018 in an attempt to bridge the performance gap between reality and the creation of tools and programs. Assistance in obtaining certification from standard ISO 45001: 2018 factory (Jordan, 2019). The results show that the actual percentage of application and documentation in mediate Textile and Knitting Factory was 43.3% for compliance with ISO 45001: 2018. Reflecting the existence of a gap between the requirements of the international standard and the reality of the application and the actual documentation of the factory which was the requirement (56.7%) was found. Significant gaps have emerged in the application of a number of requirements. The largest of these gaps was (80%) for item (3.5) organisational roles and responsibilities and authorities and the application rate (20%) and section (2.5) occupational health and safety policy. The gap was (39.6%) and the application rate (60.4%) and item (4.5) employee participation resulted. The level of application and documentation was partly for this requirement and the gap was (50%) and the application rate reached (50%). These indicators are considered to be somewhat acceptable since the plant does not currently have access to the full application of the requirements of the International Standard (ISO 45001: 2018). It is worth mentioning that the Engineering Inspection Department in the factory manages the activities (Engineering Inspection Division, Occupational Safety Division, Fire Department, Medical Department, and Environment Division). It provides the necessary support to carry out the tasks and duties assigned to all these people. Figure 2 shows the scheme of the actual application level

of the requirements of the international standard (ISO 45001: 2018) in Waist Factory for Textile and Knitting.

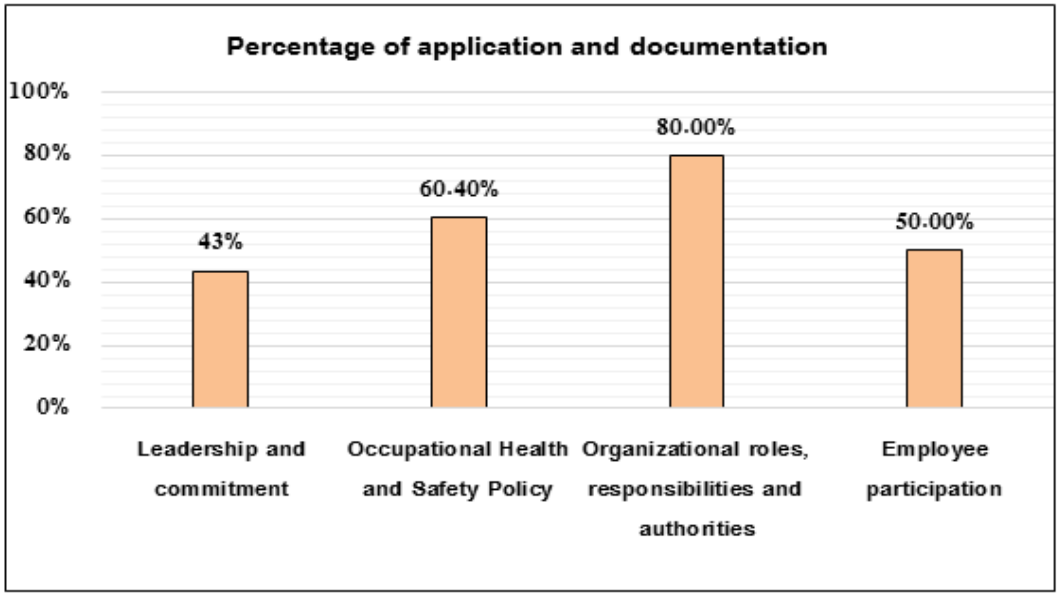


Figure 2: Percentage of Application and Documentation

**Literature Review**

This part of the literature discusses the variables that are included in the model and their relationships with each other mentioned in the subsections given below:

**The policy of Safety and Occupational Health**

Occupational health and safety mean all important activities that protect workers from exposure to materials, devices, machines, equipment and tasks that lead to accidents and injuries during work (Sheehan, Donohue, Shea, Cooper, & De Cieri, 2016). Occupational accidents and diseases have a detrimental effect on workers and equipment and on the quantity and quality of production (Chan, 2019). Occupational Health and Safety affects all aspects of work in any hazardous institution. Health and Safety being supervised by one or more competent factory managers that assist in the exercise of the occupational health and safety management system by professionals (Ojha, Acharya, & Cooper, 2018). They are the pressure in achieving production or performance objectives, financial constraints and the complexity of the organisation and others and in some

economic and difficult times (Breslin, Lay, Jetha, & Smith, 2018). These incentives are moral, legal and financial (Kim, Park, & Park, 2016). Weak standards of occupational health and safety, industrial injuries, deaths and occupational diseases pose a significant burden for the organisation, in turn, through social compensation, hospital costs, retraining and replacement of workers and loss of productivity (Coenen, Gilson, Healy, Dunstan, & Straker, 2017). The OSH management system must be integrated into the organization's culture and operations. Occupational safety and health should not be treated as a separate process, but as a complement to how activities are conducted in the company (Mohammadfam et al., 2017). In order to achieve the goal of a safe and healthy working environment, employers should make organisational arrangements commensurate with the size of the organisation and the nature of its activities (Gopang, Nebhwani, Khatri, & Marri, 2017). Thus, there is a positive link was found by the past studies among the safety measures and occupational health (Xue, Tang, & Walters, 2017). In addition, safety measures are playing a vital role in the occupational health of the employees (Garcia-Guiu, Moya, Molero, & Moriano, 2016). Moreover, safety measures are an effective tool to improve the occupational health in the organisation (Lay et al., 2016). Therefore, based on these studies, the current study proposed the following hypothesis:

**H1:** Safety policies have a positive impact on the occupational health in the textile industry in Iraq.

**Organizational Rules & Responsibilities and Occupational Health**

In order to improve occupational health and safety, it is necessary to plan and implement a sound program that serves this purpose by following several steps that result in a sound program in this field that protects the workforce while performing their work in the organisations in which they work (Bamberg, Tanner, Baur, & Gude, 2019). Organisations with the best reputation for safety have developed well-planned safety programs (Le & Lei, 2018). The health-related organisational rule and regulations have positive effects on the occupational health of the industry employees of the globe. As far as the rules and regulations related to health care increases, the occupational health of the employees also increases and vice versa (Kaynak, Toklu, Elci, & Toklu, 2016). Additionally, there is a positive link was found by the past studies among the positive organisational rules and regulations and occupational health (Curcuruto, Parker, & Griffin, 2019).

In addition, positive organisational rules and regulations are playing a vital role in the occupational health of the employees (Montano, Reeske, Franke, & Hüffmeier, 2017). Moreover, positive organisational rules and regulations are an effective tool to improve the occupational health in the organisation (Ariyabuddhiphongs & Kahn, 2017). Similarly, the foremost factor that effect the occupational health of the employee is the rules regarding the health care of the organisation (Tappura, Teperi, Kurki, & Kivistö-Rahnasto, 2018). Therefore, based on these studies, the current study proposed the following hypothesis:

**H2:** Organizational rules and regulations have a positive impact on occupational health in the textile industry in Iraq.

**Employee Participation and Occupational Health**

The practical aspect focuses on the application of the occupational health and safety management system ISO 45001: 2018 and the reality of the occupational health and safety management system in mediate textile and knitting factory, by comparing the reality of the procedures and processes of occupational health and safety in the factory with the requirements of this standard (Jilcha & Kitaw, 2017). The use of checklists in gap Analysis referred to in the abstract, and after the diagnosis of the gap for each requirement, will discuss the reasons for the emergence of this gap and the extent to which it can be overcome (Nordlöf, Wiitavaara, Högberg, & Westerling, 2017). The employee's participation in the health care program has positive effects on the occupational health of the industry employees of the globe. As far as the participation of the employee in the health care programs increases, the occupational health of the employees also increases and vice versa. Additionally, there is a positive link was found by past studies among the positive participation of the employee in the health care programs and occupational health. In addition, the participation of the employee in the health care programs is playing a vital role in the occupational health of the employees (Zhang, Torres, & Jahromi, 2019). Moreover, the participation of the employee in the health care programs is an effective tool to improve the occupational health in the organization (Lappalainen, Liira, Lamminpää, & Rokkanen, 2019). Similarly, the foremost factor that effects the occupational health of the employee is the participation of the employee in the

health care programs of the organization (Shea, De Cieri, Donohue, Cooper, & Sheehan, 2016). Therefore, based on these studies, the current study proposed the following hypothesis:

**H3:** Employee participation has a positive impact on occupational health in the textile industry in Iraq.

**Mediating Role of Leaders Participation**

The leadership also plays an effective role in the rules and regulation, safety measures and participation impact on occupational health of the organisation (Seibert, Sargent, Kraimer, & Kiazad, 2017). The employee's participation in the health care program is the results of the motivation from the leadership that have positive effects on the occupational health of the industry employees of the globe (Subramony, Segers, Chadwick, & Shyamsunder, 2018). As far as the leadership forces the employees regarding their participation in health care programs increases, the occupational health of the employees also increases and vice versa (Steffens, Slade, Stevens, Haslam, & Rees, 2019). Additionally, there is positive link was found by the past studies among the leadership motivation about the health care programs, positive participation of the employee in the health care programs and occupational health (Kao & Tsai, 2016). In order to achieve the goal of a safe and healthy working environment, employers should make organisational arrangements commensurate with the size of the organisation and the nature of its activities (Pinck & Sonnentag, 2018). Thus, there is a positive link found by the past studies among the leadership measures regarding safety and safety measures of the organisation and occupational health. In addition, safety measures are playing a vital role in the occupational health of the employees with the help of the positive role of leaders (Erkutlu & Chafra, 2018). Moreover, a leader's efforts and safety measures are an effective tool to improve the occupational health in the organisation (Follmer, Neely, Jones, & Hunter, 2019). Moreover, positive organisational rules and regulations with the positive role of leaders which is considered as an effective tool to improve the occupational health in the organisation (Elsetouhi, Hammad, Nagm, & Elbaz, 2018). Similarly, the foremost factors that affect the occupational health of the employee is the rules regarding the health care of the organisation and effective leadership (Le & Lei, 2018). Therefore, based on these studies, the current study proposed the following hypothesis:

**H4:** Leadership participation has positive mediation the nexus among the safety measures and occupational health in the textile industry in Iraq.

**H5:** Leadership participation has positive meditation the nexus among the organisational rules and regulation and occupational health in the textile industry in Iraq.

**H6:** Leadership participation has positive meditation the nexus amongemployee participation and occupational health in the textile industry in Iraq.

## Research Methods

This research aims to analyse and study the methods of prevention of work-related injuries. Additionally, it seeks to understand how the use of safety tools, rules and regulation as well as employee's participation and programs occurring within industrial organisations and what is to be followed when implementing them. The data was gathered from the textile industry in Iraq through questionnaires. Around 890 surveys are sent to the employees of the textile industry randomly and after fifteen days, only 710 valid questionnaires were received from the respondents that is a 79.77 percent response rate.

## Measures

The occupational health (OCH) is taken as the main construct of the literature and is measure with eight items. Conversely, safety measures (SM), organisational rules and regulations (ORR), and employee participants (EP) are taken as the predictors of the research that are measures as the six, eight, and ten items. The leader's participation (LP) in the health program is treated as the mediation and measure with six items.

## Theoretical Framework

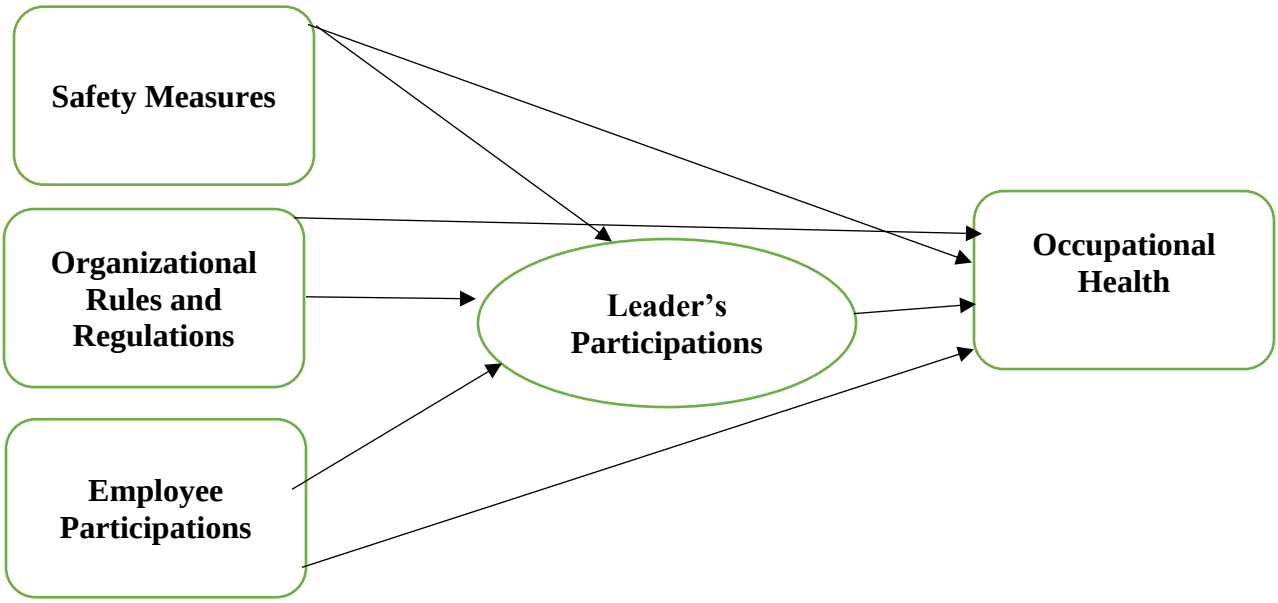


Figure 3: Theoretical Framework

## Findings

The outcomes show the convergent validity that describes the items inter-correlation and statistics highlighted the high correlation among the items. The values of CR and Alpha are more than 0.70 while the values AVE and loadings are more than 0.50 that is the indication of high correlation among the items. Table 1 shows the convergent validity as given below:

Table 1: *Convergent Validity*

| Constructs | Items | Loadings | Alpha | CR | AVE |
|---|---|---|---|---|---|
| **Occupational Heath** | OCH1 | 0.705 | 0.849 | 0.884 | 0.523 |
| | OCH2 | 0.782 | | | |
| | OCH3 | 0.822 | | | |
| | OCH4 | 0.631 | | | |
| | OCH5 | 0.626 | | | |
| | OCH6 | 0.680 | | | |
| | OCH8 | 0.789 | | | |
| **Safety Measures** | SM1 | 0.748 | 0.857 | 0.893 | 0.582 |
| | SM2 | 0.742 | | | |

| | | | | | |
|---|---|---|---|---|---|
| | SM3 | 0.781 | | | |
| | SM4 | 0.804 | | | |
| | SM5 | 0.743 | | | |
| | SM6 | 0.758 | | | |
| **Organizational Rule and Regulations** | ORR1 | 0.838 | 0.883 | 0.911 | 0.631 |
| | ORR2 | 0.834 | | | |
| | ORR3 | 0.793 | | | |
| | ORR4 | 0.666 | | | |
| | ORR6 | 0.792 | | | |
| | ORR8 | 0.828 | | | |
| **Employee's Participations** | EP1 | 0.792 | 0.896 | 0.918 | 0.587 |
| | EP2 | 0.843 | | | |
| | EP3 | 0.497 | | | |
| | EP4 | 0.812 | | | |
| | EP5 | 0.722 | | | |
| | EP8 | 0.776 | | | |
| | EP9 | 0.828 | | | |
| | EP10 | 0.800 | | | |
| **Leader's Participations** | LP1 | 0.892 | 0.806 | 0.859 | 0.553 |
| | LP2 | 0.812 | | | |
| | LP4 | 0.677 | | | |
| | LP5 | 0.648 | | | |
| | LP6 | 0.657 | | | |

The results show the discriminant validity that describe the constructs inter correlation and statistics exposed the no high correlation among the constructs. The values of first constructs are more than the other variables that is the indication of no high correlation among the items. Table 2 show the discriminant validity given below:

Table 2: *Fornell Larcker*

| | OCH | SM | ORR | EP | LP |
|---|---|---|---|---|---|
| OCH | 0.723 | | | | |
| SM | 0.723 | 0.763 | | | |
| ORR | 0.575 | 0.686 | 0.794 | | |
| EP | 0.548 | 0.514 | 0.388 | 0.766 | |
| LP | 0.686 | 0.484 | 0.476 | 0.516 | 0.744 |

The results show the discriminant validity that describe the constructs inter correlation and statistics exposed the no high correlation among the constructs. The values of constructs are more than the other variables that is the indication of no high correlation among the items. Table 3 show the discriminant validity given below:

Table 3
*Cross Loadings*

| | OCH | SM | ORR | EP | LP |
|---|---|---|---|---|---|
| OCH1 | **0.705** | 0.392 | 0.426 | 0.303 | 0.372 |
| OCH2 | **0.782** | 0.559 | 0.426 | 0.373 | 0.462 |
| OCH3 | **0.822** | 0.485 | 0.343 | 0.401 | 0.430 |
| OCH4 | **0.631** | 0.341 | 0.349 | 0.325 | 0.314 |
| OCH5 | **0.626** | 0.429 | 0.369 | 0.406 | 0.323 |
| OCH6 | **0.680** | 0.613 | 0.480 | 0.443 | 0.639 |
| OCH8 | **0.789** | 0.686 | 0.471 | 0.468 | 0.730 |
| SM1 | 0.496 | **0.748** | 0.665 | 0.354 | 0.441 |
| SM2 | 0.635 | **0.742** | 0.423 | 0.464 | 0.656 |
| SM3 | 0.508 | **0.781** | 0.639 | 0.397 | 0.413 |
| SM4 | 0.532 | **0.804** | 0.659 | 0.355 | 0.489 |
| SM5 | 0.518 | **0.743** | 0.362 | 0.376 | 0.738 |
| SM6 | 0.589 | **0.758** | 0.429 | 0.389 | 0.800 |
| ORR1 | 0.438 | 0.506 | **0.838** | 0.288 | 0.326 |
| ORR2 | 0.392 | 0.496 | **0.834** | 0.286 | 0.336 |
| ORR3 | 0.511 | 0.604 | **0.793** | 0.292 | 0.444 |
| ORR4 | 0.430 | 0.512 | **0.666** | 0.313 | 0.418 |
| ORR6 | 0.336 | 0.401 | **0.792** | 0.224 | 0.252 |
| ORR8 | 0.559 | 0.664 | **0.828** | 0.399 | 0.431 |
| EP1 | 0.351 | 0.240 | 0.175 | **0.792** | 0.298 |
| EP2 | 0.504 | 0.484 | 0.411 | **0.843** | 0.480 |
| EP3 | 0.246 | 0.274 | 0.244 | **0.497** | 0.262 |
| EP4 | 0.478 | 0.478 | 0.358 | **0.812** | 0.460 |

| | | | | | |
|---|---|---|---|---|---|
| EP5 | 0.437 | 0.466 | 0.368 | **0.722** | 0.396 |
| EP8 | 0.438 | 0.464 | 0.300 | **0.776** | 0.384 |
| EP9 | 0.424 | 0.362 | 0.252 | **0.828** | 0.429 |
| EP10 | 0.410 | 0.306 | 0.217 | **0.800** | 0.390 |
| LP1 | 0.695 | 0.732 | 0.446 | 0.499 | **0.892** |
| LP2 | 0.639 | 0.589 | 0.364 | 0.521 | **0.812** |
| LP4 | 0.398 | 0.649 | 0.344 | 0.269 | **0.677** |
| LP5 | 0.289 | 0.408 | 0.252 | 0.200 | **0.648** |
| LP6 | 0.335 | 0.486 | 0.334 | 0.273 | **0.657** |

Another method to test the discriminant validity is the HTMT ration that describe the constructs inter correlation and statistics exposed the no high correlation among the items. The values are lower than 0.90 that is the indication of no high correlation among the items. Table 4 show the HTMT ratio given below:

Table 4
*HTMT Ratio*

| | **OCH** | **SM** | **ORR** | **EP** | **LP** |
|---|---|---|---|---|---|
| OCH | | | | | |
| SM | 0.803 | | | | |
| ORR | 0.636 | 0.777 | | | |
| EP | 0.605 | 0.573 | 0.419 | | |
| LP | 0.713 | 0.906 | 0.537 | 0.545 | |

The findings show the path regression analysis the describe the relationship among the variables and statistics show that safety measures, organizational rules and regulations and employees' participation has positive nexus with the occupational health because positive sign with beta and t and p values are achieve the standards. Leaders' participation also has positive mediation among the above stated links. Table 5 show the path analysis given below:

Table 5
*Path Analysis*

| | **Beta** | **S.D.** | **t-values** | **p-values** | **L.L.** | **U.L.** |
|---|---|---|---|---|---|---|
| SM -> OCH | 0.307 | 0.098 | 3.115 | 0.001 | 0.143 | 0.459 |
| ORR -> OCH | 0.169 | 0.063 | 2.694 | 0.004 | 0.075 | 0.280 |
| SM -> LP | 0.383 | 0.039 | 9.860 | 0.000 | 0.322 | 0.449 |
| EP -> OCH | 0.202 | 0.053 | 3.772 | 0.000 | 0.107 | 0.286 |
| ORR -> LP | 0.084 | 0.046 | 1.807 | 0.036 | 0.002 | 0.157 |

| | | | | | | |
|---|---|---|---|---|---|---|
| LP -> OCH | 0.245 | 0.071 | 3.471 | 0.000 | 0.122 | 0.356 |
| EP -> LP | 0.566 | 0.004 | 15.616 | 0.000 | 0.511 | 0.627 |
| SM -> LP -> OCH | 0.117 | 0.038 | 3.096 | 0.001 | 0.055 | 0.176 |
| ORR -> LP -> OCH | 0.128 | 0.069 | 1.855 | 0.002 | 0.000 | 0.062 |
| EP -> LP -> OCH | 0.173 | 0.055 | 3.151 | 0.001 | 0.082 | 0.251 |

**Discussions and Conclusions**

There is great interest in the factory for the purpose of applying the standard of occupational health and safety management system recently issued by the International Standards Organization (ISO 45001: 2018), which is the first international standard concerned with occupational health and safety issued by the organization. The measures given by the ISO such as health measures, organizational rules and regulations regarding the health and employees' participations in the health program. According to the direction of international organizations to obtain certificates and standards for the purpose of survival, competition and good reputation, the textile and knitting factory of mediate seeks to obtain these certificates to catch up with regional and international organizations and fulfil the direction of the Iraqi Ministry of Industry - and the General Company for Textile and Leather Industries, but the factory needs to know the steps to apply System requirements as well as the need for further training and awareness. It was found that the percentage of the gap is high in the level of application and documentation of the international standard and between the actual reality in the factory and the requirements of the occupational health and safety management system of the standard (ISO 45001: 2018). These reasons are due to the high level of non-application and documentation, some of which were clarified in the weaknesses in the practical side of the study and occupational safety.

**Recommendations and Limitations**

The manufacturer should take all the results that have emerged and the observations made by the checklist and strengthen the strengths and seek to address the weaknesses by taking recommendations to improve the weaknesses mentioned in each of the requirements of the international standard in the checklist, the proposed mechanism and the working procedures

provided. The study sample will help the factory to close all cases of non-conformity between the actual reality and the requirements of the specification of the occupational health and safety management system, as well as the phases. It will enable them to start planning, implementation and procedures for examination, evaluation and improvement of the system. This study take only three predictors of occupational health, there are many other factors exits that effect the occupational health and further study should add this factors in their examination.

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