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The Role of Implementing Risk Management in Reducing Accidents and Work Injuries: A Case Study of Oil Product Distribution Company/Baghdad

دور تطبيق ادارة الخطر في الحد من الحوادث واصابات العمل

دراسة حالة في شركة توزيع المنتجات النفطية / بغداد

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Abstract

The research aims to investigate correlations and influence between risk management implementation in accordance with (ISO 31000: 2018), henceforth, (ISO), as an independent variable, and reducing accident and work injuries as a dependent one. A case study was used in preparing the empirical part of the research.

The research starts with the problem the company of concern suffers from as presented in the numerous risks that surround it, internally and externally, which lead to several accidents and work injuries. Significance of the study lies in its contribution to the awareness of the higher management about the importance of applying the risk standard (ISO) and the role it plays in job stability, employee safety, and reduction of work injuries. The study came up to certain logical conclusions in favour of the company's name, its performance, and reduction of losses. The empirical part of the study was conducted on: the company of oil product distribution in Baghdad as a field study, due to risks associated with its activities that lead to several accidents and work injuries the company suffered from.

The researcher designed a hypothetical study explaining the nature of correlation between the two variables of the study. In order to collect the data needed, she relied on (ISO) checklist regarding, accidents and work injuries, in addition to personal interviews and field visits. She also depended on records and documents associated with research, besides personal observation, as helpful tools to get necessary data. In addition, she used statistical means such as: weighted mean, percentage; of conformity to diagnose gap size in applying and documenting (ISO) items, events and work injuries, regression of correlation coefficient, using (t) and (f) tests in order to examine hypotheses correlation and influence.

The researcher came up with an important finding that there was a strong inverse link and influence between (ISO) risk management process and accidents and work injuries.

Keywords: Risk management; Accidents; Work injuries; ISO; Hypothetical diagram; Risk assesment.

1.0Introduction

At the onset of any work, small and big organisations encounter cases of uncertainty(risk) which lead to many accidents and work injuries that affect their works and expose them to material and human losses. Such losses affect the name and aims which the organizations aspire to achieve. Therefore, they must keep the cases of uncertainties under incessant control and remedy them if possible. Thus, it became very important to adopt management risk standard (ISO) for it helps in dealing with many risks surrounding the organizations. This consequently secures job stability, improve performance and name of the organizations, and protect their material and human resources.

Adopting the international standard (ISO) aroused a great interest in many researchers such as; (Liuksiala, 2013); (Scannell, et.al; 2013); and (Benjamin, 2017). As for accidents and work injuries, they attracted the attention of several researchers such as: (Mohammed, 2010); (Arquillos and Romero, 2016); and (White, 2019).

The problems from which the company of concern suffers, are several risks that surround both internal and external environments which might lead to many accidents and work injuries. The researcher endeavoured to test six hypotheses: the first four tackled the influence and correlation between the two items (work frame, process) relevant to (ISO) and accidents and work injuries; the fifth and sixth hypotheses examined the nature of differences between axes of items.

The research is divided into four subjects. The first is concerned with methodology and previous studies, the second (the theoretical part) covers risk management, accidents and work injuries and correlation between variables of the research; the third subject is assigned for the empirical part which introduces study location, presenting and analysing data of the company, measuring the link of influence, correlating and testing hypothesis variables; the fourth tackles results and recommendations.

1.1 Research problem

The presence of risks that surround employees working in different organizations lead to increase in accidents and work injuries and that affects human capital, the organizations attempt to maintain as a competitive quality.

1.2 Significance of the research

The significance lies in the following two points:

1- To draw the attention of the higher management to the importance of applying (ISO) relevant to risk management and to the role it plays in achieving job stability and protection of employees from accidents and work injuries.

2- To illustrate the role of applying risk management of the concerned company in order to: maintain subsistence in market business, protect its human capital, and help employees in the organizations to get acquainted with procedures necessary to be taken and followed in their performance as that consequently reduce the size of losses in properties and souls.

1.3 Objectives of the research

The objectives can be outlined in the following:

1- Measuring the range of applying (ISO) through eliciting the gap in the real application of the process in the relevant company.
2- Testing the nature of correlation between the process of risk management in compliance with (ISO) and the accidents and work injuries in the company.
3- Testing the influence in risk management in accordance with (ISO) to reduce accidents and work injuries.
4- Providing recommendations that contribute to reducing human resource losses.

1.4 Procedural definitions of the study two variable

The following introduces definitions of the two variables of the study and their sub-axes (quality items, accidents, and work injuries).

1- Independent variable (ISO 31000:2018)

It is a document that includes a set of items on instructions of risk management. What follows is procedural definitions relevant to (ISO 31000, 2018: 1-2).

- Risks: Influence of skepticism on achieving objectives.
- Risk management: these are coordinated activities to steer and control the organization with respect to danger.
- People of concern: the person or organization which might affect or be affected or is aware of the effect it might undergo as a result of a certain activity.
- Source of danger: the sole factor that might lead to danger.

2- Dependent variable (accidents and work injuries)

- Accident: It is an unexpected event that might result in an injury or illness to individuals ends with a loss of properties, installations environmental damage, or loss of a job (Tarik & Adil, 2018:2).
- Injuries: It is a sudden and unexpected and undesirable event because of an extraneous factor that happens and leads to physical damage (Karttunen, 2014:9).

1.5 Research limitations

1- Scientific limitations: these limitations were specified in the research objectives, significance and queries.

2- Time limitations: The research depended on the company data between 1/1/2017 till 1/8/2019

2.0 Literature review

In this part of the study, the researcher will review relevant articles of theoretical and empirical past studies associated with the two study variables as follows:

Lateefa (2012) in her study entitled "The role of risk management in the establishment of cement and its derivatives" used a questionnaire to collect data on: the most important challenges and obstacles that the Algerian economic establishment faces, identifying the foundations and controls of risk management and the way the establishment deals with risks it encounters, and the need for a specialized management whose fundamental duty is to control risks in the institution.

Findings of the study are summarized in the following:

- All economic institutions at the present time encounter challenges of various forms and multiple dimensions that dictated fatal set of risks that necessitated to take precautions to confront them.

The study of Al-Najjar (2017) entitled "The impact of risk management of entrepreneur projects in achieving competitive qualities for their projects within those of technology in Islamic University at Gaza"

In a questionnaire to collect data, the researcher put down certain objectives which can be outlined in the following:

- Identify the status of risk management at entrepreneur projects in Gaza.
- Determine the level of competition among owners of entrepreneur projects.
- Investigate the influence risk management of owners of entrepreneur projects in achieving a competitive status for their projects
- Examine differences at the function level (a <= 0.05) in respondents' answers regarding the influence of risk management of owners of entrepreneur projects in achieving competitive level that is attributed to personality variables.
- Suggest suitable solutions and propose recommendations to serve entrepreneurs and researchers in the field of entrepreneurship.

The researcher (Al-Najjar) came up to the following conclusions:

- Owners of entrepreneur projects sponsored by technology and business body at Islamic University in Gaza showed a remarkable managerial skill which eventually contributed to achieving a competitive status for their projects.

- There was a statistical significance at the functional level (a >= 0.05) for the variables of risk management skill in achieving a competitive status for their projects because of the strong bond between them.

In his study entitled "The influence of risk management on implementing (ISO 31000: 2009) standard on decisions of service processes in Ad-Doura grid / Al-Rasheed for gas. "Nouri (2018) through a case study wanted to identify the following:

- Investigate the extent of implementing (ISO 31000:2009) to determine the gap size between the grid risk management and items of ISO.
- Investigate the extent of implementing service management decisions of the aforementioned grid to determine the gap size between the actual reality of the grid and decisions taken.
- Test nature of the correlative relation between risk management process that complies with ISO and decisions taken by grid services.
- Test the impact of risk management process that complies with ISO on decisions taken by the grid.

The researcher came up with the following conclusions:

- The grid didn't know much about technology of evaluating risks in compliance with ISO which it didn't implement to determine the level of risks.
- The grid didn't have any documentation on risk standards and that prevented its administration to compare risks of the surrounding area with such standards.
- The grid didn't effectively put down any mechanism for selecting people who run risk management in all departments. In addition, there were no reports that explain work mechanism though it knows how important external contacts are regarding risks it faces.

In an article on "The Use of Risk Management Standard ISO 31000 in Finnish Organizations", the researcher, (Liuksiala: 2012) in an exploratory study aimed to determine the extent to which Finnish organizations comply with ISO standard. He found out that the current practices of risk management of Finnish organizations were not real, as companies, the small ones in particular, do not have good record management.

(Scannell, et al., 2013) in their study entitled "Integration of (ISO 31000: 2009) and supply chain Risk Management" collected data via a survey in order to determine if (ISO 31000) standard could be a suitable framework for risk management, and whether such a standard could be an essential element for planning and implementing risk management.

They found out that the company of concern was aware of the significance of risk management, but couldn't integrate with risk management and equipment group.

In an explatory study entitled "work accidents and their relation to some personal and professional variables in Banias refinery in Tartous, Syria", Mohammed (2010) aimed to identify the following:

- Correlation between work accidents and a number of personal variables (age, educational level, experience, and level of work and risk). For sample members.
- Correlation between work impotence level and a number of personal variables (age, educational level, and work-risk level)

The researcher came up to the following conclusions:

- There were differences with statistical significance between employees exposed to work injuries pertaining the variable (employees age level, duration of experience, and work risk).
- There were no differences with statistical significance between employees exposed to work injuries pertaining (educational level).

Al-Miqhim, using a questionnaire, conducted a study entitled "Factors behind employees work accidents in SABIC factories in Jubeil, Saudi Arabia, aimed to identify the following:

- Types of accidents and injuries to which employees at SABIC were exposed.
- Intensity of accidents and injuries to which those employees were exposed
- Causes of results whether caused by humans or by defects in machinery or tools.
- Methods to be adopted to reduce accidents
- He came up to the following findings:
- Members of the sample agreed on two types of accidents to which SABIC employees were exposed: explosions, and petrochemical leaks.
- Members strongly agree on seriousness of events and injury risks to which those employees were exposed as reflected in injuries and events with bad consequences for individuals, family, and society; events with whole or partial impotency and injuries leading to death.
- Sample members agree that reasons behind such injuries are: insufficient training on new equipment, indifference to safety rules, bad behavior of a number of workers, maintenance, psychological factors which affect the worker and lead to errors and accidents, and finally worker's heedlessness of the machine's shape.

(Appiah, 2014) using a questionnaire, conducted a study entitled "Work place safety and accidents among artisians at Kokompe, Accra, Ghana in which he described safety and health conditions among artisans at a small level in order to specify the major health work safety and accidents from which artisans suffer. He recommends certain practices and future researches to be conducted on health and safety.

The researcher came up to the following conclusions:

- Factors that aggravate accidents at work site are: not using safety equipment, carelessness, equipment incompetence, and hard luck.

(Arquillos & Romero, 2016), making use of records and documents, conducted a study entitled "Analysis of work place accidents in automotive repair workshops in Spain "aimed to analyze factors linked to various types of injury (minor wounds, disturbances, bone breaks, brain concussion, internal injuries, and burns resulting from work accidents in car repair workshops).

They concluded that work nature and company activity lead to different accidents and injuries.

The researcher benefitted from previous works which were verified in the literature review section as follows:

- Helped the researcher in formulating problem of the study, objectives, and hypotheses.
- The studies also helped the researcher to enrich the theoretical part of her research by reinforcing variables of the current study.

- Identify statistical methods propitious for her research, but her research is distinguished for being, to her knowledge, the first of its type to investigate the impact of implementing risk management to decrease accidents and work injuries in compliance with (ISO 31000: 2018). In addition, the study, through complying with (ISO), provides a great help to organizations by which they could decrease risks and secure safety of human resources besides improving organization performance.

3.0Research methodology

The descriptive method, presented through the theoretical approach integrated with a case study as an empirical one, was adopted. This approach was used for collecting and analyzing data via examination was used to measure the power of research variables. It then determines gap size between risk management process and (accidents and work injuries), in addition to identifying documents and records besides direct observation.

3.1 Research hypotheses

There are two major hypotheses:

1- First: there is a relation with moral significance between risk management process of (ISO) and accidents and work injuries.
2- Second: risk management process of (ISO) has an influence with moral significance on accidents and work injuries.
3-

3.2 Population and research sample

Population of the research comprises the company of oil product distribution. As for the sample, it comprises maintenance services department, gauge department and lorry maintenance department.

3.3 Statistical instruments adopted for data processing

Seven- point Likert Scale was used to diagnose the level of application of (ISO) risk managements and (accidents and work injuries in oil product distribution company in Baghdad). The scale includes: completely documented and applied six points; completely applied-partially documented five points; completely applied- non documented four points; partially applied – completely documented three points; partially applied and partially documented two points; partially applied non- documented one points; non-applied non- documented zero point. After determining the degree of application for each axis of the process of risk management of (ISO) and accidents and work injuries and in accordance with results of test forms, application percentage and gap size were elicited. The researcher used SPSS program to determine the simple regression coefficient, correlation coefficient ® , determination coefficient (R2), test (T) and Test (F).

3.4 Methods of collecting data

The methods used for collecting the necessary data included accessible theoretical literature that comprised books, theses, foreign and Arabic journals, ISO publications and internet surfing. As for collecting data of the empirical part of the study, it was conducted through personal interviews with all managerial levels of people concerned with the company, in addition to records, documents, and testing lists.

Diagram (1) Hypothetical sketch of the study

The researcher designed the hypothetical sketch in order to present a clear picture of correlation, nature and effects of study variables as follows:

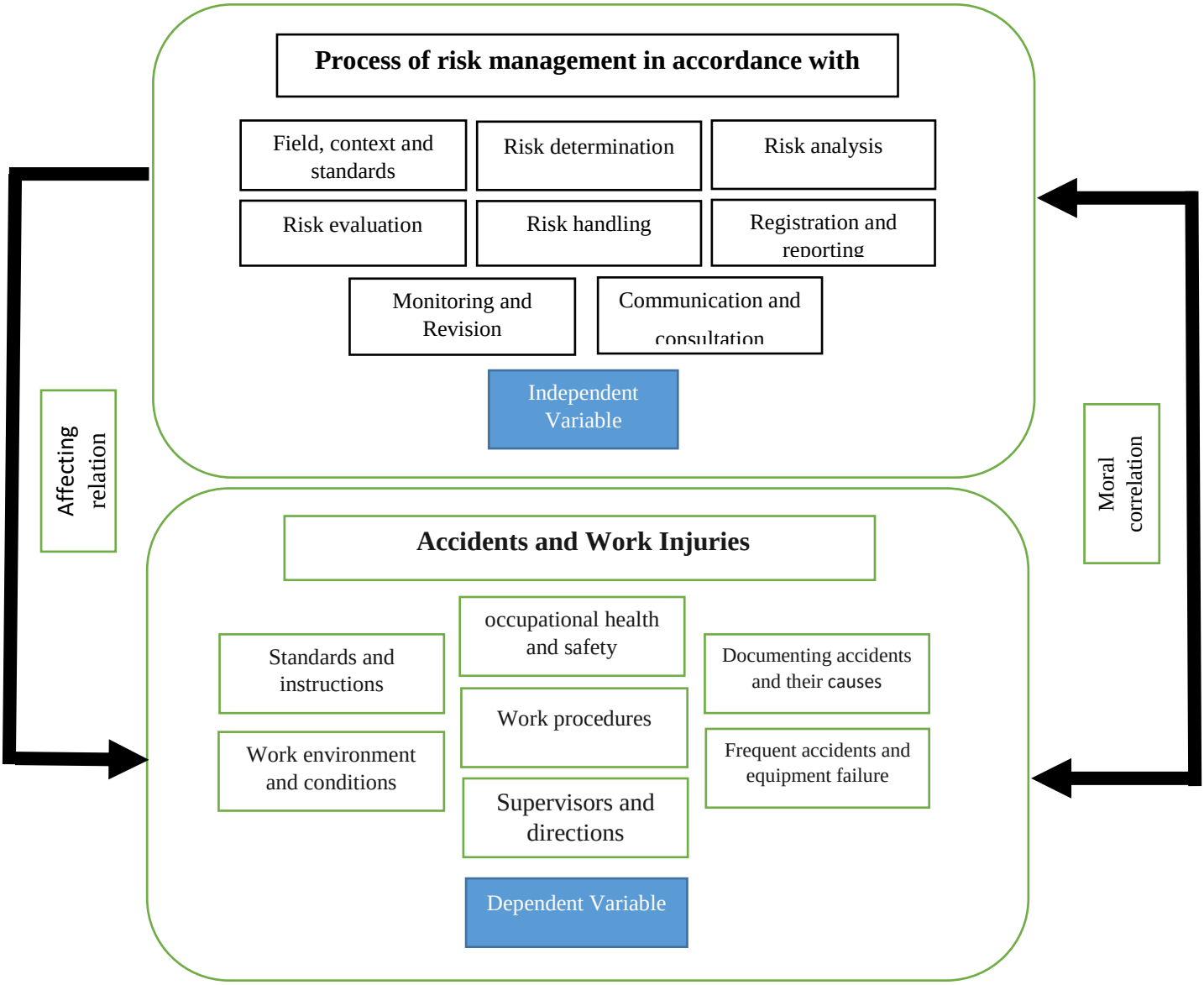

Diagram (1)

Source: Researcher's design

3.5 Research theoretical framework

3.5.1 Steps of risk management

Risk management is an on-going process in which procedures of risk control are regularly reviewed to ensure availability and proper functioning. Surrounding circumstances might change and new risks emerge or present risk circumstances, might be affected. In this case all risks should be subjected to evaluation to take more procedures if necessary. Effective risk management depends on constant vigilance and caution (Wong, 2010:5). Steps of risk management might be determined in the following:

3.5.2 Determining field, context, and standards

The organization should specify the domain of its risk management activation. It is important that it should be clear regarding area and relevant objectives which cope with its objectives. As for context, it handles anything that might affect objectives or risk standards or any other risk management activities. Outcomes of the context embody determining the range of acceptable risks and other management risk activities, such as communication and counselling. Risk standards are used to access risk significance through comparisons with extant risks and controls (Fraser and Simkins, 2010: 105).

3.5.3 Determining risks

Risk determination requires a general understanding of business, economic, legal and organizational factors that affect work (Alizadeh and Nomikos, 2009:6). Activities of this step include: Preparing a risk list, determining the risks the project encounters. Risk indicators might be formulated throughout this stage (Moran, 2014:23). To determine all probable risks, different technologies were used such as : (brainstorming, Delphi technique, schema influence, cause and effect plans, interviews, and experts' opinions).

3.5.4 Risk analysis

Risk analysis implies providing decision makers and people of concern with an adequate understanding of risks (Fraser & Simkins, 2010). This understanding creates in them a feeling of satisfaction for being equipped with enough knowledge about taking decisions with regard to risk handling or acceptance (Zhaof et.al, 2015: 36). The analysis implies looking into reasons, causes, and positive and negative consequences of risks. The factors affecting results and probability should be determined, and analysed via determining consequences and probabilities (Fraser & Simkins, 2010:107). There are two types of risk: qualitative and quantitative (Wawrzyniat, 2006:220).

The Joint use of these types secures a more accurate assessment of risks (Korombel & t worek, 2001:51).

3.5.5 Risk assessment

It is the process which determines and arranges priorities of risks so as to specify events and circumstances which might probably happen and negatively affect the organization (Kovacevic, 2018:14). At this stage, risks are compared to the set standard of risk evaluation (Haring, 2015:21). Organizations, through risk evaluation, determine the level of risk they can accept or reject and which of them needs treatment (Ranong & phuenngam, 2009; 10).

3.5.6 Risk handling

It is the process of selecting and implementing a set of measures in order to amend risks. Such measures include: avoiding risks, reducing, improving and changing them (Aven, 2015; 49). The process includes:

A- Choosing options more propitious for risk treatment
B- Designing risk treatment plans to identify the method of implementation and treatment

The method adopted in dealing with risks depends on the strategy put down by risk management organization (Aven, 2015:49).

In general, risk significance depends on the chance of occurrence and consequences, in addition to moral and legal factors. The major goal behind risk treatment is reducing occurrences and consequences when it happens (Pinto, et.al, 2015:67).

3.5.7 The strategies of treatment are as follows:

1- Risk Avoidance:

This aims to eliminate risk sources, reduce, or limit the possibility of occurrence (Strelink, 2016; 226).

2- Risk acceptance:

This aims to proceed with process of implementing necessary measures to reduce risks to acceptance level (Toosarvandil et al., 2012:18).

3- Risk transfer:

Organizations might transfer risks to the person who is able to deal with them. They resort to such options because risk costs transfer exceed local management costs. Once transfer is done, risks can’t be reduced or eliminated (Mohamed, 2015:26).

4- Risk sharing:

This means that other party shares risks wholly or partially. This sharing is the outcome of contracts that include items which interpret possible changes of risk (Fan & Stevenson, 2016:13-14).

5- Risk mitigation

Risks are mitigated to ensure that solution was satisfactorily done in the organization as risk active mitigation facilitates dealing with problem as that doesn't lead to an unacceptable situation through determination, decision taking and monitoring risk impacts (Chepa et.al.,2015;1)

6- Registration and reporting

It is necessary to keep written records on how to manage risks. Through such records which might be simple or complex, one can deal with risks once any change happens and they can be used to train employees how to deal with risks. As for reports, they are an inseparable part of organization governance which should reinforce dialogue with company owners and support senior management and monitoring bodies to meet their responsibilities.

Certain factors should be taken into considerations when preparing reports such as :

- Differences between company owners, their needs, and specific information
- Report costs and timing
- Information suitability for management objectives and decision making

7- Control and review

The purpose of control and review is to improve quality and ensure process design and implementation in addition to on-going control and periodic review of specific risks. Control and review should proceed throughout empirical stages and include control, review, planning, collecting and analyzing data, recording results, and providing (ISO) feedback.

It is necessary to control risks keeping that in special records and to monitor changes and procedures implementation at the stage of risk management. If such procedures don't produce the required influences, the process should go back to the stage of risk determination (Laycock, 2014:72).

8- Communication and counselling

These are the processes that the organizations continually perform to offer information, get or share it. They also involve consulting owners with regard to risk management. Contacts and counselling should be done with owners inside or outside the country. Incessant and active counselling acquaint people in charge of implementing risk management process with a better understanding of the necessary procedures taken. Therefore, it is necessary to create a counselling team to conduct contacts and determine rules assigned to team members (Refsdal, et.al.2015:14).

3.6 Accidents and work injuries

Accidents are the direct result of unsafe actions and activities which management can control. According to (Bhole, 2016:24) and (Hola et.al. 2018:2), there are three major factors of accidents:

1- Failure to determine insecure case prior or post activity
2- Work implementation of insecure cases
3- Performing works despite unsafe conditions

(Kumar& Bansal,2013) ; (Shamsuddin, et.al.2015) ; and (Bhole,2016) see that direct and major cases of accidents are :

1- Absence of organizational commitment from senior administration for safety during work
2- Safety weak awareness and absence of special regulations
3- Weak technical control and uncontrolled operations
4- Shortage of skilful workers, training and unsafe equipment
5- Weak information system and absence of modern technology

The researcher sees that there is another major reason of accidents which is non-determining risks linked to work and not taking necessary measures to analyse them to be kept under control within the acceptable range. Therefore, organization should create a special management department for risks so as to apply risk and counselling management in compliance with (ISO) in order to reduce accidents and work injuries.

3.7 Third: Major factors that contribute to accident reduce and work injuries

These factors are outlined in the following:

1- Work conditions and environment

Bad work conditions such as weather conditions manifested in humidity, high temperature, dim light and noise will negatively affect workers psychologically and corporally. In addition, emitted gases might lead to explosions and fires; dust will also negatively affect vision (Babovic, 2009: 250.

2- Health and occupational safety

Securing health safety as manifested in accurate information about dangerous materials and how to deal with them, work control, abiding by bylaws and regulations all help in safety. In addition, developing individuals' awareness through circulars and through motivating them to participate in seminars and attend conferences on occupational safety will help as well (Alli, 2018 ;18-19)

3- Work procedures

Accidents and work injuries occur whenever insecure conditions and procedures together with deviation from work procedures which are committed by individuals combine (Albert, et.al, 2014:153).

The deviations result from: management's weak awareness of safety, lack of training, not abiding by regulations, ignorance of using safety equipment, shortage of modern technology, and absence of team work spirit (Alli et.al, 2010 :96).

4- Supervisors and directives

Supervisors are held responsible for: determining safety objectives, securing necessary training, providing sufficient support, securing good environment, and commitment to safety rules in order to avoid accident occurrence and work injuries (Su et.al, 2019:633).

3.8 Risk management to reduce accidents and work injuries

This can be done through taking necessary procedures against risks. Such a thing can be achieved via enlightening workers on risk management in order to secure good environment which will facilitate application and anticipate risks. This dictates that management prepares risk control programs and get suitable technology to confront risks. Insecure conditions are major factors that result in work injuries.

Failure of management to anticipate risks together with absence of safety procedures also lead to accidents (Ayob et.al, 2018: 2-3).

3.9 Research empirical frame work

3.9.1 Research field

Before 1952, oil products distribution was done by Al- Rafidain Company, but after that year Khanqeen Petroleum Company took over in lieu of Iraqi government. On 4/3/1959, the first governmental establishment was instituted under the name of oil product distribution authority to distribute oil all over Iraq. In 1967, an Iraqi establishment, a joint shareholding company of French Total Company and Iraq, was instituted to supply planes with fuel. In 1972, this establishment was affiliated with the authority of oil product distribution under the name of plane fuelling department. On 2/4/1986, the general establishment for oil product distribution was dissolved and its activities were distributed to establishments in four geographical areas (North, Central, Mid- Euphrates- and South) and to pipeline establishment, in addition to oil transportation company. On 8/8/1988, all facilities were dissolved and a new company for oil product distribution was cancelled. On 28/8/1988, the gas distribution company was cancelled and its activities added up to the oil product company which was in charge of distribution activity throughout Iraq (http://opdcroilgov.iqindex.php?).

3.9.2 Analysis of company's data and hypotheses testing

This section of the research provides an analysis of the data collected about the distribution company to check the possibility of applying risk management process in accordance with (ISO) in order to reduce accidents and work injuries by taking the following steps into consideration:

1- To identify possibility of the company applying risk management process in accordance with (ISO) and approving the checklist which was prepared accordingly in order to diagnose gap size for analysis.
2- To identify possibility of the company applying accidents and work injury variable then approving the checklist which was prepared with reference to American ministry of labor for occupational safety and health administration (OSHA, 2015), together with whatever available from Arabic and foreign books.
3- To analyze data, a seven- point scale was used given a certain weight for every item as explained in table (1).

Table (1)

Seven- point scale for identifying the gap

Seven-point items	Completely applied& documented	Completely applied, Partially documented	Completely applied, non-documented	Partially applied, completely documented	Partially applied, partially documented	Partially applied, non-documented	Not applied, not documented
Weight (point)	6	5	4	3	2	1	0

Source: Al- Khatib, Samir Kamel, (2008).

Certain formulas will be used to complete the analysis. These are:

- Weighted mean = $\frac{\text{Total (weight} \times \text{frequency)}}{\text{Total frequencies}}$
- Percentages of matching = $\frac{\text{Weighted mean}}{} \times 100$

The heaviest weight in checklist

- Gap size = -1 percentage of matching

4.0Final results of measuring

Performance gap of risk management process in accordance with (ISO)

Table (2) presents the final results of measuring the gap in a real application of risk management process in accordance with (ISO) in the company of oil product distribution in Baghdad.

Process of risk management in accordance with ISO 31000: 2018	Frequencies	Result	Weighted mean	Percentage of matching	Gap size
Process	48	110	2.29	38.2	61.8
General	2	0	0	0	100
Communications and counselling	1	0	0	0	100
Field, context, and standards	13	14	1.48	24.6	75.4
General	1	2	2	33.3	66.7
Field identifying	1	3	3	50	50
External and internal contexts	1	0	0	0	100
Determining risk standards	10	9	0.9	15	85
Risk assessment	14	37	2.63	43.7	56.3
General	2	4	2	33.3	66.7
Determining risks	6	15	2.5	41.6	58.4
Risk analysis	4	12	3	50	50
Risk assessment	2	6	3	50	50
Risk treatment	13	44	3.64	60.7	39.3
General	3	15	5	83.3	16.7
Selecting options for risk treatment	6	16	2.67	44.5	55.5
Preparing and implementing risk treatment	4	13	3.25	54.2	45.8
Control and review	2	6	3	50	50
Recording and reporting	3	9	3	50	50
Total percentage of commitment to ISO items	89	305	3.347	55.78	44.22

Source: The researcher in compliance with results

The results in table (2) show that there is a gap between application and actual documentation in the process of risk management in the company of oil product distribution with regard to (ISO) the percentage was 44.22%. The gaps were as follows: general besides communications and counselling 100%; field, context and standards 75.4; risk assessment 56.3; risk treatment 39.3; control and review besides registering and reporting 50; complete matching with risk management 55.78. Therefore, the company must take more correction measures to bridge or reduce the gap.

4.1 Final results of measuring gap occurrences of the company's accidents and work injuries.

Table (3) presents final results of gap measuring the items of accidents and work injuries in the company of oil product distribution in Baghdad.

Table (3)

Summary of assessing accidents and work injuries in the company

Accidents and work injuries	Frequencies	Result	Weighted mean	Percentage of matching	Gap size
Procedures and standards	2	12	6	100%	0%
Work conditions and environment	9	33	3.67	61.2%	38.8%
Safety and health	6	30	5	83.3%	16.7%
occupational Work procedures	16	54	3.38	56.3%	43.7%
Accident frequencies and equipment failure	3	12	4	66.6%	33.4%
Supervisors and their attitudes	7	24	3.43	57.2%	42.8%
Accidents, causes and documentation	4	13	3.25	54.2%	45.8%
Complete percentage of the general commitment to items of accidents and work injuries	47	178	3.78	63%	37%

Source: The researcher in accordance with the results

Results in table (3) reveal that there is a gap between application and virtual documentation for the variables of accidents and work injuries in the company as follows: 37% work conditions and environment 38.8%; occupational safety and health 16.7%; work procedures 43.7%; accident frequencies and equipment failure 33.4%; supervisors and their attitudes 42.8%; finally accidents, causes and documentation 45.8%; but the complete matching with the variables of accidents and work injuries was 63%. Therefore, the company needs to take more correction measures to bridge the gap or reduce it.

4.2 Relation and influence of the risk management process, in accordance with ISO 31000:2018, on accidents and work injuries.

To identify the moral influence of applying risk management process in accordance with ISO in reducing accidents and work injuries regression, analysis and correlation coefficient were used to determine how strong the relation between the two variables was. The following are findings of the analysis:

4.2.1 The relation and influence of risk management on accidents and work injuries in compliance with ISO.

Table (4)

Results of relation and influence on risk management in reducing accidents and work injuries.

Correlation coefficient r	Determination coefficient R2	Regression coefficient β	Fixed point a	Calculated (t)	Calculated (f)	Level of (P) function	Nature of relation
-0.729	0.531	-0.364	4.882	*2.809	*7.890	0.037	moral

Source: The researcher in accordance with computer results

The results in table (4) show that:

1- There is a strong inverse correlation with statistical significance at the moral level (a= 5%) between risk management process of (iso) and accidents and work injuries; the coefficient correlation value between them was (-0.729). The calculated (t) value of correlation between the two variables which is (*2.809) supports that; it is higher than the tabular (t) (2.123). This makes accepting (H1) more probable. Such a thing means that there is a correlation with statistical significance of (a=5%) at the moral level of (iso) risk management and accidents and work injuries. The result is acceptable with confidence degree of (55%).

2- There is an influential correlation with moral significance of the process item. The process constitutes 53.1% of the influence on accidents and work injuries; one more unit added to the process reduces work injuries 0.364%. The calculated (t) value is more influential than its tabular counterpart rating 2.132% at (0.05) level. In addition, the (F) calculated value of the item “relation” is bigger than its tabular counterpart rating (7.71) at (0.05) level. This makes (H1) hypothesis more acceptable. Such a thing means that there is a relation with moral significance at (a=5%) level of the (iso) process in accidents and work injuries. The result is acceptable with a higher degree of confidence rating (95%).

5.0 Conclusions and recommendations

5.1 Conclusions

The researcher lists down some of the findings she came up to:

1- Awareness regarding risk management and ignorance of the significance of ISO 31000: 2018 were missing.
2- In its organizational structure, the company didn't have an independent specialized office whose role was to manage risks the company encounters at work.
3- The company didn't assign sufficient financial, material, and human resources needed for risk management as that leads to weak evaluation of risks which eventually resulted in bad performance.
4- The company didn't treat extant risks despite recording such risks and that finally lead to accidents.
5- Weak communication and correlation between departments concerned with risk management lead to more accidents.
6- The company didn't conduct constant periodic check-ups for the external and internal risks to evaluate and determine such risks.
7- The company never consulted the concerned, external and internal people, regarding practical steps of risk management.
8- Higher administration of the company didn't get beneficiaries, like workers, engineers, and supervisors, involved in consultation or decision making.
9- Workers exhaustion and absence of concentration and not granting them their periodic vacations prevented them from doing their work properly.
10- The company didn't verify that its workers use personal protection equipment (they just wear their ordinary suits), but never punished them for not using such equipment.

5.2 Recommendations

The researcher recommends the following:

1-The Company with its cadres should participate in conferences and scientific seminars to realize the significance of applying ISO 31000: 2018, relevant to risk management.

2-There is a need to sign a contract with a competent company to qualify the oil product company for (ISO).

3- A new department for risk management should be created and should be directly connected to all departments and should be given the greatest role in external and internal implementation to attract expertise in the field of risk management.
4- Health and safety and fire departments should be merged to facilitate communications and counselling with regard to risk management.
5- Negligent employees and workers who don't use personal protective measures should be penalized.
6- Disseminate the culture of risk management and occupational safety and health administration in all departments and structural levels so as to limit accidents and work injuries.
7- Document whatever relates to risk management accidents and causes leading to them and keeping those in records at hand so as to treat reasons leading to such accidents.
8- Grant periodic vacations to employees and secure rest and recreational areas in order to mitigate work pressure and to follow up the psychological and corporal conditions of the employees in an attempt to reduce accidents and work injuries.

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