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Deanship of Development and Quality

Importance of Implementation of OHSAS 18001 on the Performance of Slaughterhouse at Khartoum State

A Dissertation Submitted For Partial Fulfillment for the MSC Degree in Quality Management and Excellence

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الآيـــــة

بـسم الله الـرحمن الـرحيم

قال تعالى:

وَأَنْفِقُوا فِي سَبِيلِ اللَّهِ وَلَا تُلْقُوا بِأَيْدِيكُمْ إِلَى التَّهْلُكَةِ ۛ وَأَحْسِنُوا ۛ إِنَّ اللَّهَ يُحِبُّ الْمُحْسِنِينَ ﴿١٩٥﴾

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DEDICATION

This thesis is dedicated to mymother andfather who encourage me to be the best can be.

ACKNOWLEDGEMENT

I am grate full to Allah for the good health and wellbeing that were necessary to complete this research.

I would like to express may special appreciation and thanks to my advisor professor Mohamedabdelsalamabdalla, you have been tremendous mentor for me. I would like to thank you for encouraging may research and for allowing me to grow as research scientist.

A special thanks to my family. Wordscannot express how grate full and to my mother, my brothers, and my sisters for all of sacrifices that you've made on mybehalf. Your prayer for me was what sustained me thus far.

Abstract

The objective of this study is evaluate the occupation health and safety in workers of slaughterhouse in Khartoum stat and identify the occupation hazardsand occupation disease effect to the workers. The methodology approaches the descriptive and analytical methods data were collected from workers of three slaughterhouse (Elkarau slaughterhouse – Alsahafa slaughterhouse – Alshahid Nasr Aldyin slaughterhouse) .The result of the study showed that the percentage of uneducated workers in three slaughterhouserespectively 33.3%, 37.5%,47.1%. And the result of three slaughterhouse is similar show that the occupation accident (slipping – and injures – trauma) and occupation disease (respiratory disease – jaundice – diarrhea) .All workers in slaughterhouse not awareness about all zoonotic disease. The management of slaughterhouse not commitment about occupation health and safety and personal protective equipment.Observation obtained showedthe implementation of occupation health and safety in all slaughterhouse to minimize the work- related injuries and illness and also that all workers commitment of the personal protective equipment. Also comprehensive notification and recording system that cover all occupation hazards in slaughterhouse should beset.

خلاصة البحث

الهدف من الدراسة تقيم الصحة والسلامة المهنية في مسالخ ولاية الخرطوم والتعرف علي المخاطر المهنية, والامراض المهنية التي تؤثر علي عمال المسلخ . أن منهجية البحث اعتمدت علي دراسة وصفية وتحليلية وقد تم جمع الاحصاءت من العاملين بالسلخانة (مسلخ الكدرو ، ومسلخ الصحافة ، ومسلخ الشهيد نصر اللدين) .واظهرت النتيجة ان نسبة العمال الغير متعلمين في الثلاث مسالخ علي التوالي.33.3% , 37.5%, 47.1% وعند تحليل النتئج وجد أن اكثر الاصابات تكراراً هي (الانزلاقاق – والسقوط علي الارض – والصدمات) والامراض المهنية هي (التهاب الرئوي - واليرقان - والاسهالات نتيجة للأصابة بالديدان).

كما اظهرت الدراسة عدم وعي عمال المسلخ بكل الامراض المشتركة ، وعدم التزام مدراء المسالخ بالصحة والسلامة المهنية ومعدات الحماية الشخصية (بالنسبة للعمال)و اوضحت النتائج التي تم الحصول عليها اهمية تطبيق معاير السلامة والصحة المهنية في كل المسالخ لتقليل مخاطر العمل وتحسين الاداء وايضآ الحد من من الاصابات . وايضآ بالتزام جميع العاملين بامعدات الحماية الشخصية وتطبيق نظام التبليغ وتسجيل الشامل لتغطية جميع الحوادث المهنية في المسالخ.

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INTRODUCTION

Occupational health and safety is set of prevention and curtain measure that lead to the provision of safe working environment free risk by providing occupational protection for workers (by removing the risk and decreasing the source of risk, and protection of the facility machinery and materials from the risk that occur from fire and damage as result of misuse . Occupational safety looking for the cause of accidents. (Amaireh,2015)

organizations implement OHSAS management system in order to attainbetter result in safety and health performance. The systems approach for OSHA management hasgained worldwide acceptance since theintroduction of OHSAS 18001 guidelines. Since most of theguidelines for health and safety management advocate continual improvement and accident prevention,performance indicators become one of the most critical tools to evaluate the effectiveness of suchsystems. OHSAS 18001 system also hascertain requirements on performance measurement and management of an organization. It needs toestablish an OHS management system to reduce or minimize hazard and risk in the organization andother interested parties that may be exposed to OHS risks associated with its activities. (Habidin , 2013).

The slaughterhouse building or place where animals are butchered for food. The purposes of this study at the evaluation occupation health and safety in the slaughterhouse of Khartoum state. Workers in the slaughterhouse cannot aware about safety and occupation hazard.The workers in slaughterhouse exposed to different kind of hazard (Philips ,2008).

Objective of the study:

1. To identify the occupation health and safety in slaughterhouse of Khartoum state
2. To identify the occupation hazard effect to workers performance
3. To identify the type of occupation disease associate with processes
4. To enhance necessity of presence of means of safety and prevention in work place
5. To highlighting the role of workers in terms of safe methods and methods of work

CHAPTER ONE

Literature review

1. Definition of Quality:

What is quality? Basically, the quality of product or service refers to degree to which the product or service meets, and continues to meet customer expectation in business; there are many meaning of quality such as:

- The number of defects per million opportunities (six sigma)
- Conformance to requirement (Crosby)
- Fitness for us (juran)
- The result of care (page)
- Uniformity around target value (Kano)
- The loss a product imposes on society after it is shipped, (taguchi)
- The characteracteristics of product or service that bear on its ability to satisfy stated or implied needs (American society for quality)
- A product or service free of deficiencies (Deming)
- Value to some person (weinbyrg)
- Meeting or exceeding customer expectation (juran) and (even)
- Quality is the degree to which a set of inherent characteristics fulfils requirements, ISO 9000. (Ticker , 2010).

1.2 History of quality:

1.3 Quality inspection:

First stage 1910s when on the ford motor company started to employee team inspectors test the product with in the project standards this was applied at all stage.

1.4 Quality control:

Second stage 1924s is quality control TQM development and quality was controlled throw supervised skills specification measurement and standardization. Use statistical quality control.

1.5Quality assurance:

Third stage 1950s quality assurance from inspection to prevention . Quality assurance confidence the product or service will satisfy customers need. Other activities such as full quality manuals / use of cost of quality / develop process control and auditing of quality system

1.6Total quality management:

The fourth level is total quality management involves the understanding and implementation of quality management principles and concepts in every aspect of business activities. Total quality management must be applied at every level. Every stage and in every department of the organization. (Abdelghafour , 2017).

1.2 Quality management system:

Quality management system can be seen as complex system consisting of all the parts and components of an organization dealing with quality processes and

product. QMS can be defined as the managing structure, responsibilities , procedures , processes and management resources to implement the principles and action lines needed to achieve the quality objectives of an organization there are many definitions of QMS(ISO 8402 , 1994) , but most definitions don't provide any more information than the words quality management system . good QMS does not it set make an organization more profitable , efficient or customer focused , but it will give to an organization the ability to do anything better from production to sales . (Dassonville*etal* ., 2000).

1.2.1 Documentation of quality management system:

Documentation are manifold it provides a clear frame work of the operations in any organization it allows consistency of processes and better understanding of the QMS , and it provides evidence for achievement of objectives and goals . The QMS documentation consist of different types of documents usually it includes documents such as quality policy, quality manual, procedures, work instructions, quality plan and quality records. The international standard ISO 10013: 2001 guidelines for quality management system documentation give directions for effective dimension of QMS documentation. (Meskovska, 2014) .

1.2.2 ISO Standards:

ISO the international organization for standardization ISO is the specialized international agency for standardization and at present comprises the national standards bodies of 91 countries. (Vilas., 2004). According to Zuckerman (1997), development of standards result from either market demands, government imposed regulations or any voluntary consensus. ISO explores the interests of producers, consumers, governments, and the scientific community and formulates the international standards through the technical committees by gathering consensus

between the member countries . ISO standards serve as technical agreements providing framework for compatibleISO standards serve as technical agreements providing framework for compatible technology and are applicable across the globe. ISO has more than 18000 international standards and related documents that are applicable to various business and service sectors including agriculture, construction, engineering,manufacturing and distribution, transportation, medical and health care, and communication and information (Abobaker , 2015)

1.2.3 The ISO 9000 quality system:

Series standard was developed by the technical committee 176 of international standards organization (ISO) in 1987. There are five standards in the ISO 9000 series, ISO 9000, ISO 9001, ISO 9003, ISO 9004 . ISO 9000 contain general guideline, ISO 9001 and ISO 9002 are quality assurance standards intended to inform customers and third parties that a particular organization is work according to specific requirements. ISO 9003 and 9004 lead to establishment of total quality system based on customer, supplier chain and striving for world class competitiveness. The European community as part of integration plans is encourages wide use of ISO series. (Zairi , 1991).

1.2.4 ISO 9001: 2008:

ISO 9001:2008 sets out the criteria for a quality management system and is theonly standard in the family that can be certified to (although this is not requirement). It can be used by any organization, large or small, regardless of itsfield of activity. In fact ISO 9001:2008 is implemented by over one millioncompanies and organizations in over 170 countries.This standard is based on a number of quality management principles including strong customer focus, the motivation, and implication of top management, theprocess approach and continual improvement. Using ISO 9001:2008 helpsensure that customers get consistent, good quality

products and services, in which turn brings many business benefits , ISO 9001 is designed to be compatible with other ISO management system standards such ISO 14001 (environmental)OHSAS18001 (health and safety) and ISO 27001 (information security).(http : www. Iso .org /iso / iso .9000).

1.2.5 Integration of management systems:

These system comprised the management of processes on all levels of organization. Integrated Management System means that the company decided to introduce another management system and interconnect it with the existing quality management system and its function, and the result is the formation of integrated management system. Integrated Management Systemis based on the vision of the international standards integration for quality management, environmental management, safety management and occupational health, management of capital, but also information security management .The starting point for almost all of these management systems is a process approach that allows combining processes into one system. The key factors influencing this system are customers and suppliers, society and the public, employees and shareholders. The impact of before mentioned individual stakeholders includes all three pillars of sustainable development: economic, environmental and social. IMS consists usually of the following management systems and these are Quality Management System (QMS), Environmental Management System (EMS), Occupational Health and Safety Advisory Services (OHSAS)(Katerina , 2015).

Bs OHSAS 18001 and correspondence with other management standards occupational health and safety management systems specification and OSHAS 18002 guidelines for implementation of BS OHSAS 18001 the correspondence between OHSAS 18001, ISO 14001 , ISO 9001 . OHSAS 18001 closely follows the principle of quality management reflecting the key principles and structure of other management system and the link between health and safety management

and environmental management is strong and almost all of the OHSAS 18001 clauses are similar to ISO 14001 the potential of integration of this two systems . (Nqa , 2009).

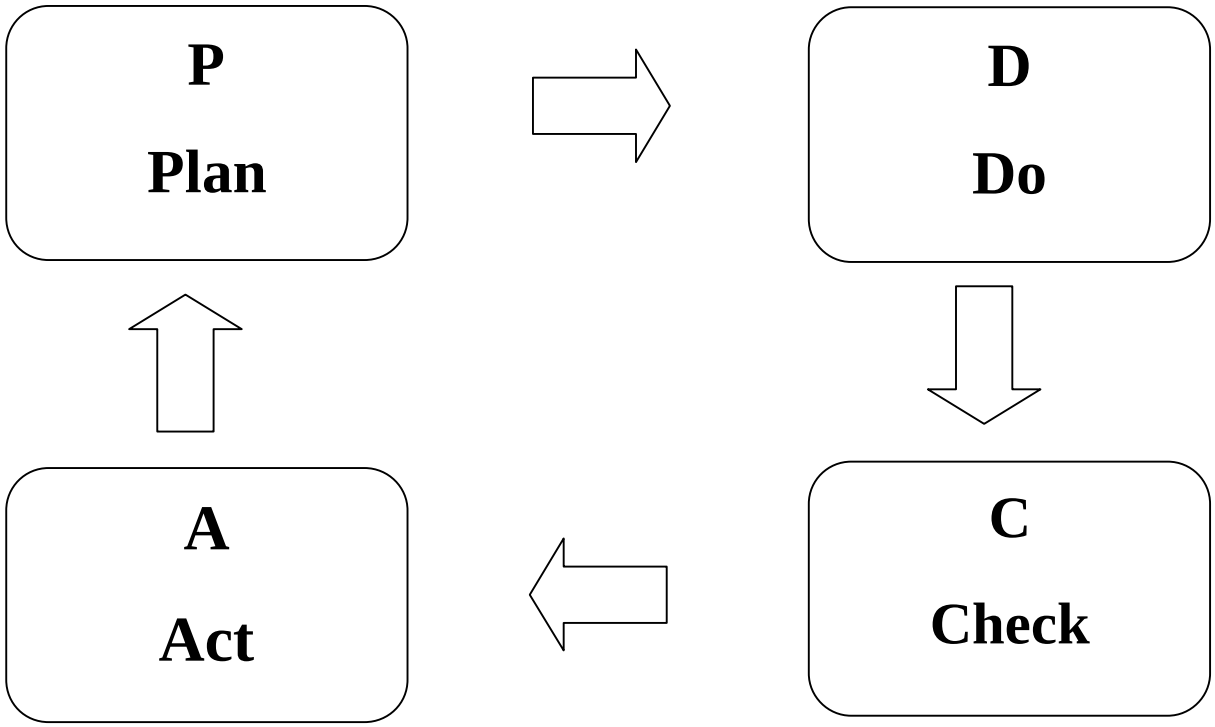

Fig (1): Plan – Do – Check – Act (PDCA) also known as Deming cycle(Nqa , 2009)

1.3 Safety systems:

Safety touches every aspect of organization systems, it is not just guarding of machinery or protection of workers, safety is not reacting to accidents and emergencies but more importantly planning to prevent accidents from happening total safety system can be defined as follows those procedures , guidelines and plans which would ensure the safe interaction of socio-technical systems to words the achievement of organizational competitive objectives . The main objective of total safety systems is to establish a culture based on zero risk through continuous

improvement activities but value adding ones .By ensuring that there are no risks to employee and process equipment optimum performance can be achieved . They represent the technical and social elements of organization systems and as such include safety of work place design . Safety of technical processes and safety of employees (Zairi , 1991).

1.3.1 Occupational health and safety:

Occupational safety and health (OSH) applied all relevant ILO (International Labour Organization) instruments and programmers.OSH is generally defined as the science ofthe anticipation, recognition, evaluation and control of hazards arising in orfrom the workplace that could impair the health and well-being of workers,taking into account the possible impact on the surrounding communities andthe general environment. This domain is necessarily vast, encompassing a largenumber of disciplines and numerous workplace and environmental hazards. Awide range of structures, skills, knowledge and analytical capacities are neededto coordinate and implement all of the “building blocks” that make up nationalOSH systems so that protection is extended to both workers and theenvironment.The scope of occupational safety and health has evolved gradually andcontinuously in response to social, political,technological and economicchanges. In recent years, globalization of the world’s economies and itsrepercussions have been perceived as the greatest force for change in the worldof work, and consequently in the scope of occupational safety and health, inboth positive and negative ways. Liberalization of world trade, rapidtechnological progress, significant developments in transport andcommunication, shifting patterns of employment, changes in workorganization practices, the different employment patterns of men and women,and the size,structure and life cycles of enterprises and of new technologiescan all generate new types and patterns of hazards, exposures and

risks.Demographic changes and population movements, and the consequent Pressures on the global environment, can also affect safety and healthin theworld of work.It is no coincidence that the protection of workers against sickness,disease and injury related to the working environment.(Benjamin , 2008)

1.3.2 Core OSH principles:

Occupational safety and health is an extensive multidisciplinary filed , invariably touching on issues related to scientific areas such as medicine including physiology and toxicology , ergonomics , physics and chemistry , as well as technology economics , law and other areas specific to various industries and activities despite this variety of concerns basic principles can be identified , including the following:

All workers have rights workers, as well as employers and governments, must ensure that these rights are protected and must strive to establish and maintain decent working conditions and decent working environment. More specifically.

- Work should take place in safe and healthy working environment
- Conditions of work should be consistent with workers well- being and human dignity
- Work should offer real possibilities for personal achievement , self-fulfillments and service to society (ILO;1984)

1.3.3 OHSAS standard:

The OHSAS 18001 standard exist from 1999 and the revised 2007 version. Both version force the firmto execute to fulfilling legal requirements, formulate targets for health and safety protection andappropriate work environment conditions, and design management systems to improve performanceand practices, OHSAS

(2007).OHSAS 18001 system also hascertain requirements onperformance measurement and management of an organization. It needs toestablish an OHS management system to reduce or minimize hazard and risk in the organization andother interested parties that may be exposed to OHS risks associated with its activities.(Aunifatin*etal* , 2013)

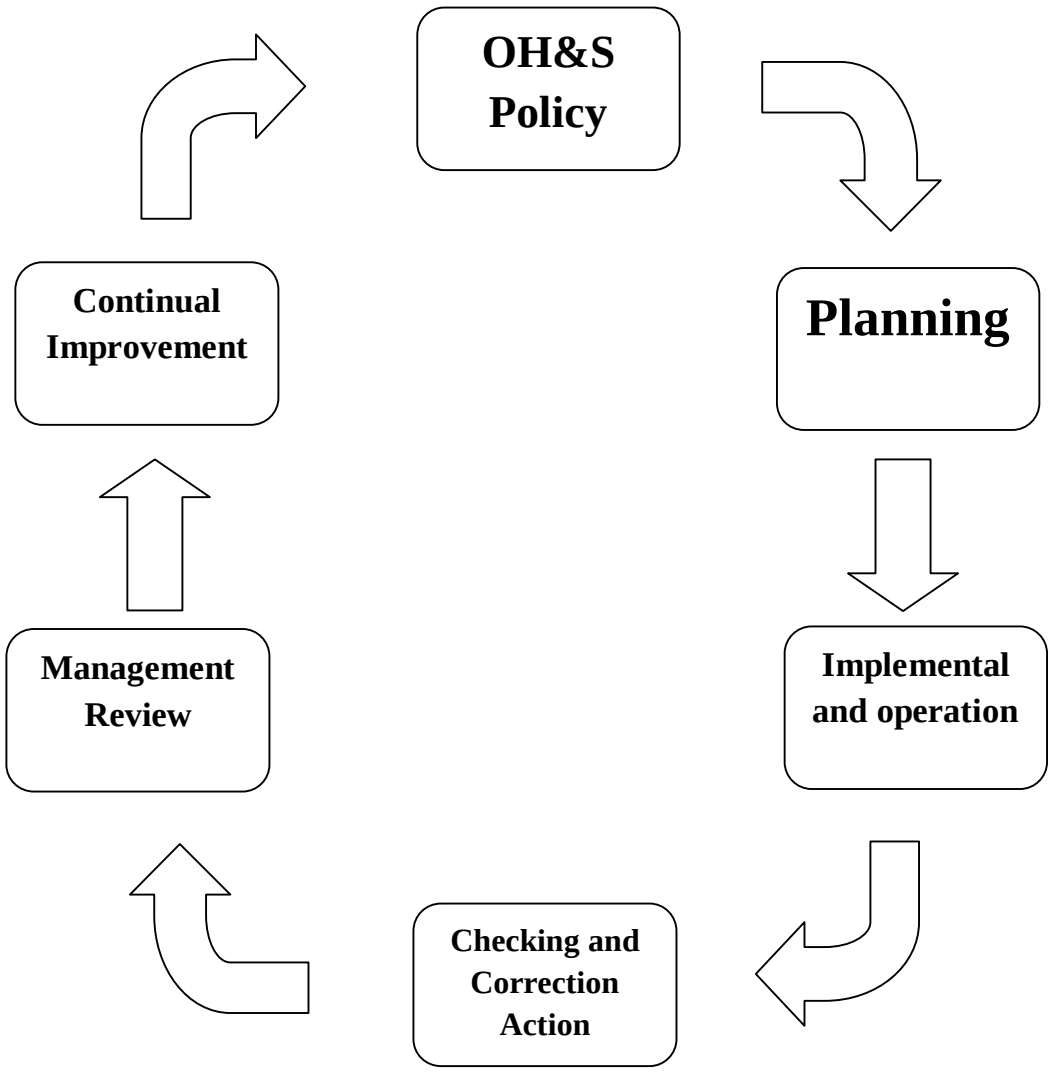

Fig (2): Occupational safety and health (OHS) management system model for OHSAS 18001 (2007) standard

OHSAS 18001 is aligned with ISO 14001 which based upon the (plan , DO, check ,ACT) structure pioneered by American quality expert w. Edwards 1950) it is effective structure is still used today to ensure that the hazards and risks associated with the organizations activities ,products and services systematically identified and assessed , controlled , monitored and continuously improved . (Nqa, 2009)

1.3.4 OHSAS 18001 management system requirements :(DNV. GL OHSAS I8001: 2007)

Scope	1
Normative reference	2
Term and definition	3
OH&S management system requirement	4
General requirement	4.1
OH&S policy	4.2
Planning	4.3.1 hazard identification risk assessment and determining control. 4.3.2 legal and other requirements 4.3.3 objectives and programmers
Implementation and operation	4.4.1 resources , roles , responsibility , accountability and authority 4.4.2 competence . training and

	awareness 4.4.3 communication participation and consultation 4.4.4 documentation 4.4.5 control of documents 4.4.6 operational control 4.4.7 emergency preparedness and response
Checking	4.5.1 performance measurement and monitoring 4.5.2 evaluation of compliance . 4.5.3 incident investigation non conformity corrective action and preventive action . 4.5.4 control of record 4. 5.5 internal audit
Review	4.6 management review

1.3.5 Occupational Health and Safety is based on:

1.3.6 Hazard identification:

The process of recognizing that a hazard exists source or situation with thepotential to cause harm in terms of human injury or ill-health .

1.3.7 Risk assessment and management

The primary purpose of the Occupational Safety and Health is to managethe occupational hazards. Therefore, it is necessary to assess the danger and risk to determine what can cause harm to workers and property so that they can take

appropriate implementation. The UK has been developed a unit for Health and Safety Executive using five-step method for assessing the risk in small-sized enterprises (SMEs) which has been approved worldwide. The five steps are:

1. Identify the hazards.
2. Decide who might be harmed and how.
3. Evaluate measures for the prevention, protection and implementation.
4. Record your findings and implement them.
5. Review your assessment and update if necessary .

1.3.8 Determination of applicable controls

Determination of applicable controls can be achieved by:

1- Measures relevant to eliminate or reduce risk to an acceptable level.

2- Measures are based on the hierarchy of control measures.

3- Handle with greater significance an effective health and safety system vital for organizations In order to achieve.

The three aspects above provide the ever important foundation for implementing the overall system would surely fail. It can assess the risk, consistent with the size and activity of the institution , as well as available resources and skills. OHSAS requires established high risk such as petrochemical plant risk assessment process which is more complex, and the mobilization of resources and skills at a high level. This willfully many countries to develop guidelines for risk assessment which is often used for regulatory purposes or to develop internationally agreed standards .(18001 :2007)

1.4 Occupation Health:

Occupational health is activity aimed to:

- Protection and promotion of health of workers by preventing and controlling occupational disease and accidents by eliminating occupational factors and conditions hazardous to health and safety at work .
- The development and promotion of healthy and safe workers and support for development and maintenance of their working capacity well as professional and social development at work .
- Enabling workers to conduct socially and economically productive lives and to contribute positively to sustainable development ,occupational health has gradually develop from mono- disciplinary risk oriented activity .
- To amulti- disciplinary and comprehensive approach that considers and individuals physical / mental and social well- being , general health and personal development (John , 2001)

1.4.1 Occupational disease and accident:

The global picture in 2005 , the international labour organization increased it is estimates of the number of deaths caused globally by work- related well as by work – related diseases to around 2.2 million it also believes that this could be conservative estimate due to under reporting of accidents and in particular work related , even in develop countries .(Kaven , 2009)

1.4.2 Record and investigating accidents:

Organization and community health workers need to record and investigate occupational accidents in order to :

- Identify the real causes of injury , property damage and near – misses .
- Develop effective methods of preventing future similar accidents
- The accident or injury report should include the following information.

- Circumstances of the accident

  Cause of the accident

- Available data for assessing the cause of the of the accident and their effects on the person and the environment
- Emergency measures taken step to be taken in the future to prevent further accidents

  Accident may be reported according to

- Cause of accident
- Place of the accident
- Type of injury
- Personal characteristics such as , age ,sex
- Time of accident (Shimwal , 2001)

1.4.3 Health work place:

The most successful economic have demonstrated that work place designed according to good principles of occupational health , safety and ergonomics are also the most sustainable and productive . in addition a healthy economy , high quality of products or services and long – term productivity are difficult to achieve in poor working conditions where workers are exposed to health and safety hazard .(john , 2001)

1.5 Slaughterhouse:

Slaughterhouse is construction that is dedicated to slaughtering animals, slaughters and flocks , for purpose of preparing edible carcasses . and play role in environmental pollution through the waste (blood , dung , dead animals) (Morshidee , 1994).

Slaughterhouse process starts at farm . The operation of slaughtering are basically the same to all animal species preparation for transport from farm , lair age moving to the stunning – bleeding – dehiding – scalding – dehairing - evisceration - inspection – classification and chilling – consequently .Slaughtering as process influencing animal welfare as well as meat quality take about 12- 24 hours or more depending on the animal species and transport time . The size of operation and the level of technology may differ and influence the slaughter process and the thefacilities .(Ninoios and Jannee , 2014)

1.5.1 Work condition in slaughterhouse:

Slaughterhouse largely workers minorities with little to no education and limited knowledge work conditions of slaughterhouse are very demanding high risk and usually management not concerned with worker rights , safety and well being often paying low wages and hiring unskilled minorities , slaughterhouse workers become ill or injured from the work and the work conditions and require serious medical attention and some slaughterhouse workers disclose being under pressure hot to report injuries . Workers have to work in either hot or cold temperatures depending on the purpose of the area location with the facility slaughterhouse rooms are often hot and humid . the floor in the processing area of the facility is usually slippery which creates more work related hazard for the workers .(Dorovskikhi , 2015)

Meat inspectors are characterized by practical work in the slaughterhouse including tasks related to ant mortem and post – mortem inspection meat inspectors are exposed to series of hazards arising from the work in slaughterhouse or from animal , people working on slaughter line are exposed to series of occupational hazard during ant mortem and postmortem meat inspection these hazards include infections with pathogens that can be transmitted by close contact with live or slaughtered animals , this can take place by direct contact with animal

and also indirectly via contaminated air . Accidents / injuries that may be cause by handling the live animal or stunned and bled animals that still display unexpected reflex movements the level of occupational hazardIn the slaughterhouse , is disproportionately high compared with other profession associated with physical work .(Thimjos and Janna , 2014)

Meat inspection is an activity which is a physically strain , during the worker day the workers stand up for many hours inspecting the carcasses and organs , more over the work is carried out at the line speed of the slaughter line and characterized as repetitive work task , this one sided repeated work causes high risk for back and shoulder problems in particularly , the incision of the mandibular lymph node requires that the meat inspectors on most of slaughter plants bend forward in order to palpate and cut the lymph nodes in the head and throat area this action results in a risk of work related to musculoskeletal disorders on same plants the meat inspection platforms have been change so that the head is presented for inspection already separated from rest of the carcasses which lower risk of injury in the back due to bending forward to cut the lymph nodes the handling knives might result in risk of damage by cutting .(Alban , 2008)

1.5.2 Same definition according to ILO:

Hazard:

Identification anything with the potential to cause harm such as chemicals , electricity , work on ladders , an unguarded machine , an open drawer demanding and stressful work .

Risk:

The risk is the chance , high or low that some body could be harmed by these and other hazards , together with indication of how serious the harm could be .

Occupational disease:

Covers any disease contracted as a result of an exposure to hazards arising from work activity e.g. asthma resulting from exposure to wood dust or chemical compounded .

Occupational accident:

An occurrence arising out of or in the course of , work which results in fatal or non fatal injury e.g. a fall from a height or contact with moving.(Ilo , 2015).

1.5.3 Occupational hazards in slaughterhouse:

1.5.4 Physical hazard:

Occupational environment is the sum of external conditions and influences which prevail at the place of work .Common injuries cut (injuries by live animal and knife cut), tendinitis , cumulative trauma disorders, back and shoulder problem and pain , carpal tunnel syndrome (CTS) persists as leading cause of extremity musculoskeletal disorders . Symptoms of carpal tunnel syndrome include numbness – tingling . Bodily fluids from carcasses such as blood and fat can make floors wet and slippery , slippery case suffer injures. (Anna , 2015).

1.5.5 Chemical hazard:

Workers are exposed to number of products that have strong chemicals including disinfections cases skin irritation or damage to other parts of the body workers are exposed to ammonia used for refrigeration.(Gao ,2005).

1.5.6 Environmental hazard:

Noise the slaughterhouse common sources of noise include animals in lair age / powered saws compressors for chillers and freezers .Some workers are exposed to very hot temperatures or very cold temperatures , the clean of the floors and dust , fumes or aerosols keep up the conditions is highly humid and effect in the lungs .(Gao , 2005).

1.5.7 Biological hazard:

Living organisms that can cause infectious disease and allergies they include (viruses , bacteria , parasite) ,workers in slaughterhouse exposed to different pathogeneses those infections that can be naturally transmitted from animal to workers slaughterhouse workers animal handlers and meat inspectors brucellosis is on common zoonotic disease

- Bacteria infection (salmonelosis , compylobacteriose, Escherichia coli , tuberculosis , anthrax).
- Parasitic zoonosis : shistosomiasis, fascioliasis cause by liver fluke belonging to genus fasciola (fasciola hepatic and F . gigantic, toxoplasmosis .Viral infection (rabies , arbo viral infection)
- Rickettsial infections e.g. Q fever
- Fungal infections e.g. ring worms
- Allergies e.g. eczema
- Respiratory disease e.g. occupational asthma .(Babeiker , 2008).

1.6 Personal protective equipment (PPE) according to health and safety guidance not for meat industry (Bmpa ,2014):-

The personal protective equipment (PPE) for the meat industry and relevant to slaughtering and processing plants and butchers in retail shops .The personal protective equipment at work regulations 1992 .

1.6.1 Eye and face protection:

The main types of eye and face protection are safety spectacles , goggles and face shields , safety spectacles protection the eye against certain types of hazard .When liquids or dust are the hazard .Goggles give the eye protection from all angles as the complete rim is contact with the face . Hazard that require eye and face

protection include liquid or chemical splashing including biological agent and contaminants .

1.6.2 Hand protection:

Gloves of various designs can protection against wide range of hazard including ,cuts , abrasions and stabs , extremes of temperature , skin irritation and dermatitis , contact with chemicals and other hazardous substances including biological hazards . Protection against cut and knife accidents are very common in slaughterhouse usually involving cut or stabs to the non knifehand , forearm or body the best protection will normally be achieved by the use of chain mail for example in the slaughter hall operative may use chain mail to protect the non knife hand and use cut – resistant material on knife hand.

1.6.3 Hearing protection:

The noise (2005) specify that employers have to provide their employees with hearing protection if they ask for it and their noise exposure is between the lower and upper exposure action values specified in the regulations leg between 80 and 85 decibels for daily exposure.

1.6.4 Protective footwear:

the safety boot or shoe is the most common type of safety footwear they normally have other safety features including slip resistant anti – slip soles that can reduce the likelihood of slipping on certain floors the main hazard which need consideration in working environment are objects falling on and crushing the feet treading on slippery surface e.g. floor work in cold condition.

1.6.5 Protection aprons:

Butchers and slaughterhouse workers should wear plat or link aprons should be sufficiently long enough to provide adequate the nature of work e.g. usually covering the body area (aprons if there is a risk of injury to the abdomen or chest.

1.6.6 Head protection:

There are several types of head protection available include industrial safety , hard hats which protect against falling objects or impact with fixed objects and bump caps which protect against bumping the head .

1.6.7 Respiratory protection:

is designed to protect the worker against inhalation of hazardous substances in the work place air. Respirators filters devices are used delete to remove contaminants air .Masks and other tight and are available fitting face pieces e.g. disposable masks ,half and full face masks (Pmba , 2014).

1.7 Performancemeasurement:

Performance measurement is the ongoingmonitoring and reporting of programaccomplishments, particularly progresstowards preestablished goals. It istypically conducted by program or agencymanagement.Performance measures may address thetype or level of program activitiesconducted (process), the direct productsand services delivered by a program(outputs), and/or the results of thoseproducts and services (outcomes).A “program” may be any activity, project,function, or policy that has an identifiablepurpose or set of objectives.(Stephanie and joseph, 1998)

1.7.1 Occupational Safety and Health Performances (OSHAPM):

Occupational safety and health performance measurement is the process to collect and analyze relevant information for assist organization to develop different levels of safety performance indicators for health and safety management and recognize the gap need to be narrowed. Measuring performance of health and safety management system is as essential as financial and other competitiveness related performances of an organization. For example, workers that do not enforce safety and health standard throughout the organizations may lead to serious health problem among workers performance. When worker are not protected while doing their job, organization will face lower performance especially on employee productivity and safety and health performance. Occupational safety and health

performance measurement is an essential element in monitoring and evaluating OHS performance. It allows the identification of problem areas where preventative actions must be taken .(Aunifatin*elal* , 2013).

1.7.2 Influence of OSH on worker's Performance:

It is clear that the purpose of OSH is to create a safe working environment and workers are protected from workplace accidents or from adverse events. This is attribute to the factors that drive job satisfaction, such as supporting workers condition in which workers care about good working environment for personal comfort and to ease their task because they prefer to work in the physical environment that is not dangerous or troublesome. A good implementation of OSH would foster a sense of security and comfort in the heart of the workers. With the creation of a sense of security and comfort, these in turn would make workers in the better position to avoid work accidents and would not hinder their performance. Thus, the creation of a sense of security and comfort in the workplace would also enable improvement of employee's performance. A positive OSH achievement would create a sense of security that could improve performance, because if workers do not feel safe whilst working, they may not do their job well. (Eliyana and Ria , 2012)

CHAPTER TWO

Material and methods

2.1 Research design:

According to research there was five hypotheses to evaluate the occupation health and safety in slaughterhouse Khartoum state .

Questionnaire survey was conducted and data was analyzed by using SPSS 2017 software program.

2.2 Research area:

The study was conducted three slaughterhouse, Alkadaru slaughterhouse, Alshahid Nasr Aldiyn and Alsahafa slaughterhouse .

2.3 Research population:

The target population of this study including all workers contact to animal in slaughterhouse in Khartoum state, Sudan

2.4 Sampling:

Selection of 110 people as samples randomly. a survey questionnaire was developed using linker scale (5)strongly agree (4)as weight for each answer(agree) and scale (3)neutral an (2)for each answer(disagree) and scale (1)as weight for each answer (strongly disagree)

- After data collection has finished , the researcher used spss software for the analysis of collected data by using

2.5 Statistical Processors Used:

- After data collection had been finished , SPSS software was used
- frequency distribution of the answers
- percentages
- chi- square test for the significance of difference between answers
- alpha equation to calculate the reliability coefficient ,
- Median

2.6 Data collection :

Questionnaire was prepared and ensure it is sincerity and coefficient of stability and after data collection processes are encoded and enter computer and processed statistically using the statistically package for social sciences (SPSS) linker scale:

(80 - 100)% strong agree

(70 - 79.9)% agree

(60 - 69.9)% neutral

(50 - 59.9)% disagree

(Less than50%) strongly disagree

CHAPTER THREE

Result

This study aimed to evaluate the occupation health and safety in the three slaughterhouse in Khartoum state and identify the occupation hazard effect the workers in slaughterhouse to identify the gender, education level.

The result of the study according to sequence of questions and hypnosis:

A / Result concerning the variable study of Alkadaru slaughterhouse:

3.1 Descriptive of the Variables Study:

3.1.1 General information: From table (3.1) the most individual study were male (90%) and female (10%) few. the most academic qualification of the individuals study were uneducated (37.5%), while educated and secondary (7.5%) secondary school were few people .

Table 3:1 Demographic characteristics of the individuals of the study (n=40)

Gender	Frequency	Percentage
Male	36	90%
Female	4	10%
Total	40	100%

Qualification:

Qualification	Frequency	Percentage
Uneducated	15	37.5%
Primary Stage	12	30%
Secondary	3	7.5%

Diploma	4	10%
Bachelor	6	15%
Total	40	100%

3.2 Test questionnaire:

3.2.1 Firstaxis Statistically significant relationship between occupation healthy and safety and slaughterhouse design

Table (3.2) The value of chi-square for all phrases in the first axis (253.50), with p-value =0.000 < 0.0) this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of agreement . first axistherewasStatistically significant relationship between occupation healthy and safety and slaughterhousedesign

Table 3:2: frequency distribution of first axis phrases answers (n=40)

No.	Phrases	Frequency and percentages%				
		Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1	slaughterhouse sit affect the ventilation	2 5.0%	12 30.0%	2 5.0%	18 45.0%	6 15.0%
2	the size of the slaughterhouse and sections suitable for all operation to avoid crowding	24 60.0%	16 40.0%	0 0.0%	0 0.0%	0 0.0%
3	solid floors to avoid slipping	15 37.5%	24 60.0%	0 0.0%	1 2.5%	0 0.0%

4	walls of ceramic easy to clean	18 45.0%	22 55.0%	0 0.0%	0 0.0%	0 0.0%
5	there sanitation to avoid air pollution	16 40.0%	24 60.0%	0 0.0%	0 0.0%	0 0.0%
6	slaughterhouse equipment uses electrical extensions of water resistance	6 15.0%	31 77.5%	1 2.5%	2 5.0%	0 0.0%
Axis		81 33.8%	129 53.8%	3 1.3%	21 8.8%	6 2.5%

3.2.2 Secondaxis:statistically significant relationship between occupation healthy and safety and exposures in the work environment

Table (3.3) The value of chi-square for all phrases in the second axis (257.73), with (p-value =0.000 < 0.05), this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of agreement .

Table 3.3 frequency distribution of the second axis phrases answer (n =40)

No.	Phrases	Frequency and percentages%				
		Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1	workers in the slaughterhouse aware of	2	22	3	11	2

	occupation disease	5.0%	55.0%	7.5%	27.5%	5.0%
2	workers in the slaughterhouse exposed to the hazard during the detection and disperse the animal	8 20.0%	23 57.5%	1 2.5%	7 17.5%	1 2.5%
3	physical hazard 1/ noisiness: animal produce sounds uncontrollable	1 2.5%	11 27.5%	4 10.0%	24 60.0%	0 0.0%
4	2/ trauma and injuries and slips	12 30.0%	20 50.0%	2 5.0%	6 15.0%	0 0.0%
5	3/ exposed workers in the slaughterhouse on the dust of the feed and movement of animals	15 37.5%	19 47.5%	2 5.0%	3 7.5%	1 2.5%
6	4/ exposed workers in the slaughterhouse to high temperature	3 7.5%	20 50.0%	3 7.5%	14 35.0%	0 0.0%
7	chemical hazards : exposure to disinfection	1 2.5%	5 12.5%	4 10.0%	21 52.5%	9 22.5%

8	biological hazard: 1/ zoonotic disease common disease between animal and humans. bordello and hepatitis	6 15.0%	28 70.0%	1 2.5%	5 12.5%	0 0.0%
9	2/ toxoplasmosis	2 5.0%	10 25.0%	10 25.0%	16 40.0%	2 5.0%
10	3/ tuberculosis	3 7.5%	13 32.5%	8 20.0%	14 35.0%	2 5.0%
11	4/ anthrax	7 17.5%	25 62.5%	1 2.5%	7 17.5%	0 0.0%
12	progressing machines in the slaughterhouse	0 0.0%	13 32.5%	1 2.5%	18 45.0%	8 20.0%
Axis		60 12.5%	209 43.5%	40 8.3%	146 30.4%	25 5.2%

3.2.3 Thirdaxis:Statistically significant relationship between occupation healthy and safety and internal process

Table (3.4) The value of chi-square for all phrases in the third axis (116.93), with (p-value =0.000 < 0.05) , this indicates that there was significant differences at the level (5%) between answers of study individuals and in favor of agreement.

Table 3.4 frequency distribution of the third axis phrases (n=40)

No.	Phrases	Frequency and percentages%				
		Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1	Slaughterhouse rooms separate rooms with corridor prevent animal attacks	29 72.5%	10 25.0%	0 0.0%	1 2.5%	0 0.0%
2	slaughtering process are automated fashion	1 2.5%	5 12.5%	0 0.0%	25 62.5%	9 22.5%
3	the skin is removed after sparing by formalin to avoid disease	0 0.0%	4 10.0%	0 0.0%	17 42.5%	19 47.5%
4	there is separate room to examine the viscera	18 45.0%	22 55.0%	0 0.0%	0 0.0%	0 0.0%
5	disposal of the meat unsound by placing them in formalin then burned	7 17.5%	7 17.5%	1 2.5%	18 45.0%	7 17.5%
6	any worker in slaughter carrying health card prove it is free from infections	22 55.0%	13 32.5%	1 2.5%	4 10.0%	0 0.0%

	disease					
7	slaughterhouse cleans after all slaughter during the day to avoid contamination	35	4 10%	1 2.5%	0 0.0%	0 0.0%
Axis		112 40%	65 23.2%	3 1.1%	65 23.2%	35 12.5%

3.2.4 Fourth axis Statistically significant relationship between the occupations healthy and safety and prevention method

Table (3.5)The value of chi-square for all phrases in the fourth axis (131.28), with (p-value =0.000 < 0.05) ,this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of agreement .

Table 3.5 frequency distribution of the fourth axis phrases (n=40)

No.	Phrases	Frequency and percentages%				
		Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1	all workers in the slaughterhouse use prevention and safety equipment	1 2.5%	17 42.5%	5 12.5%	15 37.5%	2 5%
2	first aid box at the slaughterhouse in order	6	12	3	15	4

	to deal with minor injuries	15%	30%	7.5%	37.5%	10%
3	there is a doctor in the slaughterhouse	4 10%	1 2.5%	1 2.5%	24 60%	10 25%
4	the slaughterhouse administration is keen to the continuous monitoring of workers health	2 5%	17 42.5%	7 17.5%	9 22.5%	5 12.5%
5		1 2.5%	32 80%	1 2.5%	6 15%	0 0.0%
6	there are record of work related to injury	3 7.5%	4 10%	3 7.5%	27 67.5%	3 7.5%
7	health service there are clean drinking water and toilets	18 45%	22 55%	0 0.0%	0 0.0%	0 0.0%
8	waste : there is rooms for hanging	14 35%	19 47.5%	3 7.5%	4 10%	0 0.0%
Axis		49 15.3%	124 38.8%	23 7.2%	100 31.3%	24 7.5%

3.2.4 Fifth axis: the occupational health and safety appositive impact to improve the performance of employ Table (3.6) The value of chi-square for all phrases in the fifth axis (193.60), with (p-value =0.000 < 0.05) , this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of disagreement

Table 3.6 frequency distribution of the fifth axis phrases (n=40)

No.	Phrases	Frequency and percentages%				
		Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1	provide slaughterhouse administration means of occupational safety for all employee	3 7.5%	3 7.5%	6 15.0%	23 57.5%	5 12.5%
2	the slaughterhouse management to improve slaughterhouse continuously conditions	1 2.5%	17 42.5%	3 7.5%	16 40.0%	3 7.5%
3	the slaughterhouse administration directing workers by means of preventive education	2 5.0%	11 27.5%	2 5.0%	14 35.0%	10 25.0%
4	slaughterhouse is keen to manage working the ongoing health of workers up	0 0.0%	12 30.0%	10 25.0%	15 37.5%	3 7.5%
5	careful management of slaughterhouse to identify the causes of accidents and	0 0.0%	8 20.0%	4 10.0%	21 52.5%	7 17.5%

	occupational diseases					
6	slaughterhouse to manage working to develop ways of working	2 5.0%	14 35.0%	2 5.0%	17 42.5%	5 12.5%
Axis		8 3.3%	65 27.1%	27 11.3%	107 44.6%	33 13.8%

B / Result concerning the variable study of AlshahidnasrAldiyn slaughterhouse:

3.1 Descriptive of the Variables Study:

3.1.1 General information From table 3.1 the most individual study were male (83.3%) and females (16.7%) . The most academic qualification of individuals study ware postgraduate (46.3%) and diploma (2.8%) .

Table 3:1 Demographic characteristics of the individuals of the study (n=36)

Gender	Frequency	Percentage
Male	30	83.3%
Female	6	16.7%
Total	36	100%

Qualification

Qualification	Frequency	Percentage
Uneducated	12	33.3%
Diploma	1	2.8%
Bachelor	6	16.7%
Postgraduate	17	46.3%
Total	36	100%

3.2 Test questionnaire

3.2 .1 first axis Statistically significant relationship between occupation healthy and safety and slaughterhouse design Table 3.2 Frequency distribution of the first axis phrases Answers: was The value of chi-square for all phrases in the first axis 317.38, with (p-value =0.000 < 0.05), this indicates that there is

significant differences at the level (5%) between answers of study individuals and in favor of agreement .

Table 3.2 frequency distribution of first axis phrases answer (n= 36)

No.	Phrases	Frequency and percentages%				
		Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1	slaughterhouse site affect the ventilation	0 0.0%	15 41.7%	3 8.3%	18 50%	0 0.0%
2	the size of the slaughterhouse and sections suitable for all operation to avoid crowding	0 0.0%	36 100%	0 0.0%	0 0.0%	0 0.0%
3	solid floors to avoid slipping	10 27.8%	26 72.2%	0 0.0%	0 0.0%	0 0.0%
4	walls of ceramic easy to clean	11 30.6%	25 69.4%	0 0.0%	0 0.0%	0 0.0%
5	there sanitation to avoid air pollution	4 11.1%	31 86.1%	1 2.8%	0 0.0%	0 0.0%
6	slaughterhouse equipment uses electrical extensions	1	12	2	18	3

	of water resistance	2.8%	33.3%	5.6%	50%	8.3%
Axis		26 12%	145 67.1%	6 2.8%	36 16.7%	3 1.4%

3.2.2 Second Axis Statistically significant relationship between occupation healthy and safety and exposures in the work environment Table 3.3 Frequency distribution of the second axis phrases Answers: The value of chi-square for all phrases in the second axis (278.21), with p-value =0.000 < 0.05 ,this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of disagreement .

Table 3.3 frequency distribution of the second axis phrases answer (n=36)

No.	Phrases	Frequency and percentages%				
		Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1	workers in the slaughterhouse aware of occupation disease	5 13.9%	26 72.2 %	1 2.8%	4 11.1%	0 0.0%
2	workers in the slaughterhouse exposed to the hazard during the detection and disperse	1 2.8%	21 58.3 %	1 2.8%	10 27.8%	3 8.3%

	the animal					
3	physical hazard 1/ noisiness: animal produce sounds uncontrollable	0 0.0%	9 25%	0 0.0%	25 69.4%	2 5.6%
4	2/ trauma and injuries and slips	13 30.6%	16 44.4 %	0 0.0%	6 16.7%	1 2.8%
5	3/ exposed workers in the slaughterhouse on the dust of the feed and movement of animals	0 0.0%	11 30.6 %	0 0.0%	23 63.9%	2 5.6%
6	4/ exposed workers in the slaughterhouse to high temperature	0 0.0%	9 25%	0 0.0%	24 66.7%	3 8.3%
7	chemical hazards: exposure to disinfection	0 0.0%	4 11.1 %	1 2.8%	25 69.4%	6 16.7%
8	biological hazard: 1/ zoonotic disease common disease between animal and	10 27.8%	23 63.9 %	0 0.0%	3 8.3%	0 0.0%

	humans. bordello and hepatitis					
9	2/ toxoplasmosis	0 0.0%	11 30.6 %	2 5.6%	20 55.6%	3 8.3%
10	3/ tuberculosis	2 5.6%	7 19.4 %	1 2.8%	23 63.9%	3 8.3%
11	4/ anthrax	10 27.8%	19 52.8 %	1 2.8%	6 16.7%	0 0.0%
12	progressing machines in the slaughterhouse	0 0.05	3 8.3%	1 2.8%	11 30.6%	21 58.3%
Axis		41 9.5%	159 36.8 %	8 1.9%	180 41.7%	44 10.2%

3.2.3 third axis: A statistically significant relationship between occupation healthy and safety and internal process Table3.4 Frequency distribution of the third axis phrases Answers: The value of chi-square for all phrases in the third axis (128.00), with p-value =0.000 < 0.05), this indicated that there was significant

differences at the level (5%) between answers of study individuals and in favor of agreement .

Table 3.4 frequency distribution of the third axis phrases (n= 36)

No.	Phrases	Frequency and percentages%				
		Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1	Slaughterhouse rooms separate rooms with corridor prevent animal attacks	9 25%	23 63.9%	0 0.0%	4 11.1%	0 0.0%
2	slaughtering process are automated fashion	0 0.0%	0 0.0%	1 2.8%	19 52.8%	16 44.4%
3	the skin is removed after sparing by formalin to avoid disease	1 2.8%	2 5.6%	0 0.0%	22 61.1%	11 30.6%
4	there is separate room to examine the viscera	3 8.3%	16 44.4%	1 2.8%	16 44.4%	0 0.0%
5	disposal of the meat unsound by placing them in formalin then burned	3 8.3%	10 27.8%	0 0.0%	17 47.2%	6 16.7%

6	any worker in slaughter carrying health card prove it is free from infections disease	10 27.8%	26 72.2%	0 0.0%	0 0.0%	0 0.0%
7	slaughterhouse cleans after all slaughter during the day to avoid contamination	11 36.6%	25 69.4%	0 0.0%	0 0.0%	0 0.0%
Axis		37 14.7%	103 40.9%	1 0.4%	78 31%	33 13.1%

3.2.4 Fourth Axis: Statistically Significant Relationship between the Occupations Healthy and Safety and Prevention Method Table 3.5 Frequency distribution of the fourth axis phrases Answers The value of chi-square for all phrases in the fourthaxis was (247.90), with p-value =0.000 < 0.05 , this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of agreement .

Table 3.5 frequency distribution of the fourth axis phrases (n=36)

No.	Phrases	Frequency and percentages%				
		Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1	all workers in the	2	10	2	21	1

	slaughterhouse use prevention and safety equipment	5.6%	27.8%	5.6%	58.3%	2.8%
2	first aid box at the slaughterhouse in order to deal with minor injuries	12 33.3%	24 66.7%	0 0.0%	0 0.0%	0 0.0%
3	there is a doctor in the slaughterhouse	6 16.7%	1 2.8%	24 66.7%	5 13. 9%	0 0.0%
4	the slaughterhouse administration is keen to the continuous monitoring of workers health	7 19.4%	29 80.6%	0 0.0%	0 0.0%	0 0.0%
5		8 22.2%	25 69.4%	2 5.6%	1 2.8%	0 0.0%
6	there are record of work related to injury	7 19.4%	16 44.4%	1 2.8%	11 30.6%	1 2.8%
7	health service there are clean drinking water and toilets	14 38.9%	22 61.1%	0 0.0%	0 0.0%	0 0.0%
8	waste : there is rooms for hanging	9 25%	25 69.4%	2 5.6%	0 0.0%	0 0.0%

Axis	65 22.6%	153 53.1%	7 2.4%	56 19.4%	7 2.4%

3.2.4 Fifth Axis The Occupational Health And SafetyAppositive Impact To Improve The Performance Of Workers Table 3.6 Frequency distribution of the fifth axis phrases Answers: The value of chi-square for all phrases in the fifth axis (213.03), with p-value =0.000 < 0.05 , this indicated that there is significant differences at the level (5%) between answers of study individuals and in favor of agreement .

Table 3.6 frequency distribution of the fourth axis phrases (n=36)

No.	Phrases	Frequency and percentages%				
		Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1	Provideslaughterhousead ministration means of occupationalsafety for all employee	2 5.6%	13 36.1%	1 2.8%	18 50%	2 5.6%
2	the slaughterhouse management to improve slaughterhouse continuously conditions	7 19.4%	20 55.6%	1 2.8%	8 22.2%	0 0.0%
3	the slaughterhouse administration directing	9 25%	26 72.2%	0 0.0%	1 2.8%	0 0.0%

	workers by means of preventive education					
4	slaughterhouse is keen to manage the ongoing health of workers up	3 8.3%	33 91.7%	0 0.0%	0 0.0%	0 0.0%
5	careful management of slaughterhouse to identify the causes of accidents and occupational diseases	8 22.2%	16 44.4%	0 0.0%	12 33.3%	0 0.0%
6	slaughterhouse to manage working to develop ways of working	7 19.4%	12 33.3%	0 0.0%	14 38.9%	3 8.3%
Axis		36 16.7%	120 55.6%	2 0.9%	53 24.5%	5 2.3%

C/ Result concerning the variable studyofAlsahafa slaughterhouse

3.1 Descriptive of the Variables Study:

3.1.1 General information: From table 3.1 the most of the individuals study ware males (97.1%) and female (2.9%) . The most academic qualification of individuals study are uneducated (47.1%) and postgraduate (2.9%) .

Table 3.1 demographic characteristics of individuals of the study (n= 34)

Gender	Frequency	Percentage
Male	33	97.1%
Female	1	2.9%
Total	34	100%

Qualification

Qualification	Frequency	Percentage
Uneducated	16	47.1%
Primary Stage	10	29.4%
Secondary	4	11.8%
Bachelor	3	8.8%
Postgraduate	1	2.9%
Total	34	100%

3.2 Test questionnaire

3.2.1 First Axis Statistically Significant Relationship between Occupation Healthy and Safety and Slaughterhouse Design Table 3.2 Frequency distribution of the first axis phrases Answers The value of chi-square for all phrases in the first axis (109.92), with p-value =0.000 < 0.05 , this indicated that there was significant differences at the level (5%) between answers of study individuals and in favor of agreement .

Table 3.2 frequency distribution of first axis phrases answers (n=34)

No.	Phrases	Frequency and percentages%				
		Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1	slaughterhouse sit affect the ventilation	3 8.8%	16 47.1%	0 0.0%	14 41.2%	1 2.9%
2	the size of the slaughterhouse and sections suitable for all operation to avoid crowding	4 11.8%	23 67.6%	0 0.0%	7 20.6%	0 0.0%
3	solid floors to avoid slipping	14 41.2%	19 55.9%	0 0.0%	1 2.9%	0 0.0%
4	walls of ceramic easy to clean	0 0.0%	2 5.9%	0 0.0%	13 38.2%	19 55.9%
5	there sanitation to avoid air pollution	9 26.5%	25 73.5%	0 0.0%	0 0.0%	0 0.0%
6	slaughterhouse equipment uses electrical extensions of water resistance	3 8.8%	30 88.2%	0 0.0%	1 2.9%	0 0.0%

	33 16.2%	115 56.4%	0 0.0%	36 17.6%	20 9.8%

3.2.2 Second Axis Statistically Significant Relationship between Occupation Healthy and Safety and Exposures in the Work Environment Table 3.3 Frequency distribution of the second axis phrases Answers The value of chi-square for all phrases in the second axis (260.48), with p-value =0.000 < 0.05 a this indicates that there was significant differences at the level (5%) between answers of study individuals and in favor of agreement .

Table 3.3 frequency distribution of the second axis phrases answer (n=34)

No.	Phrases	Frequency and percentages%				
		Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1	workers in the slaughterhouse aware of occupation disease	1 2.9%	31 91.2%	0 0.0%	2 5.9%	0 0.0%
2	workers in the slaughterhouse exposed to the hazard during the detection and disperse the animal	24 70.6%	8 23.5%	0 0.0%	2 5.9%	0 0.0%
3	physical hazard	1	16	1	16	0

	1/ noisiness: animal produce sounds uncontrollable	2.9%	47.1%	2.9%	47.1%	0.0%
4	2/ trauma and injuries and slips	15 44.1%	14 41.2%	0 0.0%	5 14.7%	0 0.0%
5	3/ exposed workers in the slaughterhouse on the dust of the feed and movement of animals	5 14.7%	16 47.1%	1 2.9%	9 26.5%	3 8.8%
6	4/ exposed workers in the slaughterhouse to high temperature	4 11.8%	8 23.5%	0 0.0%	19 55.9%	3 8.8%
7	chemical hazards : exposure to disinfection	1 2.9%	3 8.8%	0 0.0%	17 50%	13 38.2%
8	biological hazard: 1/ zoon tic disease common disease between animal and humans. bordello and hepatitis	8 23.5%	23 67.6%	0 0.0%	3 8.8%	0 0.0%
9	2/ toxoplasmosis	1 2.9%	13 38.2%	3 8.8%	17 50%	0 0.0%

10	3/ tuberculosis	0 0.0%	19 55.9%	0 0.0%	15 44.1%	0 0.0%
11	4/ anthrax	10 29.4%	18 52.9%	0 0.0%	6 17.6%	0 0.0%
12	progressing machines in the slaughterhouse	3 8.8%	14 41.25	0 0.0%	12 35.3%	5 14.7%
Axis		73 17.9%	183 44.9%	5 1.2%	123 30.1%	24 5.9%

3.2.3 third axis: Statistically significant relationship between occupation healthy and safety and internal process Table 3.4 Frequency distribution of the third axis phrases Answers The value of chi-square for all phrases in the third axis (146.20), with p-value =0.000 < 0.05, this indicated that there was significant differences at the level (5%) between answers of study individuals and in favor of agreement .

Table 3.4 frequency distribution of the third axis phrases (n=34)

No.	Phrases	Frequency and percentages%				
		Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1	Slaughterhouse rooms separate rooms with corridor prevent animal attacks	5 23.5%	21 61.8%	1 2.9%	4 11.8%	0 0.0%

2	slaughtering process are automated fashion	1 2.9%	2 5.9%	0 0.0%	20 58.8%	11 32.4%
3	the skin is removed after sparing by formalin to avoid disease	0 0.0%	9 26.5%	0 0.0%	18 52.9%	7 20.6%
4	there is separate room to examine the viscera	11 32.4%	23 67.6%	0 0.0%	0 0.0%	0 0.0%
5	disposal of the meat unsound by placing them in formalin then burned	10 29.4%	21 61.8%	0 0.0%	3 8.8%	0 0.0%
6	any worker in slaughter carrying health card prove it is free from infections disease	22 64.7%	12 35.3%	0 0.0%	0 0.0%	0 0.0%
7	slaughterhouse cleans after all slaughter during the day to avoid contamination	15 44.1%	19 55.9%	0 0.0%	0 0.0%	0 0.0%
Axis		67 28.2%	107 45%	1 0.4%	45 18.9%	18 7.6%

3.2.4 fourth axis A statistically significant relationship between the occupation healthy and safety and prevention method Table3.5 Frequency distribution of the fourth axis phrases answers The value of chi-square for all phrases in the fourth axis (171.49), with p-value =0.000 < 0.05 this indicated that there is significant differences at the level (5%) between answers of study individuals and in favor of agreement .

Table 3.5 frequency distribution of the fourth axis phrases (n=34)

No.	Phrases	Frequency and percentages%				
		Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1	all workers in the slaughterhouse use prevention and safety equipment	0 0.0%	7 20.6%	0 0.0%	15 44.1%	12 35.3%
2	first aid box at the slaughterhouse in order to deal with minor injuries	10 29.4%	24 70.6%	0 0.0%	0 0.0%	0 0.0%
3	there is a doctor in the slaughterhouse	3 8.8%	1 2.9%	0 0.0%	21 61.8%	9 26.5%
4	the slaughterhouse administration is keen to the continuous monitoring of workers health	3 8.8%	27 79.4%	0 0.0%	4 11.8%	0 0.0%
5		14 41.2%	18 52.9%	2 5.9%	0 0.0%	0 0.0%
6	there are record of	0	8	0	16	10

	work related to injury	0.0%	23.5%	0.0%	47.1%	29.4%
7	health service there are clean drinking water and toilets	11 32.4%	23 67.6%	0 0.0%	0 0.0%	0 0.0%
8	waste : there is rooms for hanging	10 29.4%	24 70.6%	0 0.0%	0 0.0%	0 0.0%
Axis		51 18.8%	132 48.5%	2 0.7%	56 20.6%	31 11.4%

3.2.4 the fifth axis the occupational health and safetyappositive impact to improve the performance of workers Table 3.6 Frequency distribution of the fifth axis phrases Answers the occupational health and safety a value of chi-square for all phrases in the fourth axis (276.34), with p-value =0.000 < 0.05 , this indicated that there was significant differences at the level (5%) between answers of study individuals and in favor of agreement .

Table 3.6 frequency distribution of the fifth axis phrases (n=34)

No.	Phrases	Frequency and percentages%				
		Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1	provide slaughterhouse administration means of occupational safety for	0 0.0%	12 35.3%	0 0.0%	19 55.9%	3 8.8%

	all employee					
2	the slaughterhouse management to improve slaughterhouse continuously conditions	4 11.8%	27 79.4%	0 0.0%	3 8.8%	0 0.0%
3	the slaughterhouse administration directing workers by means of preventive education	2 5.9%	22 64.7%	0 0.0%	9 26.5%	1 2.9%
4	slaughterhouse is keen to manage the ongoing health of workers up	0 0.0%	34 100%	0 0.0%	0 0.0%	0 0.0%
5	careful management of slaughterhouse to identify the causes of accidents and occupational diseases	0 0.0%	17 %50	1 2.9%	15 44.1%	1 2.9%
6	slaughterhouse to manage working to develop ways of working	4 11.8%	12 35.3%	0 0.0%	18 52.9%	0 0.0%
Axis		10 4.9%	124 60.8%	1 0.5%	64 31.4%	5 2.5%

CHAPTER FOUR

Discussion

The research study evaluate the occupation health and safety in the slaughterhouse and identify the occupation hazard effect to workers .Research fin out the result of three slaughterhouse (Alkadrou - A lsahafa– AlshahidnasrAldiyin) the result is similar .The workers in slaughterhouse agreed that the important of slaughterhouse design to facilitate the process and ventilation and this identical (Edward ; 2005) some worker be ill because of exposure to chemical , blood and fecal material which can be exacerbated by poor ventilation and extreme temperature and loud noise.

The workers in AlshahidnasrAldiyn disagreed to exposure the hazard in slaughterhouse. butAlkadaru and Alsahafa slaughterhouse agreed to exposure to occupational hazard this agreed to (Anna ; 2015) . Work conditions of slaughterhouse are very demanding high risk and and can take physiological as well psychological tool on workers (human rights which reports slaughterhouse jobs has having extraordinarily high rates of injury. Workers agreed the biological hazards e.g. brucellosis ,jaundice , diarrhea, respiratory disease , hepatitis (magda and Siham; 2014) contamination meat carcass has pointed to many source of hazard poor personal hygiene transmission of transient microorganisms (diarrhea, brucellosis , salmonella , hepatitis . from the study the lack of attention of personal protective equipment .Personal protective equipment, or PPE, is designed to protect workers from serious workplace injuries or illnesses resulting from contact with chemical, radiological, physical, electrical, mechanical, or other workplace hazards. Besides face shields, safety glasses, hard hats, and safety shoes, protective equipment includes a variety of devices and garments such as goggles, coveralls,

gloves, vests, earplugs, and respirators. In other words, PPE is equipment worn on the body that protects a worker from exposure to a hazard.

Management of the slaughterhouse are lack of attention to accident report and record of the this agreed to (ILO; 2015) record provide record of investigation in to accident it should explain what happen and the action taken to prevent recurrence e.g. injury person, workers at the sit where the accident occurred .

The study observed top management non commitment to provide the means of occupational health and safety to all workers in slaughterhouse (Anna ;2015) slaughterhouse management generally does not concern itself with worker rights , safety and well being of it is workers often paying low wages and hiring unskilled minorities due to high level of labor turnover .

Conclusion and Recommendation

According to literature reviewed and finding from results this study t here is relationship between the occupation health and safety and the slaughterhouse design. There is relationship between the occupation health and safety and work environment . There is relationship between the occupation health and safety and internal processThere is relationship between the occupation health and safety and prevention method .The occupation health and safety are positive impact of the improved the performance of workers .

Recommendations:

- the attention of the program occupational of occupational health and safety through edify special department or worked team specializing for occupations health and safety in the slaughterhouse
- Evaluation and improvement the work environment of the slaughterhouse
- Education of all the worker in zoonoses , microbiological , physical , chemical hazard , personal hygiene and health issues
- Coordination between Sudan veterinary council and Sudan medicine council to regulate occupational health and safety programs
- Inform the workers about occupational health and safety programs to encourage their participation . this can be done by the following mechanisms
  - Workers orientation and meetings
  - Signs and themed posters
  - Bulleting
- Activation of the role of occupational health department in ministry of health to take care of all professions

- Setting of laws by the ministry of labor to improve work conditions and preserve workers rights
- Evaluation and improvement of work environment in all slaughterhouse
- Increase financial support given for treatment of occupational disease
- Vaccination should be available and compulsory for all workers in case of zoonotic disease out break

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APPENDIX

Alkadaru slaughterhouse analysis

Reliability and Validity:

stability means that measure give the same results if used more than once under similar conditions. Reliability is defined as the extent to which a questionnaire, test, observation or any measurement procedure produces the same results on repeated trials.

Validity is defined as the extent to which the instrument measures what it purports to measure. and calculate in many ways represents the easiest being the square root of the reliability coefficient

$$\text{Validity} = \sqrt{\text{Reliability}}$$

researcher calculates the reliability coefficient of the scale used in the questionnaire by alpha equation and the results as follows:

Table (1):Reliability and Validity:

reliability coefficient	**validity coefficient**
0.63	0.79

Source: prepared by researcher, using SPSS, 2017

Notes from the results table (3) that all reliability and validity coefficients for questionnaire is greater than (50%) and close to the one,This indicates that the

questionnaire is characterized by high reliability and validity, and makes statistical analysis acceptable.

Table (2):Chi-square test results: first axis Statistically significant relationship between occupation healthy and safety and slaughterhouse design .

No.	Phrases	Chi-square value	P-value	Median	Trend
1	slaughterhouse sit affect the ventilation	24.00	0.000	2	disagree
2	the size of the slaughterhouse and sections suitable for all operation to avoid crowding	1.60	0.206	-	-
3	solid floors to avoid slipping	20.15	0.000	4	agree
4	walls of ceramic easy to clean	0.40	0.527	-	-
5	there sanitation to avoid air pollution	1.60	0.206	-	-
6	slaughterhouse equipment uses electrical extensions of water resistance	60.20	0.000	4	Agree
Axis		253.50	0.000	4	agree

Source: prepared by researcher, using SPSS, 2017

- The value of chi-square for the first phrase is (24.00) with (p-value=0.000 < 0.05), this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of disagree.

- The value of chi-square for the second phrase is (1.60) with (p-value=0.206> 0.05), this indicates that there is no significant differences at the level (5%) between answers of study individuals .
- The value of chi-square for the third phrase is (20.15) with (p-value=0.000 < 0.05), this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of agree.
- The value of chi-square for the fourth phrase is (0.40) with (p-value=0.527> 0.05), this indicates that there is no significant differences at the level (5%) between answers of study individuals .
- The value of chi-square for the fifth phrase is (1.60) with (p-value=0.206> 0.05) , this indicates that there is no significant differences at the level (5%) between answers of study individuals.
- The value of chi-square for the sixth phrase is (60.20) with (p-value=0.000 < 0.05) , this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of agree.

  The value of chi-square for all phrases in the first axis (253.50), with (p-value =0.000 < 0.05) , this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of agree.

Table (3):Chi-square test results: of second axis statistically significant relationship between occupation healthy and safety and exposures in the work environment

No.	Phrases	Chi-square value	P-value	Median	Trend
1	workers in the slaughterhouse aware of occupation disease	37.75	0.000	4	Agree
2	workers in the slaughterhouse exposed to the hazard during the detection and disperse the animal	40.50	0.000	4	Agree
3	physical hazard 1/ noisiness: animal produce sounds uncontrollable	31.40	0.000	2	Disagree
4	2/ trauma and injuries and slips	18.40	0.000	4	Agree
5	3/ exposed workers in the slaughterhouse on the dust of the feed and movement of animals	35.00	0.000	4	Agree
6	4/ exposed workers in the slaughterhouse to high temperature	21.40	0.000	4	Agree
7	chemical hazards : exposure to disinfection	30.50	0.000	2	Disagree

8	biological hazard: 1/ zoonotic disease common disease between animal and humans. bordello and hepatitis	44.60	0.000	4	Agree
9	2/ toxoplasmosis	18.00	0.001	3	Neutral
10	3/ tuberculosis	15.25	0.004	3	Neutral
11	4/ anthrax	32.40	0.000	4	Agree
12	progressing machines in the slaughterhouse	15.80	0.001	2	Disagree
Axis		257.73	0.000	4	Agree

Source: prepared by researcher, using SPSS, 2017

From The Table Above:

- The value of chi-square for the first phrase is (37.75) with (p-value=0.000 < 0.05), this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of agree.
- The value of chi-square for the second phrase is (40.50) with (p-value=0.000< 0.05), this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of agree.
- The value of chi-square for the third phrase is (31.40) with (p-value=0.000 < 0.05), this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of disagree.

- The value of chi-square for the fourth phrase is (18.40) with (p-value=0.000 < 0.05), this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of agree.
- The value of chi-square for the fifth phrase is (35.00) with (p-value=0.000 < 0.05) , this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of agree.
- The value of chi-square for the sixth phrase is (21.40) with (p-value=0.000 < 0.05) , this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of agree.
- The value of chi-square for the seventh phrase is (30.50) with (p-value=0.000< 0.05) , this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of disagree.
- The value of chi-square for the eighth phrase is (44.60) with (p-value=0.000 < 0.05) , this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of agree.
- The value of chi-square for the ninth phrase is (18.00) with (p-value=0.001< 0.05), this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of neutral.
- The value of chi-square for the tenth phrase is (15.25) with (p-value=0.004< 0.05), , this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of neutral.
- The value of chi-square for the eleventh phrase is (32.40) with (p-value=0.000 < 0.05), this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of agree.

- The value of chi-square for the twelfth phrase is (15.80) with (p-value=0.001< 0.05), this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of disagree.

Table (4):Chi-square test result of the hired axis: Statistically significant relationship between occupation healthy and safety and internal process

No.	Phrases	Chi-square value	P-value	Median	Trend
1	Slaughterhouse rooms separate rooms with corridor prevent animal attacks	30.65	0.000	5	Strongly agree
2	slaughtering process are automated fashion	33.20	0.000	2	disagree
3	the skin is removed after sparing by formalin to avoid disease	9.95	0.007	2	disagree
4	there is separate room to examine the viscera	0.40	0.527	-	-
5	disposal of the meat unsound by placing them in formalin then burned	19.00	0.001	2	disagree
6	any worker in slaughter carrying health card prove it is free from infections disease	27.00	0.000	5	Strongly agree
7	slaughterhouse cleans after all slaughter during the day to avoid contamination	53.15	0.000	5	Strongly agree
Axis		116.93	0.000	4	agree

Source: prepared by researcher, using SPSS, 2017

From the table above:

- The value of chi-square for the first phrase is (30.65) with (p-value=0.000 < 0.05), this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of strongly agree.
- The value of chi-square for the second phrase is (33.20) with (p-value=0.000< 0.05), this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of disagree.
- The value of chi-square for the third phrase is (9.95) with (p-value=0.007< 0.05), this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of agree.
- The value of chi-square for the fourth phrase is (0.40) with (p-value=0.527> 0.05), this indicates that there is no significant differences at the level (5%) between answers of study individuals .
- The value of chi-square for the fifth phrase is (19.00) with (p-value=0.001< 0.05) , this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of disagree.
- The value of chi-square for axis the phrase is (27.00) with (p-value=0.000 < 0.05) , this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of strongly agree.
- The value of chi-square for the seventh phrase is (53.15) with (p-value=0.000< 0.05) , this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of strongly agree.

Table (5):Chi-square test results of fourth axis: A statistically significant relationship between the occupation healthy and safety and prevention method

No.	Phrases	Chi-square value	P-value	Median	Trend
1	all workers in the slaughterhouse use prevention and safety equipment	28.00	0.000	3	Neutral
2	first aid box at the slaughterhouse in order to deal with minor injuries	13.75	0.008	3	Neutral
3	there is a doctor in the slaughterhouse	46.75	0.000	2	Disagree
4	the slaughterhouse administration is keen to the continuous monitoring of workers health	16.00	0.003	3	Neutral
5		66.20	0.000	4	Agree
6	there are record of work related to injury	56.50	0.000	2	Disagree
7	health service there are clean drinking water and toilets	0.40	0.527	4	Agree
8	waste : there is rooms for hanging	18.20	0.000	4	Agree
Axis		131.28	0.000	4	Agree

Source: prepared by researcher, using SPSS, 2017

From The Table Above:

- The value of chi-square for the first phrase is (28.00) with (p-value=0.000 < 0.05), this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of Neutral.
- The value of chi-square for the second phrase is (13.75) with (p-value=0.003< 0.05), this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of Neutral.
- The value of chi-square for the third phrase is (46.75) with (p-value=0.000 < 0.05), this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of disagree.
- The value of chi-square for the fourth phrase is (16.00) with (p-value=0.003< 0.05), this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of Neutral.
- The value of chi-square for the fifth phrase is (66.20) with (p-value=0.000 < 0.05) , this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of agree.
- The value of chi-square for the sixth phrase is (56.50) with (p-value=0.000 < 0.05) , this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of disagree.
- The value of chi-square for the seventh phrase is (0.400) with (p-value=0.527>0.05) , this indicates that there is no significant differences at the level (5%) between answers of study individuals .
- The value of chi-square for the eighth phrase is (18.20) with (p-value=0.000 < 0.05) , this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of agree.

Table (6):Chi-square test results of the fifth axis: the occupational health and safetyappositive impact to improve the performance of employees

No.	Phrases	Chi-square value	P-value	Median	Trend
1	provide slaughterhouse administration means of occupational safety for all employee	36.00	0.000	2	Disagree
2	the slaughterhouse management to improve slaughterhouse continuously conditions	30.50	0.000	3	Neutral
3	the slaughterhouse administration directing workers by means of preventive education	23.90	0.000	2	Disagree
4	slaughterhouse is keen to manage the ongoing health of workers up	7.80	0.050	-	-
5	careful management of slaughterhouse to identify the causes of accidents and occupational diseases	17.00	0.001	2	Disagree
6	slaughterhouse to manage working to develop ways of working	24.75	0.000	2	Disagree
Axis		193.60	0.000	2	Disagree

Source: prepared by researcher, using SPSS, 2017

From the table above:

- The value of chi-square for the first phrase is (36.00) with (p-value=0.000 < 0.05), this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of disagree.
- The value of chi-square for the second phrase is (30.50) with (p-value=0.000< 0.05), this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of neutral.
- The value of chi-square for the third phrase is (23.90) with (p-value=0.000 < 0.05), this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of disagree.
- The value of chi-square for the fourth phrase is (7.80) with (p-value=0.050 = 0.05), this indicates that there is no significant differences at the level (5%) between answers of study individuals .
- The value of chi-square for the fifth phrase is (17.00) with (p-value=0.001< 0.05) , this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of disagree.
- The value of chi-square for the sixth phrase is (24.75) with (p-value=0.000 < 0.05) , this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of disagree.

alshahidnasraldiyn slaughterhouse :

Reliability and Validity:

stability means that measure give the same results if used more than once under similar conditions.

Reliability is defined as the extent to which a questionnaire, test, observation or any measurement procedure produces the same results on repeated trials.

Validity is defined as the extent to which the instrument measures what it purports to measure. and calculate in many ways represents the easiest being the square root of the reliability coefficient

$$\text{Validity} = \sqrt{\text{Reliability}}$$

researcher calculates the reliability coefficient of the scale used in the questionnaire by alpha equation and the results as follows:

Table (1):Reliability and Validity**:**

reliability coefficient	**validity coefficient**
0.82	0.91

Source: prepared by researcher, using SPSS, 2016

Notes from the results table (2) that all reliability and validity coefficients for questionnaire is greater than (50%) and close to the one, This indicates that the questionnaire is characterized by high reliability and validity, and makes statistical analysis acceptable.

Table (2):Chi-square test results of first axis: Statistically significant relationship between occupation healthy and safety and slaughterhouse design.

No.	Phrases	Chi-square value	P-value	Median	Trend
1	slaughterhouse sit affect the ventilation	10.50	0.005	2	disagree
2	the size of the slaughterhouse and sections suitable for all operation to avoid crowding	0.00	1.000	-	-
3	solid floors to avoid slipping	7.11	0.008	4	agree
4	walls of ceramic easy to clean	5.44	0.020	4	agree
5	there sanitation to avoid air pollution	45.50	0.000	4	agree
6	slaughterhouse equipment uses electrical extensions of water resistance	30.94	0.000	2	disagree
Axis		317.38	0.000	4	agree

Source: prepared by researcher, using SPSS, 2016

From The Table Above:

- The value of chi-square for the first phrase is (10.50) with (p-value=0.005< 0.05), this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of disagree.

- The value of chi-square for the second phrase is (0.00) with (p-value=1.000> 0.05), this indicates that there is no significant differences at the level (5%) between answers of study individuals .
- The value of chi-square for the third phrase is (7.11) with (p-value=0.008< 0.05), this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of agree.
- The value of chi-square for the fourth phrase is (5.44) with (p-value=0.020 < 0.05), this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of agree.
- The value of chi-square for the fifth phrase is (45.50) with (p-value=0.000 < 0.05) , this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of agree.
- The value of chi-square for the sixth phrase is (30.94) with (p-value=0.000 < 0.05) , this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of disagree.

Table (3):Chi-square test results of second axis of the second axis statistically significant relationship between occupation healthy and safety and exposures in the work environment

No.	Phrases	Chi-square value	P-value	Median	Trend
1	workers in the slaughterhouse aware of occupation disease	43.78	0.000	4	agree
2	workers in the slaughterhouse exposed to the hazard during the detection and disperse the animal	40.67	0.000	4	agree

3	physical hazard 1/ noisiness: animal produce sounds uncontrollable	23.17	0.000	2	disagree
4	2/ trauma and injuries and slips	15.33	0.002	4	agree
5	3/ exposed workers in the slaughterhouse on the dust of the feed and movement of animals	18.50	0.000	2	disagree
6	4/ exposed workers in the slaughterhouse to high temperature	19.50	0.000	2	disagree
7	chemical hazards : exposure to disinfection	39.33	0.000	2	disagree
8	biological hazard: 1/ zoonotic disease common disease between animal and humans. bordello and hepatitis	17.17	0.000	4	agree
9	2/ toxoplasmosis	23.33	0.000	2	disagree
10	3/ tuberculosis	46.23	0.000	2	disagree
11	4/ anthrax	19.33	0.000	4	agree
12	Progressing machines in the slaughterhouse	27.56	0.000	1	Strongly disagree
Axis		278.21	0.000	2	disagree

Source: prepared by researcher, using SPSS, 2017

From The Table Above:

- The value of chi-square for the first phrase is (43.78) with (p-value=0.000 < 0.05), this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of agree.
- The value of chi-square for the second phrase is (40.67) with (p-value=0.000< 0.05), this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of agree.
- The value of chi-square for the third phrase is (23.17) with (p-value=0.000 < 0.05), this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of disagree.
- The value of chi-square for the fourth phrase is (15.33) with (p-value=0.002< 0.05), this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of agree.
- The value of chi-square for thefifth phrase is (18.50) with (p-value=0.000 < 0.05) , this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of disagree.
- The value of chi-square for thesixth phrase is (19.50) with (p-value=0.000 < 0.05) , this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of disagree.
- The value of chi-square for the seventh phrase is (39.33) with (p-value=0.000< 0.05) , this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of disagree.
- The value of chi-square for the eighth phrase is (17.17) with (p-value=0.000 < 0.05) , this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of agree.

- The value of chi-square for the ninth phrase is (23.33) with (p-value=0.000 < 0.05), this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of disagree.
- The value of chi-square for the tenth phrase is (46.23) with (p-value=0.000< 0.05), , this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of disagree.
- The value of chi-square for the eleventh phrase is (19.33) with (p-value=0.000 < 0.05), this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of agree.
- The value of chi-square for the twelfth phrase is (27.56) with (p-value=0.000 < 0.05), this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of strongly disagree.

Table (4):Chi-square test results of the third axis: Statistically significant relationship between occupation healthy and safety and internal process:

No.	Phrases	Chi-square value	P-value	Median	Trend
1	Slaughterhouse rooms separate rooms with corridor prevent animal attacks	16.17	0.000	4	Agree
2	slaughtering process are automated fashion	0.257	0.612	-	-
3	the skin is removed after sparing by formalin to avoid disease	31.78	0.000	2	disagree
4	there is separate room to examine the viscera	22.00	0.000	4	Agree

5	disposal of the meat unsound by placing them in formalin then burned	12.22	0.007	2	disagree
6	any worker in slaughter carrying health card prove it is free from infections disease	7.11	0.008	4	Agree
7	slaughterhouse cleans after all slaughter during the day to avoid contamination	5.44	0.020	4	Agree
Axis		128.00	0.000	4	Agree

Source: prepared by researcher, using SPSS, 2017

From The Table Above:

- The value of chi-square for the first phrase is (16.17) with (p-value=0.000 < 0.05), this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of agree.
- The value of chi-square for the second phrase is (0.257) with (p-value=0.612> 0.05), this indicates that there is no significant differences at the level (5%) between answers of study individuals.
- The value of chi-square for the third phrase is (31.78) with (p-value=0.000 < 0.05), this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of disagree.
- The value of chi-square for the fourth phrase is (22.00) with (p-value=0.000 < 0.05), this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of agree.

- The value of chi-square for the fifth phrase is (12.22) with (p-value=0.007< 0.05) , this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of disagree.
- The value of chi-square for the sixth phrase is (7.11) with (p-value=0.008< 0.05) , this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of agree.
- The value of chi-square for the seventh phrase is (5.44) with (p-value=0.020< 0.05) , this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of agree.

Table (5):Chi-square test results of fourth axis: A statistically significant relationship between the occupation healthy and safety and prevention method:

No.	Phrases	Chi-square value	P-value	Median	Trend
1	all workers in the slaughterhouse use prevention and safety equipment	40.39	0.000	2	Disagree
2	first aid box at the slaughterhouse in order to deal with minor injuries	4.00	0.046	4	Agree
3	there is a doctor in the slaughterhouse	32.54	0.000	3	Neutral
4	the slaughterhouse administration is keen to the continuous monitoring of workers health	13.44	0.000	4	Agree
5		41.11	0.000	4	Agree

6	there are record of work related to injury	21.71	0.000	4	Agree
7	health service there are clean drinking water and toilets	1.40	0.237	-	-
8	waste : there is rooms for hanging	21.66	0.000	4	Agree
Axis		247.90	0.000	4	Agree

Source: prepared by researcher, using SPSS, 2016

From The Table Above:

- The value of chi-square for the first phrase is (40.39) with (p-value=0.000 < 0.05), this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of disagree.
- The value of chi-square for the second phrase is (4.00) with (p-value=0.046< 0.05), this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of agree.
- The value of chi-square for the third phrase is (32.54) with (p-value=0.000 < 0.05), this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of neutral.
- The value of chi-square for the fourth phrase is (13.44) with (p-value=0.000 < 0.05), this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of agree.
- The value of chi-square for the fifth phrase is (41.11) with (p-value=0.000 < 0.05) , this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of agree.

- The value of chi-square for the sixth phrase is (21.71) with (p-value=0.000 < 0.05) , this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of agree.
- The value of chi-square for the seventh phrase is (1.40) with (p-value=0.000< 0.05) , this indicates that there is no significant differences at the level (5%) between answers of study individuals.
- The value of chi-square for the eighth phrase is (21.66) with (p-value=0.000 < 0.05), this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of agree.

Table (6):Chi-square test results of the fifth axis: the occupational health and safetyappositive impact to improve the performance of employees:

No.	Phrases	Chi-square value	P-value	Median	Trend
1	provide slaughterhouse administration means of occupational safety for all employee	33.72	0.000	2	disagree
2	the slaughterhouse management to improve slaughterhouse continuously conditions	21.11	0.000	4	agree
3	the slaughterhouse administration directing workers by means of preventive education	27.17	0.000	4	agree
4	slaughterhouse is keen to manage the	25.00	0.000	4	agree

	ongoing health of workers up				
5	careful management of slaughterhouse to identify the causes of accidents and occupational diseases	2.67	0.264	-	-
6	slaughterhouse to manage working to develop ways of working	8.22	0.042	4	agree
Axis		213.03	0.000	4	agree

Source: prepared by researcher, using SPSS, 2016

From The Table Above:

- The value of chi-square for the first phrase is (33.72) with (p-value=0.000 < 0.05), this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of disagree.
- The value of chi-square for the second phrase is (21.11) with (p-value=0.000< 0.05), this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of agree.
- The value of chi-square for the third phrase is (27.17) with (p-value=0.000 < 0.05), this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of agree.
- The value of chi-square for the fourth phrase is (25.00) with (p-value=0.000 < 0.05), this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of agree.
- The value of chi-square for the fifth phrase is (2.67) with (p-value=0.264> 0.05) , this indicates that there is no significant differences at the level (5%) between answers of study individuals .

- The value of chi-square for the sixth phrase is (8.22) with (p-value=0.042< 0.05) , this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of agree.

Alsahafa Slaughterhouse Analysis:

Reliability and Validity:

Stability means that measure give the same results if used more than once under similar conditions.

Reliability is defined as the extent to which a questionnaire, test, observation or any measurement procedure produces the same results on repeated trials.

Validity is defined as the extent to which the instrument measures what it purports to measure. And calculate in many ways represents the easiest being the square root of the reliability coefficient

$$\text{Validity} = \sqrt{\text{Reliability}}$$

Researcher calculates the reliability coefficient of the scale used in the questionnaire by alpha equation and the results as follows:

Table (1): Reliability and Validity:

reliability coefficient	**validity coefficient**
0.62	0.79

Source: prepared by researcher, using SPSS, 2017

Notes from the results table (3) that all reliability and validity coefficients for questionnaire is greater than (50%) and close to the one,This indicates that the questionnaire is characterized by high reliability and validity, and makes statistical analysis acceptable.

Table (2):Chi-square test results of the first axis: Statistically significant relationship between occupation healthy and safety and slaughterhouse design.

No.	Phrases	Chi-square value	P-value	Median	Trend
1	slaughterhouse sit affect the ventilation	20.35	0.000	4	Agree
2	the size of the slaughterhouse and sections suitable for all operation to avoid crowding	18.41	0.000	4	Agree
3	solid floors to avoid slipping	15.24	0.000	4	Agree
4	walls of ceramic easy to clean	13.12	0.001	1	Agree
5	there sanitation to avoid air pollution	7.53	0.006	4	Strongly disagree
6	slaughterhouse equipment uses electrical extensions of water resistance	46.29	0.000	4	Agree
Axis		109.92	0.000	4	Agree

Source: prepared by researcher, using SPSS, 2017

From The Table Above:

- The value of chi-square for thefirst phrase is (20.35) with (p-value=0.000 < 0.05), this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of agree.

- The value of chi-square for the second phrase is (18.41) with (p-value=0.000< 0.05), this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of agree.
- The value of chi-square for the third phrase is (15.24) with (p-value=0.000 < 0.05), this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of agree.
- The value of chi-square for the fourth phrase is (13.12) with (p-value=0.001< 0.05), this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of strongly disagree.
- The value of chi-square for the fifth phrase is (7.53) with (p-value=0.006< 0.05) , this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of agree.
- The value of chi-square for the sixth phrase is (46.29) with (p-value=0.000 < 0.05) , this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of agree.

Table (3):Chi-square test results the second axis: second statistically significant relationship between occupation healthy and safety and exposures in the work environment :

No.	Phrases	Chi-square value	P-value	Median	Trend
1	workers in the slaughterhouse aware of occupation disease	51.24	0.000	4	Agree
2	workers in the slaughterhouse exposed to the hazard during the detection and disperse the animal	22.82	0.000	5	Strongly agree

3	physical hazard 1/ noisiness: animal produce sounds uncontrollable	26.47	0.000	2	Disagree
4	2/ trauma and injuries and slips	5.35	0.069	-	Agree
5	3/ exposed workers in the slaughterhouse on the dust of the feed and movement of animals	20.71	0.000	4	Agree
6	4/ exposed workers in the slaughterhouse to high temperature	18.94	0.000	2	Disagree
7	chemical hazards : exposure to disinfection	21.06	0.000	2	Disagree
8	biological hazard: 1/ zoonotic disease common disease between animal and humans. bordello and hepatitis	19.12	0.000	4	Agree
9	2/ toxoplasmosis	21.06	0.000	2	Disagree
10	3/ tuberculosis	0.47	0.493	-	Agree
11	4/ anthrax	6.59	0.037	4	Agree
12	progressing machines in the slaughterhouse	10.00	0.019	3	Neutral
Axis		260.48	0.000	4	Agree

Source: prepared by researcher, using SPSS, 2017

From The Table Above:

- The value of chi-square for the first phrase is (51.24) with (p-value=0.000 < 0.05), this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of agree.
- The value of chi-square for the second phrase is (22.82) with (p-value=0.000< 0.05), this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of strongly agree.
- The value of chi-square for the third phrase is (26.47) with (p-value=0.000 < 0.05), this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of disagree.
- The value of chi-square for the fourth phrase is (5.35) with (p-value=0.069> 0.05), this indicates that there is no significant differences at the level (5%) between answers of study individuals.
- The value of chi-square for the fifth phrase is (20.71) with (p-value=0.000 < 0.05) , this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of agree.
- The value of chi-square for the sixth phrase is (18.94) with (p-value=0.000 < 0.05) , this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of disagree.
- The value of chi-square for the seventh phrase is (21.06) with (p-value=0.000< 0.05) , this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of disagree.
- The value of chi-square for the eighth phrase is (19.12) with (p-value=0.000 < 0.05) , this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of agree.

- The value of chi-square for the ninth phrase is (21.06) with (p-value=0.000 < 0.05), this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of disagree.
- The value of chi-square for the tenth phrase is (0.47) with (p-value=0.493> 0.05), , this indicates that there is no significant differences at the level (5%) between answers of study individuals.
- The value of chi-square for the eleventh phrase is (6.59) with (p-value=0.037< 0.05), this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of agree.
- The value of chi-square for the twelfth phrase is (10.00) with (p-value=0.019< 0.05), this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of neutral.

Table (4):Chi-square test results of third axis: Statistically significant relationship between occupation healthy and safety and internal process:

No.	Phrases	Chi-square value	P-value	Median	Trend
1	Slaughterhouse rooms separate rooms with corridor prevent animal attacks	27.41	0.000	4	Agree
2	slaughtering process are automated fashion	27.88	0.000	2	Disagree
3	the skin is removed after sparing by formalin to avoid disease	6.06	0.048	2	Disagree
4	there is separate room to examine the	4.24	0.040	4	Agree

	viscera				
5	disposal of the meat unsound by placing them in formalin then burned	14.53	0.001	4	Agree
6	any worker in slaughter carrying health card prove it is free from infections disease	2.94	0.086	-	-
7	slaughterhouse cleans after all slaughter during the day to avoid contamination	0.47	0.493	-	-
Axis		146.20	0.000	4	Agree

Source: prepared by researcher, using SPSS, 2017

From The Table Above:

- The value of chi-square for thefirst phrase is (27.41) with (p-value=0.000 < 0.05), this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of agree.
- The value of chi-square for the second phrase is (27.88) with (p-value=0.000< 0.05), this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of disagree.
- The value of chi-square for the third phrase is (6.06) with (p-value=0.048< 0.05), this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of disagree.
- The value of chi-square for the fourth phrase is (4.24) with (p-value=0.000 < 0.05), this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of agree.

- The value of chi-square for the fifth phrase is (14.53) with (p-value=0.001< 0.05) , this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of agree.
- The value of chi-square for the sixth phrase is (2.94) with (p-value=0.086> 0.05) , this indicates that there is no significant differences at the level (5%) between answers of study individuals.
- The value of chi-square for the seventh phrase is (0.47) with (p-value=0.493> 0.05) , this indicates that there is no significant differences at the level (5%) between answers of study individuals.

Table (5):Chi-square test results of four axis: A statistically significant relationship between the occupation healthy and safety and prevention method:

No.	Phrases	Chi-square value	P-value	Median	Trend
1	all workers in the slaughterhouse use prevention and safety equipment	2.88	0.000	-	-
2	first aid box at the slaughterhouse in order to deal with minor injuries	5.77	0.016	4	Agree
3	there is a doctor in the slaughterhouse	28.59	0.000	2	Disagree
4	the slaughterhouse administration is keen to the continuous monitoring of workers health	32.53	0.000	4	Agree
5		12.24	0.002	4	Agree

6	there are record of work related to injury	3.06	0.217	-	-
7	health service there are clean drinking water and toilets	4.24	0.040	4	Agree
8	waste : there is rooms for hanging	5.77	0.016	4	Agree
Axis		171.49	0.000	4	Agree

Source: prepared by researcher, using SPSS, 2017

From The Table Above:

- The value of chi-square for the first phrase is (2.88) with (p-value=0.237> 0.05), this indicates that there is no significant differences at the level (5%) between answers of study individuals.
- The value of chi-square for the second phrase is (5.77) with (p-value=0.016< 0.05), this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of agree.
- The value of chi-square for the third phrase is (28.59) with (p-value=0.000 < 0.05), this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of disagree.
- The value of chi-square for the fourth phrase is (32.53) with (p-value=0.000 < 0.05), this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of agree.
- The value of chi-square for the fifth phrase is (12.24) with (p-value=0.002< 0.05) , this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of agree.

- The value of chi-square for the sixth phrase is (3.06) with (p-value=0.217> 0.05) , this indicates that there is no significant differences at the level (5%) between answers of study individuals.
- The value of chi-square for the seventh phrase is (4.24) with (p-value=0.040< 0.05) , this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of agree.
- The value of chi-square for the eighth phrase is (5.77) with (p-value=0.016< 0.05) , this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of agree.

Table (6):Chi-square test results of the fifth axis: the occupational health and safetyappositive impact to improve the performance of employees:

No.	Phrases	Chi-square value	P-value	Median	Trend
1	provide slaughterhouse administration means of occupational safety for all employee	11.35	0.003	2	Disagree
2	the slaughterhouse management to improve slaughterhouse continuously conditions	32.53	0.000	4	Agree
3	the slaughterhouse administration directing workers by means of preventive education	33.06	0.000	4	Agree
4	slaughterhouse is keen to manage the ongoing health of workers up	0.00	1.000	-	-

5	careful management of slaughterhouse to identify the causes of accidents and occupational diseases	26.71	0.000	4	Agree
6	slaughterhouse to manage working to develop ways of working	8.71	0.013	2	Disagree
Axis		276.34	0.000	4	Agree

Source: prepared by researcher, using SPSS, 2017

From The Table Above:

- The value of chi-square for the first phrase is (11.35) with (p-value=0.003< 0.05), this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of disagree.
- The value of chi-square for the second phrase is (32.53) with (p-value=0.000< 0.05), this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of agree.
- The value of chi-square for the third phrase is (33.06) with (p-value=0.000 < 0.05), this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of agree.
- The value of chi-square for the fourth phrase is (0.00) with (p-value=1.000 > 0.05), this indicates that there is no significant differences at the level (5%) between answers of study individuals.
- The value of chi-square for the fifth phrase is (26.71) with (p-value=0.000 < 0.05) , this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of agree.

- The value of chi-square for the sixth phrase is (8.71) with (p-value=0.013< 0.05) , this indicates that there is significant differences at the level (5%) between answers of study individuals and in favor of disagree.

Questionnaire

Thanks:

Information in this questionnaire is specially studied occupational health and safety assessment in Khartoum stat slaughterhouse .please answers the questions.

Name of slaughterhouse …… address……. Manger director …...number of workers …… function ……..

Personal data:

Firs / Type: Male ☐ Female ☐

Academic Qualification:

Uneducated ☐ Primary Stage ☐ Secondary ☐ Bachelor ☐

Please place a reference in front of the box that expresses your point of view.

First:Statistically significant relationship between occupation healthy and safety and slaughterhouse design

Standard phrase	Strong agree	Agree	neutral	disagree	Strongly disagree
1/slaughterhouse sit affect the ventilation					
2/ the size of the slaughterhouse and sections suitable for all operation to avoid crowding					
3/ solid floors to avoid slipping					
4/ walls of ceramic easy to clean					
5/ there sanitation to avoid air pollution					
6/ slaughterhouse equipment uses electrical extensions of water resistance					

Second: statistically significant relationship between occupation healthy and safety and exposures in the work environment

Standard phrase	Strong agree	Agree	Neutral	disagree	Strongly disagree
1/ workers in the slaughterhouse aware of occupation disease					
2/workers in the slaughterhouse exposed to the hazard during the detection and disperse the animal					
3/physical hazard 1/ noisiness: animal produce sounds uncontrollable 2/ trauma and injuries and slips 3/ exposed workers in the slaughterhouse on the dust of the feed and movement of animals					
4/ exposed workers in the slaughterhouse to high temperature					
4/ chemical hazards : exposure to disinfection					
5/ biological hazard: 1/ zoonotic disease common disease between animal and humans. bordello and hepatitis					
2/ toxoplasmosis 3/ tuberculosis 4/ anthrax **6**/ progressing machines in the slaughterhouse					

Thirdly: Astatistically significant relationship between occupation healthy and safety and internal process

Standard phrase	Strong agree	Agree	neutral	disagree	Strongly disagree
1/ Slaughterhouse rooms separate rooms with corridor prevent animal attacks					
2/ slaughtering process are automated fashion 3/ the skin is removed after sparing by formalin to avoid disease					
4/ there is separate room to examine the viscera					
5/disposal of the meat unsound by placing them in formalin then burned					
6/any worker in slaughter carrying health card prove it is free from infections disease					
7/ slaughterhouse cleans after all slaughter during the day to avoid contamination					

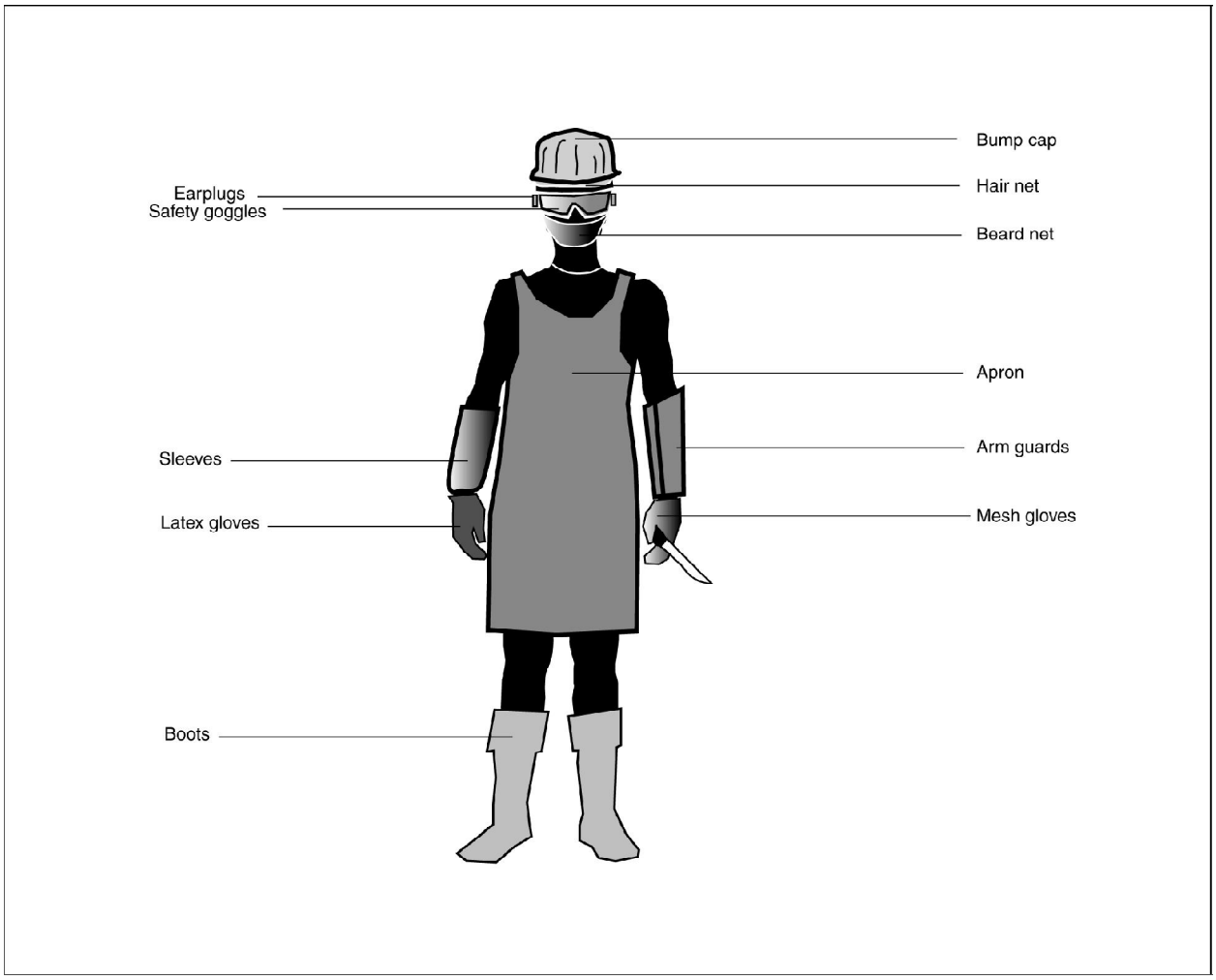
Fourthly: statistically significant relationship between the occupations healthy and safety and prevention method

Standard phrase	Strong agree	Agree	Neutral	disagree	Strongly disagree
1/ all workers in the slaughterhouse use prevention and safety equipment					
2/ first aid box at the slaughterhouse in order to deal with minor injuries					
3/ there is a doctor in the slaughterhouse					
4/the slaughterhouse administration is keen to the continuous monitoring of workers health					
5/ there are record of work related to injury					
6/health service there are clean drinking water and toilets					
7/waste : there is rooms for hanging					

Fifth: the occupational health and safetyappositive impact to improve the performance of employees

Standard phrase	Strong agree	Agree	Neutral	disagree	Strongly disagree
1/ provide slaughterhouse administration means of occupational safety for all employee					
2/the slaughterhouse management to improve slaughterhouse continuously conditions					
3/the slaughterhouse administration directing workers by means of preventive education					
4/ slaughterhouse is keen to manage the ongoing health of workers up					
5/ careful management of slaughterhouse to identify the causes of accidents and occupational diseases					
6/ slaughterhouse to manage working to develop ways of working					

Personal Protective Equipment in Slaughterhouse:



Source: GAO analysis.