

## 1.1INTRODUCTION

Training is the process of teaching the new and/or present employees the basic skills they need to effectively perform their jobs. Alternatively speaking, training is the act of increasing the knowledge and skill of an employee for doing his/her job. The ultimate desire of any institute is to achieve its goals ,Goals are broad, general statements of what the institution, discipline/program, co-curricular area, course, or activity intends to accomplish. Goals describe broad learning outcomes and concepts expressed in general terms (e.g., clear communication, problem-solving skills, etc. A single goal may have multiple subordinate outcomes(**IECC,2015**) In another term, training refers to the teaching and learning activities carried on for the primary purpose of helping members of an organization to acquire and also to apply the required knowledge, skill and attitudes to perform their jobs effectively. It consider as main corner stone in career development , Career development is the ongoing acquisition or refinement of skills and knowledge, including job mastery and professional development, coupled with career planning activities, . Professional development skills are the skills and knowledge that go beyond the scope of the employee's job description, although they may indirectly improve job performance. With continuing changes in work, work organization, technologies and market demands, there has been wide recognition both locally and internationally of the proportionate skill demands required by employees at all levels of the workforce. However, this recognition does not appear to be reflected in an increasing commitment to training existing workers from either enterprises or employees.( **Mawer,et,al,2005**) Companies large and small implement quality management systems to improve performance and increase customer

satisfaction with the company's products and services. To be effective, implementations of such a system must have specific objectives related to the company's overall strategic goals. When a small business defines such goals clearly, it can identify the tasks and characteristics that allow it to achieve its targets. Through the quality management system, it can specify tests and measurements that identify problems and help improve output quality to better meet the needs of its customers

Quality management systems detail with the skills, training and qualifications that are prerequisites for carrying out specific tasks. When problems arise despite the skill of employees, additional training may be required. When employees don't achieve the quality goals the company sets for them, the test results often indicate the sources of problems and the kind of training that will improve performance. If a company can measure the quality of its products and cultivate a quality-centered culture, employees are motivated to take the appropriate training so they can achieve the company's quality goals and objectives(Zu,2009).

Total quality management as an approach originated from quality assurance methods. These methods were adopted during World War 1. The war resulted in the poor quality of production. Quality management practices (QMPs) have been proposed to improve organizational performance and received substantial attention in recent researches. In response to increase global pressures – customers' demanding superior quality of products and services, the global marketplace has become very competitive, many organizations have adopted practices such as total quality management (TQM), and benchmarking(Zu,2009). Many scholars claim that managers can implement TQM in any organization in any sectors of the economy such

as manufacturing, service, education, and government, and that it generates improved products and services, more satisfied customers and employees, reduced costs, improved financial performance, enhanced competitive, and increased productivity(**Kaynak, 2003**) One of the very important factor in achieving the goals of institute is performance management which is consider as a systematic process aimed at helping achieve an organization's mission and strategic goals by improving effectiveness, empowering employees, and streamlining the decision-ma Performance management practices can also be used to: prioritize and allocate resources; inform managers about needed adjustments or changes in policy or program directions to meet goals; frame reports on the success meeting performance goals

## **1.2. PROBLEM STATEMENT**

### **2.1. Topic selection:-**

A quality management system is a management technique used to communicate to employees what is required to produce the desired quality of products and services and to influence employee actions to complete tasks according to the quality specifications and it have principles and elements . It is very important for employees to know elements and principles of it to apply of in proper way, specially with different educational background of employee .It is important to detect previous training experience about TQM and identify if worker in quality department had previous scientific knowledge about it .

### **2.2. Area selection:-**

Ministry of petroleum in Sudan consider as one of the important area which need high level of quality control at all levels because several sectors in the country depend on it , petroleum industry generally is consider as a growing field in Sudan which need more attention specially in the field training ,quality of the employee and professional.

### **2.3. Aims:-**

This study is aimed detect training background of the staff in the quality control unit which help them to deal with objectives of institute.

### **1.3. OBJECTIVES**

#### **1.3.1. General objective:-**

To assess the Impact of the Training on Quality Control employee in Achieving the Goals of Institute, Ministry of Petroleum ,Sudan.

#### **1.3.2. Specific objectives :-**

**A.** To detect training experience on total quality and management.

**B.** To evaluate status of employees in quality department.

### **1.4.1. RESEARCH HYPOTHESIS**

On the basis of relevant literature and justification proposed above the following hypotheses are formulated:-

Ho: There is no relationship between employee training about quality control and working in quality department .

H1: Relationship between employee training about quality control and working in quality department .

Dependent variables: accomplish of training activates, opinion of employee about training

Independent variable: educational background of employee, being staff in quality department

## 2. LITERATURE REVIEW

Training both physically, socially, intellectually and mentally are very essential in facilitating not only the level of productivity but also the development of personnel in any organization. Therefore, training can be put in a context relevant to school administrators. However, knowledge is the ability, the skill, the understanding, the information, which every individual requires acquiring in order to be able to function effectively and perform efficiently. Continuing changes in work, work organization, technologies and market demands both locally and internationally have led to proportionate demands for ongoing skill development at all levels of the workforce. At the same time, the pool of new workforce entrants is set to diminish, necessitating a dual strategy of new entrant training and continuous training of existing workers .( Mawer,et,al,2005)

**2.1. Concept of training:-** Training is the process of teaching the new and/or present employees the basic skills they need to effectively perform their jobs. Alternatively speaking, training is the act of increasing the knowledge and skill of an employee for doing his/her job. Thus, training refers to the teaching and learning activities carried on for the primary purpose of helping members of an organization to acquire and also to apply the required knowledge, skill and attitudes to perform their jobs effectively Training is the act of improving one's knowledge and skill to improve his/her job performance. Training is job-oriented. It bridges the gap between what the employee has and what the job demands. For that matter, imparting training to employees working in all organised sectors of human activity is no longer a matter of debate.( Smriti,2015) Another definition for training is that Training is a process of learning a sequence of programmed behavior. It is

application of knowledge and it attempts to improve the performance of employee on the current job and prepares them for the intended job. Training is a short term process utilizing a systematic and organized procedure by which non managerial personnel acquire technical knowledge and skills for a definite purpose. Training refers to instructions in technical and mechanical operations, like operation of some machine/equipment. Training is for a specific job related purpose(C B Memoria,2000)

**2.2. Philosophy of training:-** Training is regarded as investment and not a cost. Even long-term intangible gains such as attitude change, are to be considered as valuable returns. Training is considered as vehicle for effective communication and coordination. Training is catalytic in any man management matrix for cohesiveness, compatibility, and cooperation in every organizational endeavour.( S Chandra, 1997)

**2.2. Total Quality Management (TQM):-** Total Quality Management is a management approach that originated in the 1950s and has steadily become more popular since the early 1980s. Total quality is a description of the culture, attitude and organization of a company that strives to provide customers with products and services that satisfy their needs. The culture requires quality in all aspects of the company's operations, with processes being done right the first time and defects and waste eradicated from operations. Total Quality Management(TQM) has played an important role in the development of contemporary management. Quality, considered a key strategic factor in achieving business success, is more than ever required for competing successfully in today's global market place (Dean et, al, 1994)

**2.1. Quality gurus:-** However, no TQM discussion is complete without acknowledging the work of the five best known TQM experts, or 'quality gurus': Deming, Juran , Feigenbaum, Crosby and Ishikawa. By mention the



concepts which defined by them the world of quality become more easy to understand by the worker in that field.

**2.1.1.Deming:-** He was one of the founder of the quality concepts by adopting appropriate principles of management, organizations can increase quality and simultaneously reduce costs (by reducing waste, rework, staff attrition and litigation while increasing customer loyalty). The key is to practice continual improvement and think of manufacturing as a system, not as bits and pieces. Unfortunately, some of the most difficult obstacles to successful adoption of Deming's management philosophy are taught as standard practice in American business schools. Deming defined quality as “multidimensional to produce a product and/or deliver a service that meets the customer’s expectations to ensure customer satisfaction” (**Deming, 1986**). Deming does not define quality in a single phrase. He said that the quality of any product or service can only

be defined by the customer. Quality is a relative term that will change in meaning depending on the customer's needs (**Brown,2008**). Deming approach to TQM is mainly concentrated on the creation of an organizational system that is based on cooperation and learning for facilitating the implementation of process management practices, which, in turn, leads to continuous improvement of processes, products, and services as well as to employee fulfillment, both of which are critical to customer satisfaction, and ultimately, to firm survival (**Jeorge,1992**). Deming (1986) stressed the responsibilities of top management to take the lead in changing processes and systems. He said that Leadership plays in ensuring the success of quality management, because it is the top management’s responsibility to create and communicate a vision to move the firm toward continuous

improvement. Top management is responsible for most quality problems; it should give employees clear standards for what is considered acceptable work, and provide the methods to achieve it. These methods include an appropriate working environment .Deming (1986) also emphasized the importance of identification and measurement of customer requirements, creation of supplier partnership, use of functional teams to identify and solve quality problems, enhancement of employee skills, participation of employees, and pursuit of continuous improvement. He is cautious in defining quality and characterizes the difficulty of achieving it. "The difficulty in defining quality is to translate future needs of the user into measurable characteristics by using statistical approach , so that a product can be designed and turned out to give satisfaction at a price that the user will have to pay" (Deming, 1986)

#### **2.1.1.1. The points put forward by Deming are :-**

Create a constancy of purpose to improve products and services - take a longer term view, and innovate; Adopt the new philosophy - accept the management style which promotes constant improvement; Cease dependence on mass inspection - concentrate on improving processes; end the practice of awarding business on the basis of price tag alone, building up relationships with fewer suppliers to understand jointly specifications of and uses for materials and other inputs Constantly and forever improve the system - search continually for problems in all processes. It is management's job to work on the system; institute modern methods of training on the job - for all, to make the best use of every employee institute modern methods of supervision - managers to focus on quality not numbers; drive out fear - so that people work more effectively

break down barriers between departments - team working to tackle problems; eliminate numerical goals for the workforce - eliminate slogans and exhortation, make reasonable requests of the workforce; eliminate work standards and numerical quotas - focus on quality and provide support;

Remove barriers that rob workers of pride in their work - for example, defective materials, poor tools, lack of management support; Institute a vigorous program of education and training - for continual updating and improvement; Create a top management structure to push every day on the above points. Top management commitment is where it begins and ends

#### **2.1.1.2. Deming's seven deadly diseases:-**

Deming's seven deadly diseases summarize the factors that he believes can inhibit the transformation that the fourteen points can bring about. The seven deadly diseases are: Lack of constancy of purpose to plan products and services that have a market sufficient to keep the company in business and provide jobs Emphasis on short-term profit; short-term thinking that is driven by a fear of unfriendly takeover attempts and pressure from bankers and shareholders to produce dividends, Personal review systems for managers and management by objectives without providing methods or resources to accomplish objectives; includes performance evaluations, merit rating, and annual appraisals, Job-hopping by managers. Using only visible data and information in decision making with little or no consideration given to what is not known or cannot be known

Excessive medical costs, Excessive costs of liability driven up by lawyers who work on contingency fees (**Deming, 1986**)

#### **2.1.2. Juran:-**

Joseph M. Juran made many contributions to the field of quality management in his 70+ active working years. His book, the Quality Control

Handbook, is a classic reference for quality engineers. He revolutionized the Japanese philosophy on quality management and in no small way worked to help shape their economy into the industrial leader it is today. Dr. Juran was the first to incorporate the human aspect of quality management which is referred to as Total Quality Management. Juran defined quality based on a multiple meaning, namely “Quality consists of those product features which meet the needs of customers and thereby provide product satisfaction,” and quality is apparently associated with customers’ requirements, and fitness suggests conformance to measurable product characteristics” (**Juran, 1993**). Juran considers quality management as three basic processes .juran trilogy: quality planning, quality control, and quality improvement (**Juran and Gryna, 1993**). In his view, the approach to managing for quality consists of :The sporadic problem is detected and acted upon by the process of quality control; The chronic problem requires a different process, namely, quality improvement; Such chronic problems are traceable to an inadequate quality planning Process. Like Deming, juran believes most quality problems are due to management, not employees. He also states that the distinction between chronic and sporadic problems is essential because there are two different approaches to handling the problems. Chronic problems require the principle of “breakthrough”, while sporadic problems require the principle of “control” He further elaborates the sequence of activities required for “breakthrough” and “control”. These are respectively as follows: “breakthrough” activities ,quality improvement (**juran and gryna, 1970**) include: Breakthrough in attitudes - convincing those responsible that a change in quality level is desirable and feasible, Discovery of the vital few projects - determining which quality problem areas are important; Organizing for breakthrough in knowledge - defining the organizational

mechanism for obtaining the knowledge for achieving a breakthrough ;Creation of a steering arm - defining and staffing a mechanism for directing the investigation for quality improvement; Creation of a diagnostic arm - defining and staffing a mechanism for executing the technical investigation; Diagnosis - collecting and analyzing the facts required and recommending the action needed; breakthrough in cultural pattern - determining the effect of a proposed change on the people involved and finding ways to overcome resistance to change; Breakthrough in performance - obtaining agreement to take action; Transition to the new level - implement the change. “Control” activities include: Choosing the control subject: i.e., choosing what we intend to regulate; Choosing a unit of measure; Setting a goal for the control subject; Creating a sensor which can measure the control subject in terms of the unit of measure; Measuring actual performance; Interpreting the difference between actual performance and the goal; Taking action (if any) on the difference. “Planning” activities include: Establish the quality goal; Identify customers , discover customer needs; develop product features; develop process features; Establish process controls and transfer to operations. (juran,1970).

### **2.1.3. Crosby:-**

Cosby’s definition of quality is “conformance to requirements” (**Crosby, 1979**). Another definition of TQM: "an integrated approach to achieving and sustaining high quality output, focusing on the maintenance and continuous improvement of processes and defect prevention at all levels and in all functions of the organization, in order to meet or exceed customer expectations" (**Flynn et al, 1994**) Quality must be defined in measurable and clearly stated terms to help the organization take action based on achievable targets, rather than experience, or opinions. To Crosby, quality is either

present or not present There is no such thing as differing levels of quality (Donaldson ,2004) Management must measure quality by continually tracking the cost of doing things wrong. Crosby refers to this as the "price of nonconformance." To aid managers in tracking the cost of doing things wrong, he developed the following formula. (Jeorge,1992) Crosby Provides 14 steps to quality improvement the steps ( Management commitment - to make clear where management stands on quality; Quality improvement team - to set up a high-level, cross-functional team to run the quality improvement program; Quality measurement - to provide a display/report of current and potential non-conformance problems in an objective manner; The cost of quality - to define the ingredients of the cost of quality and explain its use as a management tool; Quality awareness - to provide a method of raising the personal concern for quality felt by all employees; Corrective action - to provide a systematic method for resolving problems identified; Zero defects (zd) action - preparatory activities for zd program launching; Employee education - define the type and extent of supervisor training; Zd day - popularize zd philosophy and raise quality consciousness; Goal setting - goals and commitments are set by employees for themselves and their groups ,Error-cause removal - develop a method for employees to communicate with the management regarding error-cause removal ;Recognition of good work in the quality process - to appreciate employees with superior performance. Quality councils - brings together the professional quality staff for a planned communication on a regular basis

Do it over again - emphasize that quality improvement never ends and is a constant effort. Crosby in 1984 claims “mistakes are caused by two factors: lack of knowledge and lack of attention”. Education and training can

eliminate the first cause, and a Personal commitment to excellence (zero defects) and attention to detail will cure the second. (**George,1992**)

**2.1.4. Feigenbaum:-** was an American quality control expert and businessman, Feigenbaum defines quality as the “total composite product and service characteristics of marketing, engineering, manufacture and maintenance through which the product and service in use will meet the Expectations of the customer” (**Feigenbaum, 1986**). He states that total quality management covers the full scope of the product and service “life cycle” from product conception through production and customer Service. The quality chain, he argues, starts with the identification of all customers’ requirements and ends only when the product or service is delivered to the customer who remains satisfied. Thus, all functional Activities, such as Marketing, design, engineering, purchasing, manufacturing, inspection, shipping, accounting, installation, and service, etc., are involved in and influence the attainment of quality. Effective total quality control requires, therefore, a high degree of functional integration. Furthermore, it guides the coordinated actions of people, machines and information to achieve quality goals. He stresses a system approach to quality. The total quality control consists, he claims, of four main Stages. They are described as. Setting quality standards; Appraising conformance to these standards; Acting when standards are not met; Planning for improvement in these standards. The emphasis is on the prevention of poor quality rather than detecting it after the event. He argues that quality is an integral part of the day-to-day work of the line, staff and operatives of an organization. It cannot be effectively separated from other activities undertaken by employees and any attempt to do so more would than likely result in substandard quality. He, like most

other gurus, considers effective staff training and education to be an essential component of TQM. He states that education and training should address the three vital areas of quality attitudes, quality knowledge, and quality skills. He is known as the originator of total quality control, a concept he introduced in the 1950s. Feigenbaum saw it as a business method and proposed three steps to quality as Quality leadership; Modern quality technology; and Organizational commitment. TQM requires a high degree of effective functional integration among people, machines, and information, stressing a systematic approach to quality. Clearly defined total quality system is a powerful foundation for TQM, and Quality is the responsibility of everybody in the company **(Feigenbaum, 1991)**. They all agreed on the importance of the following six key elements: customer satisfaction, cost reduction, leadership and top management commitment, training and education, teamwork and organizational culture. In addition to the complete agreement reflected in the above six elements, **(Reed et al,2000)**

**2.1.5. Ishikawa:-** Ishikawa defines quality as the “development, design, production and service of a product that is most economical, most useful, and always satisfactory to the consumer” **(Greg,2004)**. He argues that quality control extends beyond the product and encompasses after-sales service, the quality of management, the quality of individuals and the company itself. He advocates employee participation as the key to the successful implementation of TQM. Quality circles, he believes, are an important vehicle to achieve this. In his work, like all other gurus, he emphasizes the importance of education. He states that quality begins and ends with education. He has been associated with the development and advocacy of universal education in the seven QC tools These tools are listed below: Process flow chart; Check sheet; Histogram; Pareto chart; Cause -



effect diagram (ishikawa diagram) Scatter diagram; Control chart. (ishikawa,1985).

**2.2. What is quality management?** Quality management (QM) is defined as the application of a quality management system in managing a process to achieve maximum customer satisfaction at the lowest overall cost to the organization while continuing to improve the process. Quality management system (QMS) is a formalized system that documents the structure, responsibilities and procedures required to achieve effective quality management (Nelsen & Daniels 2007).

Quality has been generally associated with factories, manufactured goods, and production processes until the 1980s. During the 1980s the definition of quality broadened to include services, all processes, and industries. Quality began to be viewed as a business problem and not as a technical problem where all who are impacted are external or internal customers, quality is based on the “Universal trilogy” and not on a culture of functional departments, and improvements are directed at company performance instead of department performance. Evaluation of quality is mainly based of responsiveness to customers’ needs instead of conformance to specifications, procedures and standards and coordination is made by a quality council of upper managers, not only by the quality manager (Juran,1992)

**2.3. Employees in total quality management:-** People are an essential element of a quality management system. An important component of introducing TQM in an organization is training, development, and empowerment of personnel, as well as ensuring that quality is not only what employees strive for to make money for shareholders (value creation), but that it becomes a personal goal to them..Shareholders can, with reasonable

certainty, declare full ownership of all physical resources within their organizations. The most important category of the resources of a business, namely employees, however, can never be truly owned. While the actual driving force and the lifeblood of any organization is its employees, they are the most difficult to mobilize for maximum return on investment for shareholders. The best that an organization can do is to create an environment that makes the best people want to stay (**Pennington ,2001**)

The early establishment of a quality improvement team is vital to the success of the quality improvement process (**Ceronio ,1996**) The quality improvement team is a multi-functional and interdepartmental team whose role is to drive the process as well as to ensure that quality commitment among employees permeates all levels and departments in the organization. the responsibilities of the quality improvement team includes the following: to develop a detailed quality strategy and to action the quality improvement programme , to establish the need for resources, monitor results of the programme and make adjustments where necessary, to represent their department fully on the team, to coordinate and execute quality decisions made by the team as they affect their Department, to contribute creatively to the quality programme. (**James,1996**) Employees' role and effectiveness within organizations cannot be seen in isolation of the organizations' cultures, strategies, priorities, and leadership styles. Total quality management needs a supportive culture or sentiment within the company to be able to thrive. If the values of this philosophy cannot be installed into the hearts and minds of a company's employees, the chances of long-term success are slim. Also, the values of TQM have to match the actions of its employees, and especially its management. As the TQM philosophy is essentially based on the values of openness, trust, exchange, and a

“supportive corporate culture”, the introduction of a new system in conjunction with an old repressive frame of mind will eventually backfire. Should employees continue to perceive that their problems, feelings, opinions and values are not taken seriously ... then the likelihood of the fundamental tenets being adhered to is drastically imperiled.(Teifel,1995)While TQM was quite popular as a possible solution for companies’ poor productivity and quality problems in the 1970s and 1980s, researchers claims that this popularity has declined. There are more incidences where TQM has failed to solve companies’ problems than where it has helped them. He attributes this mainly to limitations of leadership strategies in line with TQM and to reluctant involvement and empowerment of employees in companies. Managers usually focus on employees mainly to elicit desired output, and without real concern for the employee’s development or wellbeing. (Smit, 2000)

**2.4. Employees’ role in implementing TQM as an organizational strategy:-**TQM goes far beyond the philosophy and practices of quality control and quality assurance. It is a strategy that is concerned with changing the fundamental beliefs, values and cultures of the organization, harnessing the enthusiasm of, and participation by everyone towards an overall idea of “right first time” (Ceronio,1996) To achieve the ideals of TQM, employees have to understand it as a corrective and developmental strategy for the good of all stakeholders in the organization. This will involve the employees participating in processes of reengineering, new ways of doing things, and communicating their ideas to management. For employees to practice this level of commitment and involvement, it is imperative that management consciously transfer skills and the power to take necessary decisions, to them. Workers must *believe* that management genuinely trusts them with the

custodianship for quality achievement and continuous improvement. If the quality movement is to have truly widespread success, it must convince managers to see the merits of the prospect that there must be less control and more freedom. They must learn that managing is not merely controlling, but unfortunately their egos and fear all too often make it impossible for them to let go of power. Employees also have the responsibility to identify quality defects, as well as to proactively recognize threats to quality and continuous improvement. To be able to do this, employees need to have no fear of reprimand or discipline from management for failing to achieve total quality. Managers need to create a culture of learning and freedom to make mistakes in the process of learning. **(Smith,2000)**

**2.5. Employees' role in sharing in the organizational goals:-**When they join organizations, employees usually enter into a service contract, where they commit to abide by the organizational rules and regulations. This contract is useful as a foundation for the nature of the relationship that will develop between the employer and the employee. This relationship tends to be rules-based as well as tending to focus on minimum standards. Organizations of the 21st century have to focus beyond minimum standards, to developing teams based on excellence. Excellence requires that employees must identify a benefit for themselves in the achievement of organizational goals. This benefit is not always measured in terms of remuneration. believes that people want more than just material rewards. They want to believe that their jobs are vital to the company's success. proposes a motivational tool that he refers to as instrumentality to motivate employees to achieve desirable goals for the company, and to avoid undesirable outcomes. **(Cartwright,1999)** How successful an organization is will depend on the commitment of its people to achieve the goals that an

organization has set for itself. The ideal is that individuals within the organisation also set goals for themselves that coincide with organisational goals, so that employees can be motivated by them. For example, it has been found that there is a mutual relationship between employee satisfaction and customer satisfaction, where satisfied customers can reinforce the employees' sense of satisfaction in their jobs **(Ziethaml,1996)**

encouraging people to share in the organizational goals is identification. Personal identity is the most important thing that humans possess. It is the way humans feel about themselves, the way they express themselves, and the way other people see them. This is the core of what makes individuals unique. The realization of the importance of this identity for managers is fundamental for people management. People like to be recognized for what they are, what they uniquely possess, and what their specific contribution can add to business. This is a major motivator towards continuous improvement and total quality. Identification is also a motivator in so far as individuals can identify attractive attributes in a leader that encourages them to use them as a role model. In the same way, unattractive leadership may repel and act as a demotivator for employees. Similarly, employees will identify more readily with an organization that shares the same values and beliefs as themselves. For example, employees who regard themselves as caring, reliable and honest, may find it difficult to identify with a job that requires them to carry out industrial espionage. **(Cartwright,1999)**

In terms of the factor of identification, employers have to take time to understand each individual in the company and treat each one as a unique person. In the same way, leadership has to work on developing a company whose vision, mission, and values build its image. People would commit

themselves more readily to a company with which they can identify themselves. cautions that managers should be able to identify the difference between commitment and compliance. He suggests that employees should not only be expected to identify with a company's vision and mission, they should as much as possible participate in developing one. **(Branham,2000)**

**2.6.Training and development:-** Training and Development basically deals with the acquisition of understanding, know-how, techniques and practices. In fact, training and development is one of the imperatives of human resource management as it can improve performance at individual, collegial and organizational levels. As the process of 'increasing one's capacity to take action, organizations are now increasingly becoming particular with organizational learning and therefore collective development. Organizational learning, on the other hand, refers to the "efficient procedure to process, interpret and respond to both internal and external information of a predominantly explicit nature. the emergence of the concept of organizational learning is central on the hitherto idea that prior advocacies of learning are tended to its commercial significance and are lacking of empirical information on learning processes.( **Easterby,1999**) Strategically, organizational learning, which makes use of training and development as one of the several responses, deals with the acquisition of understanding, know-how, techniques and practices. These intellectual intangibles can be translated into an organizational resource through the people that acquire, infer and utilize such towards the achievement of the organization-wide training and development **(Armstrong, 2006)**. Training and development are planned learning experiences which teach employees how to perform current and future jobs more effectively. training focuses on present jobs while development prepares employees for possible future jobs. Basically,

the objective of training and development is to contribute to the organization's overall goal. (Sims,2002) Closing the skills gap is now a critical area of human resource development for organizations to continuously penetrate the market. Skills gap basically threatens the productivity and competitiveness both in organizational and operational levels. This requires that human resource management professionals should start the cultivation of the workforce from the recruitment period. However, this is not easy considering that there are specific works which require customization of skills and that not all newly hired employees acquire social skills aside from the basic skills. In responding to the challenges of the skills gap and skills deficiency, HR professionals have to develop programs that will address the problem (Sims, 2006). The purposes of learning from the employee perspective are basically to acquire skills and knowledge to do the job and to gain promotion and advance career. In facilitating career changes, training and development also caters for the personal and professional developments of the employees. Learning can be defined as knowledge obtained by self-directed study, experience, or both; the art of acquiring knowledge, skills, competencies, attitudes, and ideas retained and used; or a change of behavior through experience. Regardless of individual differences and whether a trainee is learning a new skill or acquiring knowledge of a given topic, the person should be given opportunity to practice what is being taught. Practice is also essential after the individual has been successfully trained. There are two aspects of practice – active practice and over learning. Active learning allows the trainees to perform the task repeatedly or use the knowledge being learned. Over learning occurs when trainees are given the opportunity to practice far beyond the point where the task becomes ‘second nature’ and is said to be ‘over learned’. The fifth and most important of all

which will give life to other four is application because training is useless unless learning can be applied.(Sims 1990). Thereby, training and development is beneficial not just for the organization itself but also to the individual employees. On the one hand, training and development leads to improved profitability and/or more positive attitudes toward profit orientation, improves the job knowledge and skills at all levels of the organization, improves the morale of the workforce and helps the employees identify with organizational goals ,On the other, training and development benefits individual employees through helping them make better decisions and effective problem solving, assisting in encouraging and achieving self-development and self-confidence, helping an employee a person handle stress, tension, frustration, and conflict, increasing job satisfaction and recognition and moving the person toward personal goals while improving interaction skills (Sims, 1990).

**2.7.Previous study :-**Previous studies reported mixed and ambiguous results of the relationship between TQM practices and performances, as Sadikoglu and Hilal Olcay mention different TQM practices significantly affect different performance outcomes. Results revealed that primary obstacles that the firms in Turkey face were lack of employee involvement, awareness and commitment of the employees, inappropriate firm structure, and lack of the resources. It is recommended that firms should continue implement TQM with all variables to improve performance. Firms should improve employees' involvement/commitment/awareness to TQM, enhance firm structure, and provide resources to overcome the barriers that prevent effective implementation of TQM practices.( Sadikoglu,2014) data from 166 American firms were used to show that overall performance of TQM correlated positively and significantly with both implementing TQM and its



degree of advancement or organizational performance. Although the empirical literature suggests a positive link between TQM and organizational performance, the level of contribution attributed to TQM was not large, suggesting that there could be other variables at play.(**Powell,1995**) Another wave of research has focused on the study between TQM and financial performance. studies show that firms that focus on improving the quality of their product and processes improve revenues and reduce costs. (**Demirbag ,2005**) So the financial performance of a firm as a result of quality initiatives can be measured by the increase in the level of sales and revenues, the level of cost reduction, the return on investment, and by the increase in market share. . (**Fotopoulos et al ,2009**)

### 3. Material and Methods

This chapter contains a description of the materials and methods followed by the researcher for determining the study population and sample, the study tool, the verification steps of the accuracy and stability of the research tool, also a description of the study design and statistical methods that used in data analysis.

**3.1. Study design:-** This study based on theoretical background of methodology and the using a hypothesis testing approach. Quantitative, Descriptive cross section facility base study was conducted in ministry of Petroleum.

**3.2. Study area:** - Ministry of Petroleum, Sudan. Sudan is a country situated in the Nile Valley of North Africa, bordered by Egypt to the north, the Red Sea , Eritrea, and Ethiopia to the east, South Sudan to the south, the Central African Republic to the southwest, Chad to the west and Libya to the northwest. It is the third largest country in Africa. The River Nile divides the country into eastern and western halves , Khartoum is the capital and second largest city of Sudan and Khartoum state. It is located at the confluence of the White Nile, flowing north from Lake Victoria, and the Blue Nile Khartoum situated between latitude 15°33'06" N Longitude: 32°31'56" E Elevation above sea level: 381 m = 1250 ft(**Richard,1997**) Ministry of petroleum. The main building of the ministry in Sudan is found in Africa street in the middle of Khartoum city .

#### **3.3.The study population:-**

Employees in the quality control department, ministry of petroleum, Sudan which was at the time of the study.

### **3.3.1 Selection criteria:-**

Candidate who fulfills the criteria of the studies.

### **3.3.1.2. Inclusion criteria:-**

Employees of quality control department ,Ministry of Petroleum and willing to participate in the study. .

### **3.3.1.2. Exclusion criteria:-**

Employees in ministry of Petroleum other than quality control department and quality control employees who unwilling to participate.

## **3.4. 1.Sampling Technique:**

### **3.4.1. Sample size:-**

Total coverage of department employees , they was 14 employees with different tasks in the field of quality only .

**3.4.2. Sampling distribution:-**The questionnaires were distributed and collected within several days in one week .

**3.4.3. Data collection:** -Data collected using a pre-prepared and tested questionnaire which reviewed by research board at the time of proposal acceptance

**3.4.3. Reliability and Validity of the Questionnaire;-** In order to check the apparent validity for the study questionnaire and validation of its statements according to the formulation and explanation, the researcher showed the questionnaire to the quality management system trainee who are specialists in the study field .

### 3.4.4 Research Questions .

1. What are the educational backgrounds of the employee? .

2. How they gain culture of quality control? .

3. What are training programs which provided to them? .

### 3.6. Study tools .

The researcher has developed a study tools to become a tool for data collection in this study, and that a review of previous literature on the subject of the impact of perceived of internal service on employee satisfaction. The study tool include on the two main parts are:

**The first:** deals with the general demographic information about the respondent on the questionnaire .

**The second:** was devoted to measure the extend of employees training about quality control .

**3.7. Data analysis:** Data analyzed using a computer program , Statistical Package for Social Science (SPSS) version (18) .

**3.8. Study procedures:** The study have been conducted, according to the following steps:1. Preparation of the study measurements of the final image.2- Identify the study sample.3-Distribute the study tool on the study sample, and retrieval, where distributed (14 ) questionnaires, which formed the study sample.4- Enter the data into the computer and processed statistically using the Statistical Package for Social Sciences (SPSS).5- Extracting, analyzing and discussing the results

## 4. Results

The aim of this chapter is to present the information obtained from the data collection for the research .

**Table (1):-**

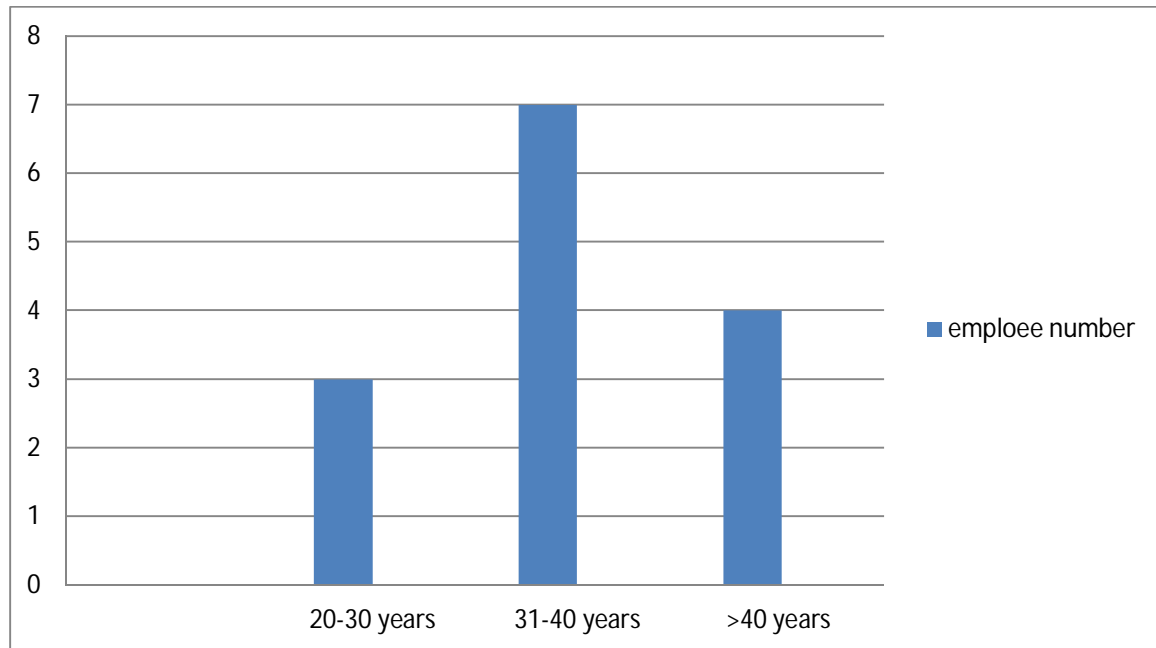
Age distribution of the employees at quality control department, ministry of Petroleum , 2016

n=(14)

Age group/ years	NO.	%
< 20 years	0	0
20 -30	3	21.5
31 -40	7	50
>40 years	4	28.5
Total	14	100

**Figure (I):-**Age distribution of the employees at quality control department, ministry of Petroleum , 2016 .

n=(14)



**Table (2):-**

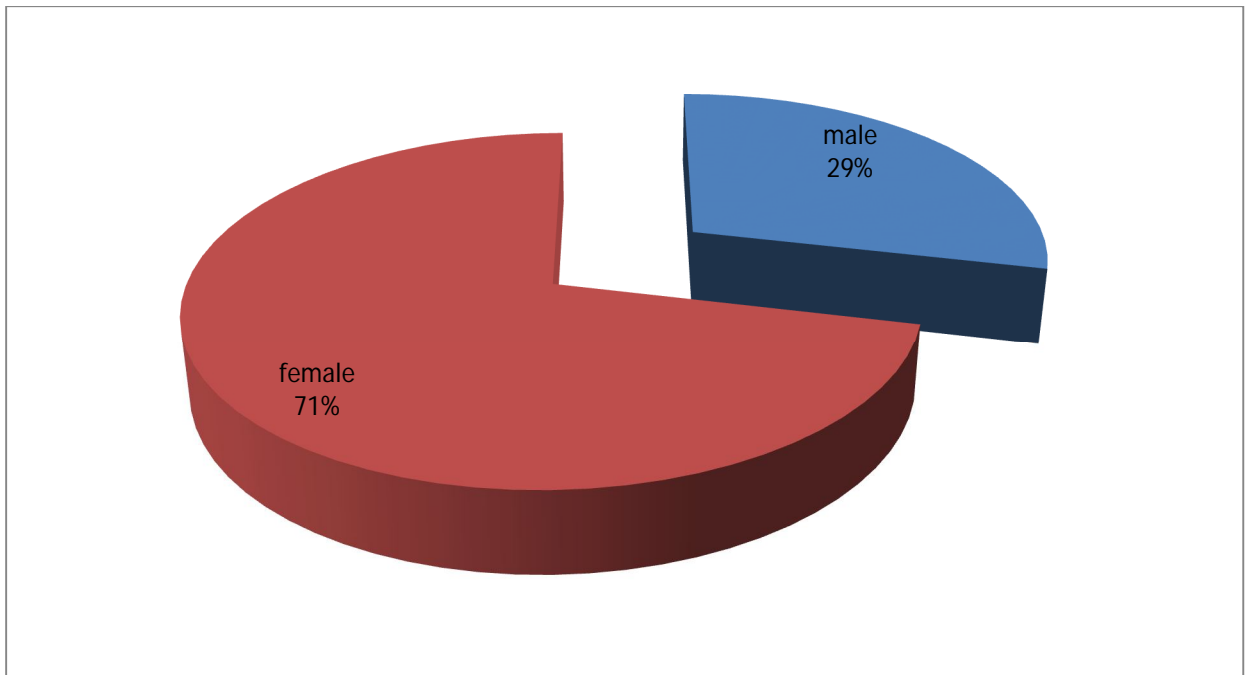
Gender distribution of the employees at quality control department, ministry of petroleum, Sudan,2016.

n=(14)

Gender	No.	%
Male	4	28.6
Female	10	71.4
Total	14	100

**Figure (II) :-** Gender distribution of the employees at quality control department ,ministry of petroleum, Sudan ,2016.

n=(14)



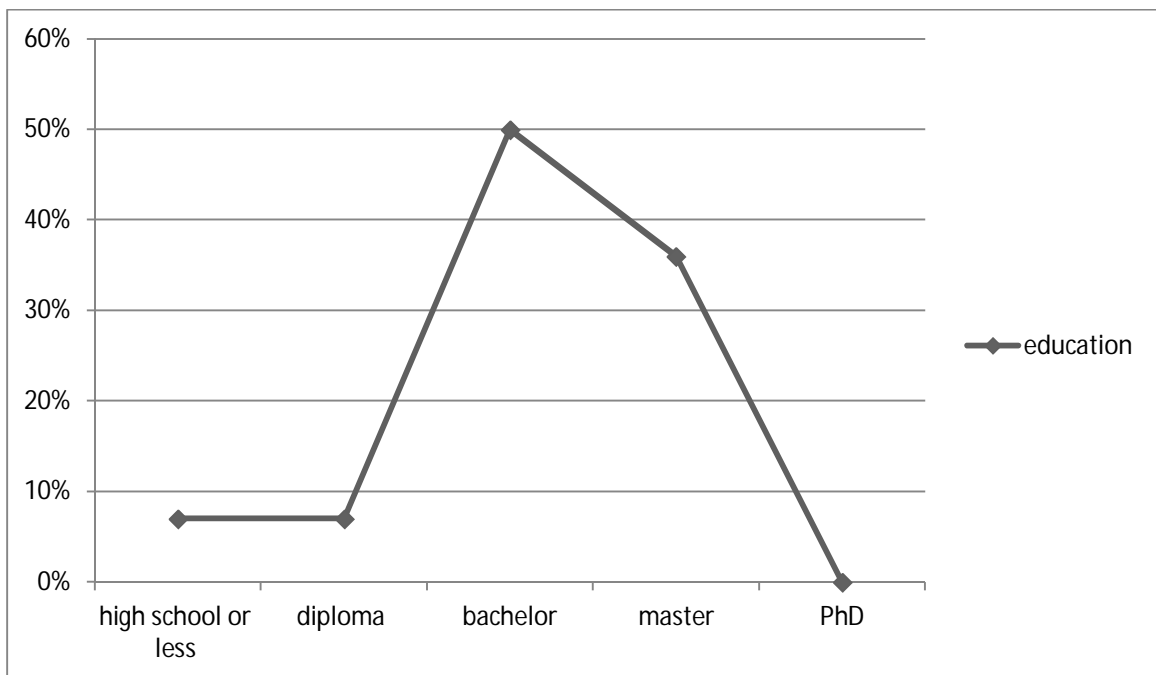
**Table (3):-**

Level of education among employees at quality control department ministry of Petroleum ,Sudan , 2016 . n= (14)

Level of education	No.	%
Higher school or less	1	7
Diploma	1	7
Bachelor	7	50
Master	5	36
PhD	0	0
Total	14	100

**Figure (III):-** Level of education among employees at quality control department ministry of Petroleum ,Sudan, 2016

n=(14)



**Table (4):-**

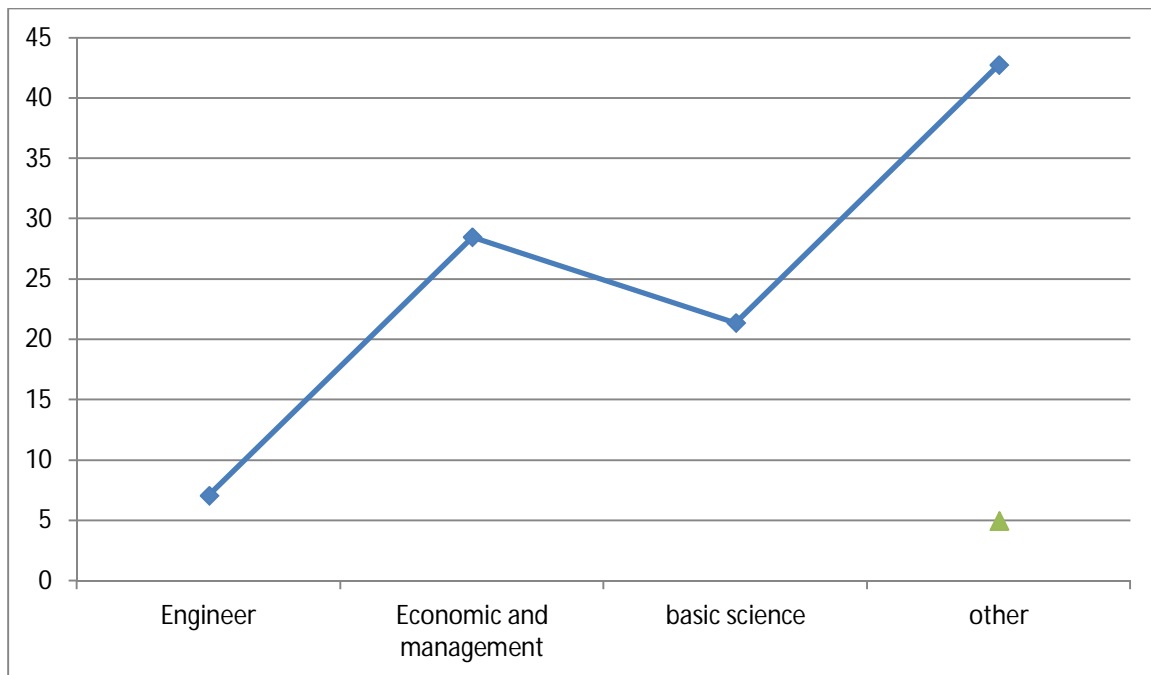
Basic Higher Education of the employees at quality control department ministry of Petroleum ,Sudan, 2016

n= (14)

Type of education	No.	%
Engineer	1	7.1
Economic &management	4	28.5
Basic science college	3	21.4
Other specialties	6	42.8
Total	14	100

**Figure (IV):-** Basic Higher Education of the employees at quality control department ministry of Petroleum ,Sudan, 2016

n=(15)





**Table (5):-**

Background about quality science among employees at quality department ministry of Petroleum ,Sudan ,2016 ,

n= (14)

Background about quality	No.	%
Diploma	0	0
Bachelor	1	7.1
Master	4	28.5
PhD	0	0
Courses	5	35.7
Workshops	3	21.4
Others	1	7.1
Total	14	100

**Figure (V):-** Background about quality science among employees at quality department ministry of Petroleum ,Sudan ,2016. n=(14)



**Table (6):-**

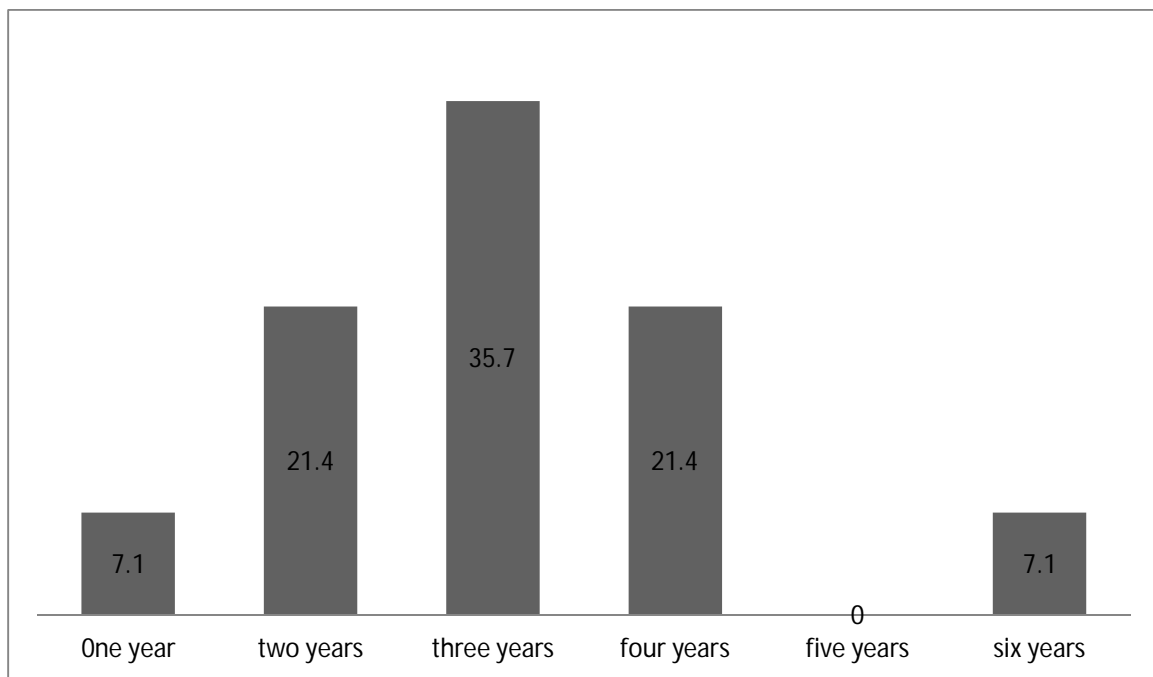
Years of experience of the employees at quality control department ministry of Petroleum ,Sudan, 2016

n= (14)

Duration in quality department in year	No.	%
1 year	1	7.1
2years	3	21.4
3years	5	35.7
4years	3	21.4
5years	0	0
6years	1	7.1
7years	1	7.1
Total	14	100

**Figure (VI):-** Years of experience of the employees at quality control department ministry of Petroleum ,Sudan, 2016 .

n= (14)



**Table (7):-**

Presence of orientation activity about quality for employees when joined quality control department ministry of Petroleum ,Sudan ,2016

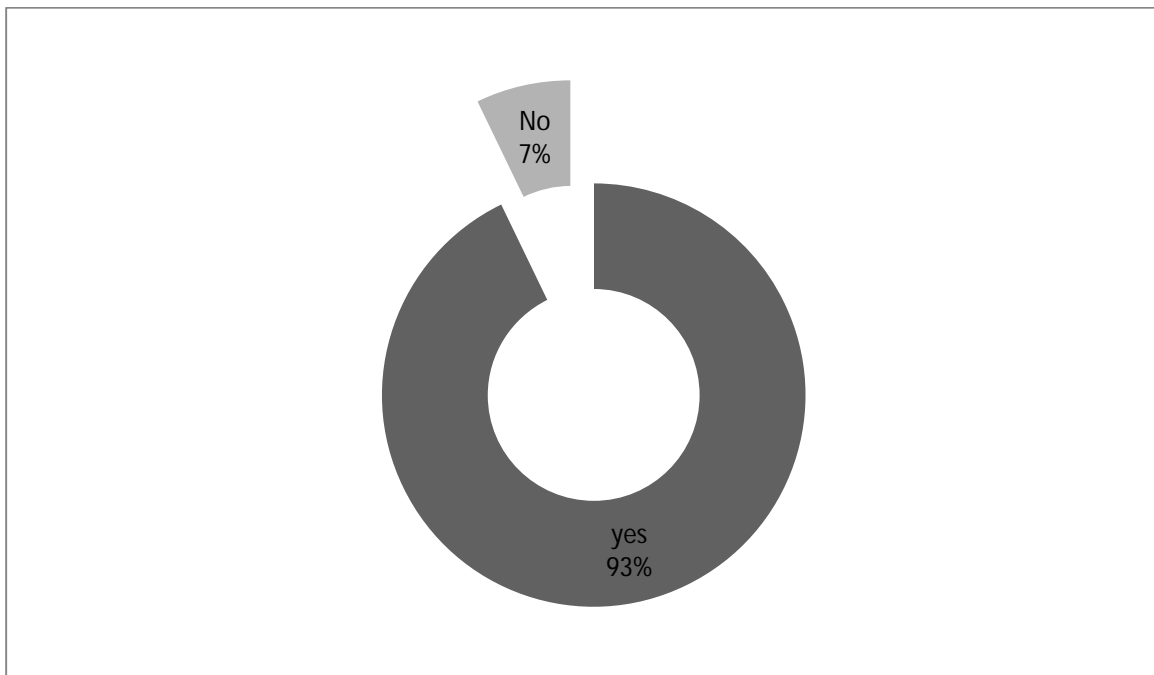
n= (14)

Orientation activity	No.	%
Yes	13	92.8
No	1	7.2
Total	14	100

**Figure (VII):-**

Presence of orientation activity about quality for employees when joined quality control department ministry of Petroleum ,Sudan ,2016

n=(14)



**Table (8):-**

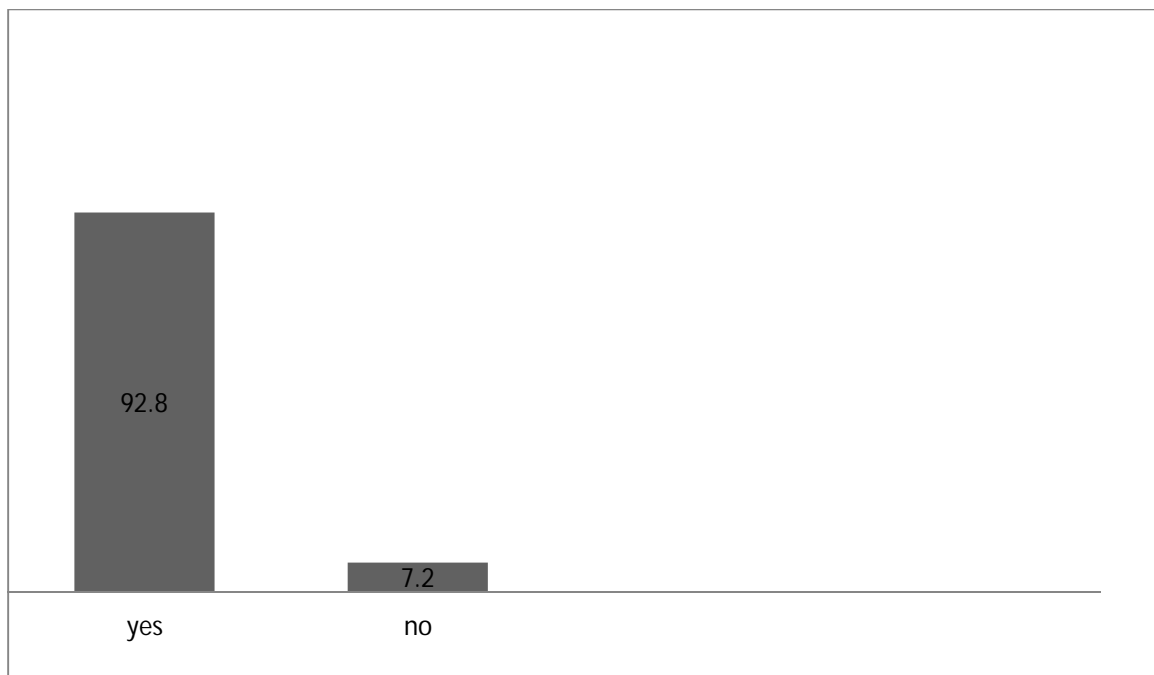
Presence of training programs for worker at quality department, ministry of Petroleum ,Sudan, 2016

n= (14)

Training programs	No.	%
Yes	13	92.8
No	1	7.2
Total	14	100

**Figure (VIII):-** Presence of training programs for worker in quality department, ministry of Petroleum ,Sudan , 2016

n=(14)



**Table (9):-**

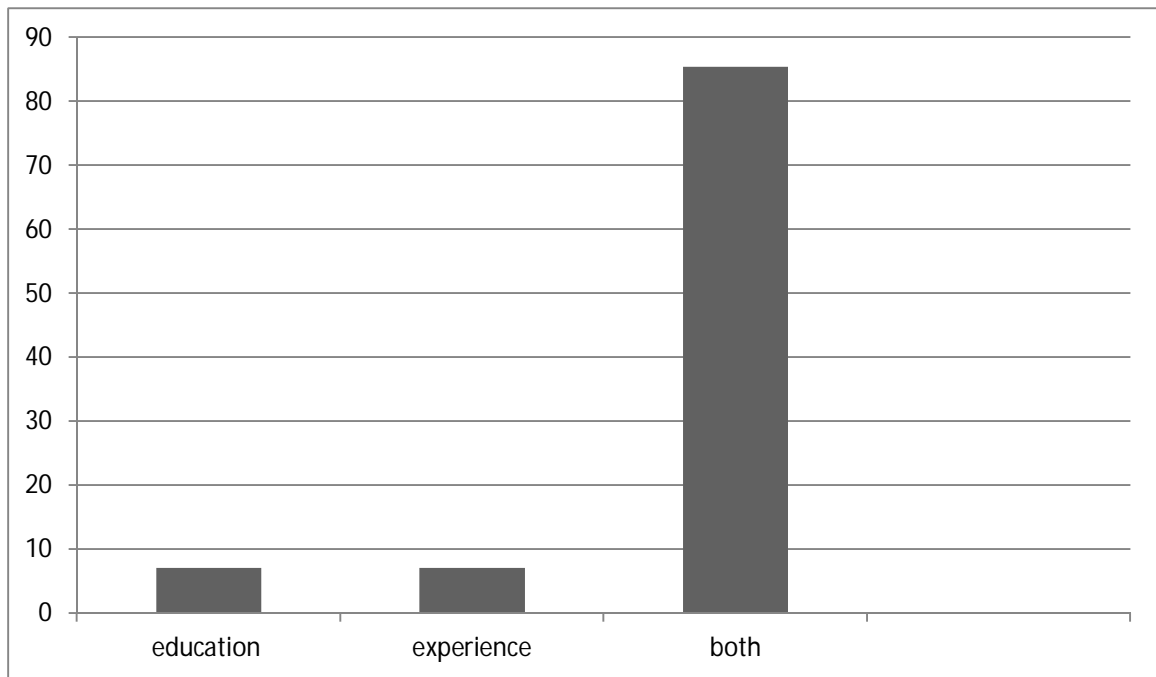
Opinion of the employees about requirement to work at quality control department, ministry of Petroleum ,Sudan,2016

n=(14)

Working requirement	No.	%
Education	1	7.1
Experience	1	7.1
Both education and experience	12	85.4
Total	14	100

**Figure (IX):-** Opinion of the employee about requirement to work at quality control department, ministry of Petroleum,Sudan, 2016

n=(14)



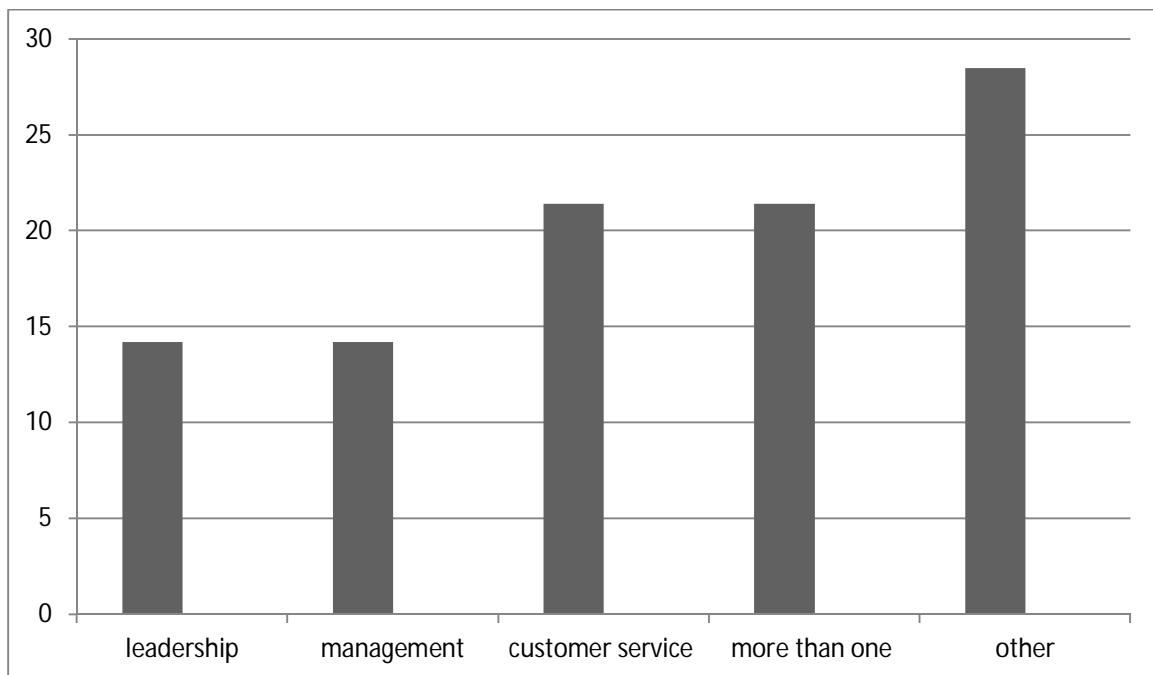
**Table (10):-**

Type of training activities which employees had in quality control department, ministry of Petroleum ,Sudan,2016

n= (14)

Type of training activities	No.	%
Leadership	2	14.2
Management	2	14.2
Customer serves	3	21.4
More than one type	3	21.4
Other	4	28.5
Total	14	100

**Figure(X):-** Type of workshop which employees had in quality control department, ministry of Petroleum ,Sudan, 2016



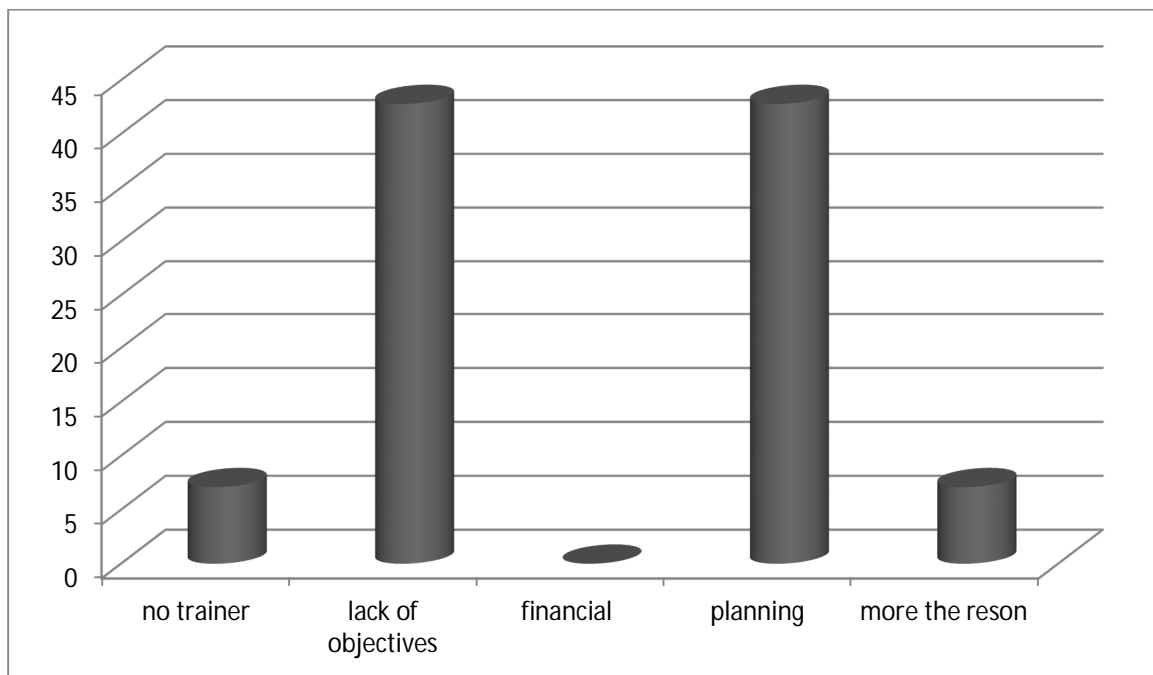
**Table (11):-**

Opinion of employees about causes of shortage in training at quality control department , ministry of Petroleum ,Sudan, 2016

n= (14)

Causes of training shortage	No.	%
Deficiency of trainer	1	7.1
Lack of aims and objectives	6	42.8
Financial reasons	0	0
Planning	6	42.8
More than reason above	1	7.1
Total	14	100

Figure (XI):- Opinion of employees about causes of shortage in training in quality department , ministry of Petroleum and Gas 2016



**Table (12):-**

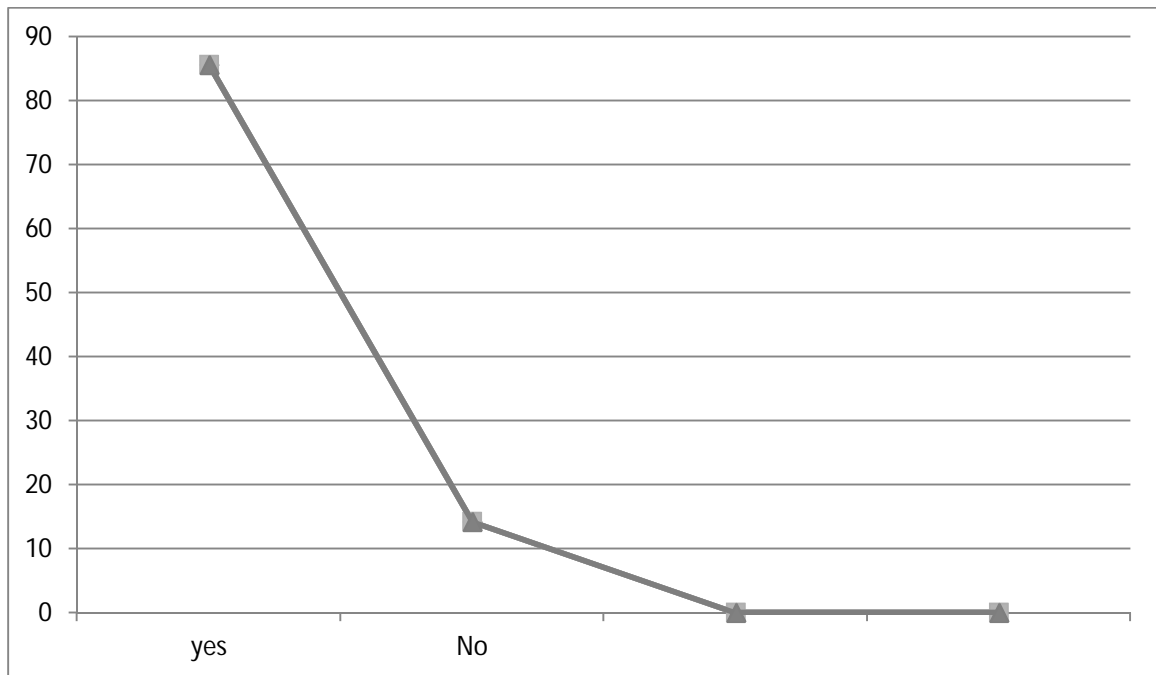
History of request for training programs by employee in quality department, ministry of Petroleum and Gas 2016

n= (14)

Training programs request	No.	%
Yes	12	85.7
No	2	14.2
Total	14	100

**Figure (XII):-**

History of request for training programs by employee in quality department, ministry of Petroleum and Gas 2016





## 5. Discussion

Employees in quality departments must have specific characteristics. For example, they must be observant and very good at paying attention to detail. They also need to be patient as some tests are complex and take a long time to complete. The study showed several results about employees in quality departments in the ministry of petroleum and gas. Half of the employees were in the age group between 31 and 40 years and shows that quality departments attract middle age group employees. As Slagter, 2007 mentions, middle age workers demand flexible working hours and they used to setting goals for themselves with regard to what they want to achieve and a coaching leadership style would be very appropriate for this age group. Majority of the employees were female (71.4%) as Stewart, 2007 reported that the concept 'quality of working life' has been there has been an increase in the presence of women in combined from literature findings and includes eight the workplace over the last few decades and this growth aspects: work motivation, learning opportunities, job pattern is projected to continue. Half of the employees had Bachelor degree with only (7%) graduated from engineer college, (28.5%) from economic and management and (42.8%) other specialties and that indicate variety of basic educational qualification of employees but as Northcentral University, 2016 Certificates in quality control or quality assurance and control which offered at the post-secondary, post-baccalaureate, or post-master's degree level and Certificate programs introduce students to concepts and procedures involved with maintaining a consistently high level of quality in manufactured products but that result shows deficiency of scientific qualification among employees. Less than half (35.7%) of the employees work in quality departments for only

3 years and only (7%) work for 7 year as longest duration in that department and it represent one employee and that agree with work experience program ,2010 lack of work experience is itself not a barrier to employment and also employers recruiting young people directly from education would not expect them to have prior work experience. It is therefore logical to target work experience on those for whom a lack of work experience is a key barrier to employment and who will benefit most.

Majority of the employees (92.8%) had orientation activity since hired and training about quality control and that agree with Robert, 2006 , Training programs helps in making acquaintance of employees with more advance technology and attaining robust competencies and skills in order to handle the functions and basics of newly introduced working needs.

(42.8%) of the employee consider that Lack of aims and objectives and same percentage consider planning are most important causes of shortage in training in quality department and that enhanced by concept mentioned by Asiya Gul,2012 as Organizational goals and strategies become clear and are quickly comprehended by employees after they undergo training. They smoothly and effortlessly move to the desired ends for optimal gain .

## 5. Conclusion

- (50%) of the employees was in age group between 31 -40 years and (21.5%) between 20 -30
- (71.4%) of the employees was female
- (50%) of the employees was bachelor holder and no one was PhD holder
- (35.7%) of the employees had only courses on quality control
- (35.7%) of the employees had experience of 3 years on quality department.
- (85.4%) of the employees consider education and experiences important to work in quality department.
- (85.7%) of the employees requested for training programs in quality department

## **6. Recommendations**

- 1- Set specific aims and goals in the quality departments specially in field of training of employees
- 2- Give more attention for employee requests
- 3- Encourage more postgraduate quality control certificate holders to join the ministry .
- 4- Increase number of training programs for employee
- 5- When Organizational goals and strategies become clear it helps employees to determine which type training more important

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## 8. APPENDECES

### Sudan University of Science and Technology

#### Total Quality & Excellence Center

دراسة عن التدريب للعاملين في قسم الجودة وزاره البترول والغاز

استبيان رقم ( )

- 1- العمر  
اقل من 20 ( ) بين 20 و 30 ( ) من 31 و 40 سنة ( ) اكبر من 40 ( )
- 2- النوع  
ذكر ( ) انثي ( )
- 3- الدرجة العلميه  
ثانوي او اقل ..... ( ) بكالوريوس ..... ( ) ماجستير ... ( ) دكتوراه  
..... ( ) فوق الدكتوراه ..... ( ) اخري ... ( )
- 4- مجال الدراسه الجامعيه  
الهندسه... ( ) الاقتصاد واداره الاعمال ( ) كليه العلوم الاساسيه ... ( ) تخصصات اخري .... ( )
- 5- الخلفيه الاكاديميه المتعلقه بعلمو الجودة  
دبلوم .. ( ) بكالوريوس ( ) ماجستير ( ) دكتوراه ( ) كورسات ( ) ورش ودورات تدريبيه ( )  
( ) اخري ( ) لا توجد ( )
- 6- عدد سنين العمل في قسم الجودة بالوزاره .....
- 7- هل تم عمل دوره تدريبيه علي اساسيات الجودة عند الالتحاق بقسم الجودة نعم ( ) لا ( )
- 8- هل هنالك برامج تدريبيه داخل او خارج الوزاره للعاملين عن علوم الجودة  
نعم ( ) لا ( )
- 9- هل تعتقد ان العمل في قسم الجودة يحتاج ل  
الدراسه الاكاديميه ( ) الخبره ( ) الاثنين معا ( )
- 10- هل هنالك برامج تدريبيه عن  
القياده ( ) اداره الاعمال ( ) التعامل مع العملاء ( ) اخري ( )  
من وجهه نظرك هي المشكله الاساسيه لنقصان التدريب في مجال الجودة يرجع لنقص  
المدرسين ( ) عدم وجود رويه وهدف ( ) اسباب ماديه ( ) التخطيط ( ) اخري ( )
- 11- هل تمت المطالبه من قبلكم لعمل دورات لشرح مفاهيم الجودة من الاداره  
نعم ( ) لا ( )

