



**Sudan University of Science and Technology**

**College of Graduate Studies**

**Total Quality Management and Excellence Center**

**Implementation of ISO 9001: 2008 System in Industrial Organizations and Its Impact on Improving Performance.**

**A Case Study in (Sudanese Hydro Power Generating Co.LTD)**

**تطبيق نظام إدارة الجودة في المؤسسات الصناعية وأثره في ترقية الاداء ISO 9001:2008**

**دراسة حالة الشركة السودانية لتوليد الطاقة المحدودة**

**A Dissertation Submitted to Sudan University of Science and Technology In the Partial Fulfilment of Requirements for the M.Sc Degree In Total Quality Management And Excellence**

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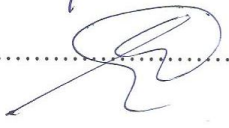
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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ  
مَّا مَدَّ يَدَهُمْ فَمَدَّ يَدَهُمْ



قال تعالى:

((وَجَعَلْنَا اللَّيْلَ وَالنَّهَارَ آيَاتٍ فَمَحَوْنَا آيَةَ اللَّيْلِ وَجَعَلْنَا آيَةَ النَّهَارِ  
مُبْصِرَةً لِتَبْتَغُوا فَضْلًا مِنْ رَبِّكُمْ وَلِتَعْلَمُوا عَدَدَ السِّنِينَ وَالْحِسَابَ  
وَكُلَّ شَيْءٍ فَصَّلْنَاهُ تَفْصِيلًا)).

سورة الاسراء الايه (12)

## الاهداء

الي

روح والدي الطاهره

الي امي الرؤوم

الي افراد اسرتي الكريمة

الي كل من علمني حرفا او اسهم في تعليمي

الي كل الزملاء و الاصدقاء

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Finally, I wish to express my gratitude and love to my parents for their unreserved Love, support and encouragement. The courage and determination they taught me have made my life so wonderful.

## **Abstract**

The main objective of this research is to study the effect of quality management system ISO 9001:2008 to perform the upgrade in the Industrial Establishments, and the scope of the study was in the Sudanese Hydro power Generating CO.LTD.

The research used a system of statistical analysis and Excel program and Chi-square to calculate the assumptions of statistical significance in the analysis of the questionnaire, which was distributed to a random sample of members of the company and after analysis of the results showed that there are statistically significant for implementing quality system ( ISO ) in industrial enterprises and its impact on performance upgrade .

The most important findings of the study:

The implementation of quality management system leads to the optimal use of resources - the awareness of senior management of the ISO system helps in the process of evaluation and measurement, and this leads to the achievement of intended results - the implementing of the ISO system improves the performance of the company .

The research recommended that the company is working to educate all employees and their knowledge of procedures for the application of ISO - the company must use the information sufficient to measure the performance of the improving process.

## مستخلص الدراسة

الهدف الرئيسي لهذا البحث هو دراسة اثر نظام إدارة الجودة ايزو 9001:2008 على ترقية لأداء في المؤسسات الصناعية، وكان نطاق الدراسة في الشركة السودانية للتوليد المائي.

استخدم البحث نظام التحليل الاحصائي وبرنامج اكسل ومربع كاي لحساب الفروض ذات الدلالة الاحصائية في تحليل الاستبانة التي وزعت علي عينة عشوائية لإفراد من الشركة وبعد التحليل اظهرت النتائج وان هنالك دلالة احصائية لتطبيق نظام الجودة (ايزو) في المؤسسات الصناعية وإثرها على ترقية الاداء.

ومن اهم نتائج الدراسة:

إن تطبيق نظام إدارة الجودة يقود الى الاستخدام الامثل للموارد - وعى وإدراك الإدارة العليا لنظام الايزو يساعد في عملية التقييم والقياس وهذا يؤدي الى تحقيق نتائج مرجوءة - تطبيق نظام الايزو يحسن من الاداء في الشركة.

ويوصى البحث أن تعمل الشركة على توعية جميع العاملين ومعرفتهم بإجراءات تطبيق نظام الايزو - يجب على الشركة أن تستخدم المعلومات الكافية لقياس الاداء لترقية العمليات.



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# **Chapter One**

## **Introduction**

### **1-1 preface**

ISO is the International Organization for Standardization. It has a membership of 158 national standards institutes from countries large and small, industrialized and developing, in all regions of the world, ISO develops voluntary technical standards which add value to all types of business operations.

ISO (9001) is a requirement of the International Standards Organisations that standards are reviewed every 7 years. Previous issues of ISO 9001 were in 1987 and 1994. As a result of the last revision was, issued December 2000, Certification Bodies are expected to require an organisation to be compliant to ISO 9001:2000 by December 2003.

ISO 9001 Presents the requirements for a Quality Management System that can be used by an organisation to address customer satisfaction and regulatory requirements used by other parties to assess the ability to meet customer satisfaction and regulatory requirements. Ensure that its personnel are aware of the relevance and importance of their activities. Top management shall review the organization's quality management system to ensure its continuing suitability, adequacy and effectiveness<sup>1</sup>.

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<sup>1</sup> ISO Center Secretariat, Geneva-Switzerland [Web WWW.ISO.Org](http://WWW.ISO.Org)

## **1-2 Statement of problem:**

I'm interested to do my research project in the field of Implementing ISO 9001 and its Impacts on performance of organization. Most of Sudanese organizations do not Implement ISO 9001:2008 effectively So, still they have faced so, many problems in their systems in terms of how to implement corporate strategy and objectives as well as measuring the performance.

## **1-3 The Objectives of Study:**

- 1/ The impact of implementing ISO system on performance improvement
- 2/ The awareness of top management by ISO system requirement
- 3/Spreading the quality culture among the employees
- 4/Increase production of the company by implementing ISO system effectiveness.

## **1-4 Hypothesis:**

- 1/ Implementing ISO system will lead to utilize resources efficiently.
- 2/The awareness and perception of top managers of ISO will help them in the process of evaluating and measuring the systems as well achieve intended results.
- 3/ Implementing ISO system in enhance the performance of the company .

## **1-5 Research Questions:**

- 1/Do top management and employees aware and understand the requirement of ISO?
- 2/Does ISO system implemented effectively to achieve goals and objectives?
- 3/ Are there any difficulties affecting the implementation of ISO in the organization?

## **1-6 Research Methodology:**

I wrote about the subject matter as well as what was published research and scientific articles in specialized periodical.

I designed the questionnaire and distributed to employees in order to help analyzing data, then write recommendation about study.

## **1-7 Data Collection:**

Questionnaire will be distributed with an explanation of the survey purpose. Confidentiality for many employees in the company of Hydro Power generation will be sustained.

## **Chapter Two**

### **Literature Review**

#### **2-1 Previous Studies:**

Study by AMIRUL ALIFF BIN JAMALUDIN (2009) was mainly carried out by literature study, discussion with supervisor and preparing the letter go along with visit to International Islamic University Malaysia that already get their certification in QMS ISO 9000 Quality Management System. From that visit, there will be surveying process, analysis of the surveying, result and discussion of the implementation QMS ISO 9000 Quality Management System and conclusion.

Hopefully that the result and discussion come out will contributed to Automotive Excellent Center in University Malaysia Pahang to achieve their mission to provide world class research equipment and facilities for automotive research and Collaboration with domestic and foreign research institutions and universities for automotive development and knowledge sharing.

Study by David McAlister (2009) showed the successful route to ISO 9001 registration of the Hillington based construction company Landscapes and Contracts.

#### **The Challenge:**

1- Gain certification in 9 month period



2- Obtain Grant Assistance

3-Reduce resource time required to complete and submit tenders and PQPs

4- Better satisfy the expectations of customers.

**The result :**

1-ISO 9001 certification awarded in 9 months

2- Grant assistance secured

3- Enhanced management control of projects

4- Improved customer satisfaction

5- Improved operational efficiency

A study by Metal Parts Fabricating Company (2009) recognized the need to demonstrate their capability to produce consistent quality product.

They first used ISO 9000 to develop a plan to create an acceptable QMS.

Next, they prepared the quality manual and quality system procedures as required by ISO 9001, excluding the requirements covering product design and development because their products are made to designs prepared by their customers<sup>2</sup>.

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<sup>2</sup> AMIRUL ALIFF BIN JAMALUDIN, Report submitted in partial fulfilment of the requirements for the award of the degree of Bachelor of Mechanical Engineering,2009,p vi

They implemented the QMS described in their manual and procedures and ensured the system functioned as planned. Later, in order to bid on the supply of parts to a major automotive company. They upgraded their quality system to meet the automotive sector specific requirements of ISO/TS 16949.

### **The gap of research:**

The gap between the previous studies and the research, several Studies showed the ISO 9001 upgrade and improve customer satisfactions as well as performance and result of implementing ISO 9001:2008 in Sudanese Hydro Power Generation Co.ltd showed increase productivity and profitability.

## **2-2 Background to the ISO 9001:2008**

In order to assist organizations to have a full understanding of the new ISO 9001:2008, it may be useful to have an insight on the revision process, how this revision reflects the inputs received from users of the standard, and the consideration given to benefits and impacts during its development.

Prior to the commencement of a revision (or amendment) to a management system standard, ISO/Guide 72:2001 *Guidelines for the justification and development of management system standards* recommends that a “Justification Study” is prepared to present a case for the proposed project and that it outlines details of the data and inputs used to support its arguments. In relation to the development of ISO 9001:2008 user needs were identified from the following:

- 1- The results of a formal “Systematic Review” on ISO 9001:2000 that was performed by the members of ISO/TC 176/SC2 during 2003-2004
- 2- Feedback from the ISO/TC 176/Working Group on “Interpretations”
- 3-The results of an extensive worldwide “User Feedback Survey on ISO 9001 and ISO 9004” by ISO/TC 176/SC 2/WG 18 and similar national surveys.

A tool for assessing the impacts versus benefits for proposed changes was created to assist the drafters of the amendment in deciding which changes should be included, and to assist in the verification of drafts against the identified user needs. The following decision making principles were applied:

- 1) No changes with high impact would be incorporated into the standard;
- 2) Changes with medium impact would only be incorporated when they provided a correspondingly medium or high benefit to users of the standard;
- 3) Even where a change was low impact, it had to be justified by the benefits it delivered to users, before being incorporated.

The changes incorporated in this ISO 9001:2008 edition were classified in terms of impact into the following categories:

- 1- No changes or minimum changes on user documents, including records
- 2-No changes or minimum changes to existing processes of the organization
- 3-No additional training required or minimal training required
- 4- No effects on current certifications<sup>3</sup>.

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<sup>3</sup> [www.ISO/TC 176/SC2/N836](http://www.ISO/TC 176/SC2/N836)

## 2-3 Principle of ISO 9000

The ISO 9000 quality management system is based on eight principles

1/customer focus: understand the customer's needs meet the customer's requirement and strive to exceed the customer expectations

2/leadership: establishes unity of purpose and organizational direction and provides an environment that promotes employees involvement and achievement of objective.

3/involvement of peoples : take advantage of fully involved employees using all their ability for the benefit of the organization

4/process approach: recognize that things accomplished are the results of processes and that processes along with related activities and resources must be managed

5/ system approach to management: the multiple interrelated processes that contribute to the organization effectiveness are system and should be managed as systems

6/ continual improvement: continual improvement should be a permanent objectives applied to the <sup>4</sup>

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<sup>4</sup> Davidl .gootsch –stanley davis, quality management for organizational excellence .seventh Edition p 232

organization and to its people, processes, system and products

7/factual approach to decision making : decisions must be based on the analysis of accurate ,relevant and reliable data and information.

8/mutually beneficial supplier relationships: both the organization and supplier benefiting from one another resources and knowledge results in value for all .

## **2-4 Benefits of implementing ISO:**

### **1 /customers and users**

Will benefit by receiving product that conform to the requirements are dependable and reliable are available when needed are maintainable

### **2/ people in the organization**

People in the organization will benefit by

Better working conditions

Increased job satisfaction

Improved health and safety<sup>5</sup>

Improved morale

Improved stability of employment

### **3/ owners and investors**

Owners and investors will benefit by

Increased return on investment

Improved operational results

Increased market share

Increased profits

### **4/suppliers and partners**

Suppliers and partners will benefit by

Stability

Growth

Partnership and mutual understanding

### **5/society**

Society will benefit by

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<sup>5</sup>Ray tricker :ISO 9001:2000

Fulfillment of legal and regulatory requirement

Improve health and safety

Reduced environmental impact

## **2-5 The ISO 9000 family – Core standards:**

The ISO 9000 standard provides the fundamentals and vocabulary used in the entire ISO 9000 family of standards .It sets the stage for understanding the basic elements of quality management as described in the ISO standards. ISO 9000 introduces users to the eight Quality Management Principles as well as the use of the process approach to achieve continual improvement ISO 9001 is used when seeking to establish a quality management system that provides confidence in the organization’s ability to provide products that fulfill customer needs and expectations.

There are five sections in the standard that specify activities that need to be Considered when you implement your system:<sup>6</sup>

1-Overall requirements for the quality

2- Management system and documentation

3-Management responsibility, focus, policy, planning and objectives

4-Resource management and allocation

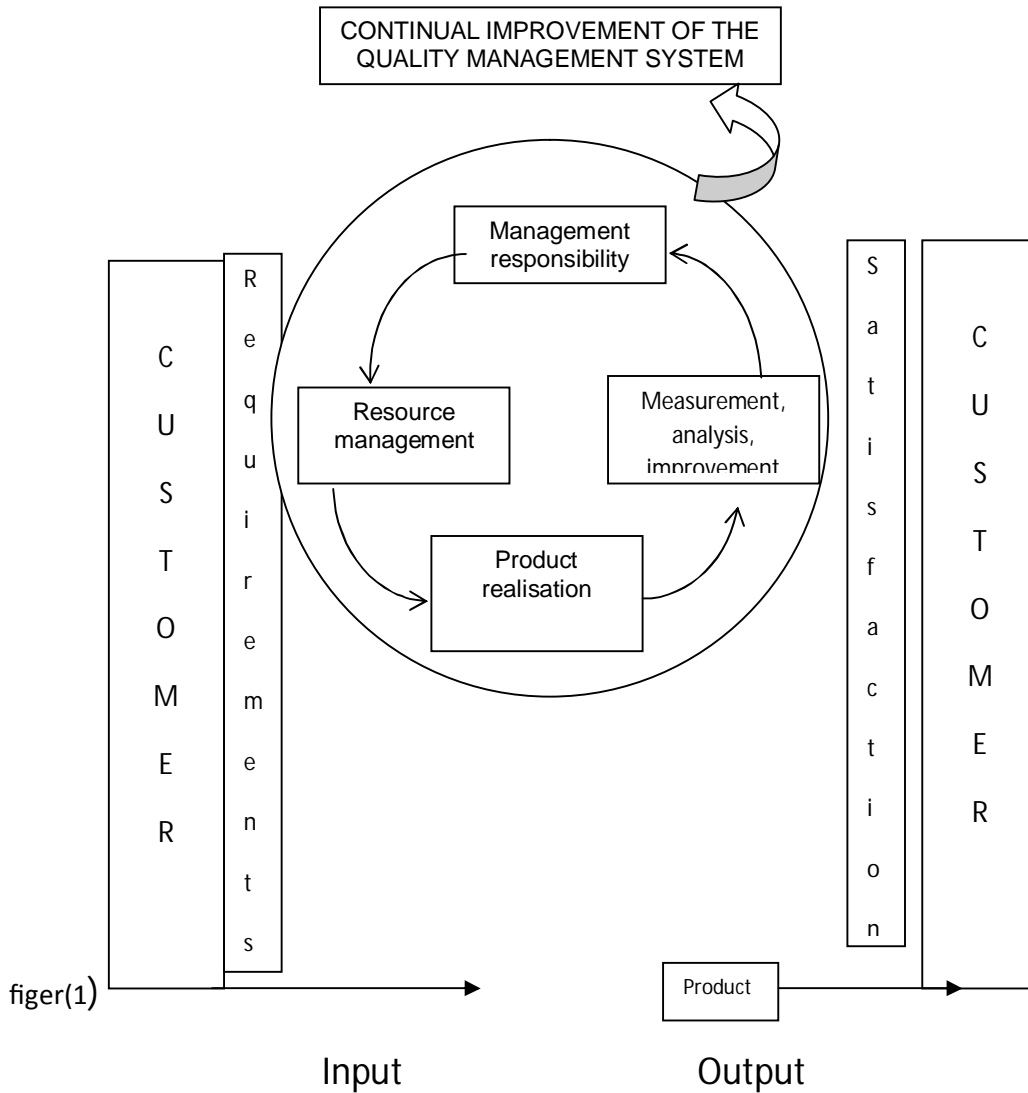
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<sup>6</sup> - [www.iso.org/tc176/sc2](http://www.iso.org/tc176/sc2)



5-Product realization and process management, and Measurement, monitoring, analysis and Improvement.

They are shown in figure (1) bellow



ISO 9001:2000 Model of the process Approach<sup>7</sup>

<sup>7</sup> Web [WWW.ISO.Org](http://WWW.ISO.Org)

## Criteria for Meeting ISO 9000:1994

The 20 criteria for the 1994 ISO 9000 series quality management system (QMS) are given in table (1).

9001	9002	9003	
4.1	4.1	4.1	Management responsibility
4.2	4.2	4.2	Quality system
4.3	4.3	-	Contract review
4.4	-	-	Design control
4.5	4.5	4.5	Document control
4.6	4.6	-	Purchasing
4.7	4.7	-	Purchaser supplied product
4.8	4.8	4.8	Product identification and traceability
4.9	4.9	-	Process control
4.10	4.10	4.10	Inspection and testing
4.11	4.11	4.11	Inspection, measuring and test equipment
4.12	4.12	4.12	Inspection and test status
4.13	4.13	4.13	Control of non-conforming product
4.14	4.14	-	Corrective and Preventative Action
4.15	4.15	4.15	Handling, storage, packaging preservation and delivery
4.16	4.16	4.16	Quality records
4.17	4.17	-	Internal quality audits
4.18	4.18	4.18	Training
4.19	4.19	-	Servicing
4.20	4.20	4.20	Statistical techniques

(Source: Munro-Faure & Bones, *Achieving Quality Standards*, Pitman Publishing: 1994)

*ISO 9001, 9002 and 9003 - Contents Compar<sup>8</sup>*

<sup>8</sup> Module (6) Q.M.S total quality and Excellence center – Sudan - Khartoum

## **2-6 Comparison between ISO 9001:2000 and 9001:2008**

### **(Changes in 2000:2008)**

The main changes in 9001 :2008 .it has been developed in order to introduce clarifications to the existing requirements of ISO 14001:2004 9001:2000 and changes that are intended to improve compatibility with ISO 9001:2008 does not introduce additional requirements nor does it change the intent of the ISO 9001:2000 standard.

There is little difference between ISO 9001:2008 and ISO 9001:2000. First, it related to information system, while later related to software and utility. Secondly, it is the part of QMS while later is not a part of QMS. It refer to the need to control monitoring and measurement equipment, while later refers to controlling devices and finally ISO 9001:2008 refers to customer satisfaction plus customer satisfaction opinion while ISO 9001:2000 refers to customer satisfaction only.

### **The following are few differences which found as very important to point out in comparison to ISO 9001: 2000 and ISO 9001:2008**

1. Process approach to management: As per ISO 9001:2008, this is a clear indication that all the functions in the organization should have a process approach which means that the inputs, activities and outputs are clearly defined for each process running in the organization.
2. Management representative: a designated individual must be present from the top management team. Clause 5.5.2 clearly states this as a mandatory requirement.

3. Calibration of equipments: it is also called as control of measuring device and measuring equipments. Clause 7.6 of the ISO 9001:2008 focuses on the fact all equipments shall be monitored and calibrated compulsorily to follow the standard.

4. Control of documents: Clauses 4.2.3 and 4.2.4 of ISO 9001:2008 ensures that the organization maintains a strict control of documents and records required by the QMS of that organization.

5. Internal audit: Clause 8.8.2 of ISO 9001:2008 specifies the requirement of an internal audit. This audit should clearly specify the non conformances of the respective process and also engage in coordination to find out respective corrective action. Following this, there can be scope for continuous improvements to enhance customer satisfaction.

Software development organizations may have been unsure how to “confirm” the calibration of equipments, as per clause 7.6, but it should be clear that software used for monitoring and measurement has the ability to satisfy the intended application.

## DIFFERENCES BETWEEN ISO 9001:2000 & ISO 9001:2008

Parameters	ISO 9001:2008	ISO 9001:2000
<b>Outsourced Process</b>	Still Part of you QMS even though performed by an external party	Process control need not be shared, not a part of your QMS
<b>Documentation</b>	Includes records that are needed by the organization to plan, operate & control its QMS processes	Includes only the records required by your standard
<b>Management Rep</b>	Need to appoint any member within the organization to oversee QMS	Appoint any member to oversee QMS
<b>Competence</b>	QMS personnel must be competent	Was not clear as to who has to be competent
<b>infrastructure</b>	Buildings, workspaces, equipment, software, utilities, and support services like transportation and communications + Information systems.	Buildings, workspaces, equipment, software, utilities, and support services like transportation and communications

<b>Work environment</b>	Refers to working conditions like physical and environmental conditions, as well as things like noise, temperature, humidity, lighting, and weather	Refers to product requirements
<b>Customer Requirement</b>	Identify post delivery requirements include things like warranty provisions, contractual obligations (such as maintenance), and supplementary services (such as recycling and final disposal).	Identify your customers' specific delivery and post delivery requirements
<b>Design &amp; planning</b>	Review, verification, and validation activities can be carried out separately or in any combination as long as it makes sense.	Plan and perform product design and development review, verification, and validation activities
<b>Monitoring &amp; Measuring equipment</b>	Refers to the need to control monitoring and measuring equipment	Refers to controlling devices

<b>Customer Satisfaction</b>	Refers to monitor and measure customer satisfaction + many ways like customer satisfaction opinion surveys	Refers to monitor and measure customer satisfaction
<b>Internal audit Records</b>	Audit Records must be maintained & refers to the need to establish a procedure to define how internal audits should be planned, performed, reported & recorded	Did not explicitly state that audit records must actually be maintained
<b>Process Monitoring &amp; Measurement</b>	Need to consider the impact each process has on the overall effectiveness of your QMS	Need to monitor and measure your QMS processes
<b>Release of Product</b>	Records must now indicate who releases products for delivery to customers.	Records indicate indicate who was responsible for authorizing the release of products <sup>9</sup>

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<sup>9</sup>[www.iso.org/tc176/sc2www.iso.org/tc176/ISO9001AuditingPracticesGroup](http://www.iso.org/tc176/sc2www.iso.org/tc176/ISO9001AuditingPracticesGroup)

[http://www.iso.org/iso/about/iso\\_members.htm](http://www.iso.org/iso/about/iso_members.htm)

## 2-7 The Industry of Electricity in Sudan

The electricity services were firstly introduced in the Sudan the year 1908 .in 1925 government of Sudan signed a contract with some British companies to develop the electricity and water services in the Sudan .As a result the Sudanese light and power company was established .In 1956 the signed an agreement with some British companies to install a number of power plant steam plant with a capacity of 30 megawatts mw .Successive developments took place afterwards till the maximum installed capacity including Merowe units –reached 2,238.6mw in 2009.

In 1982 Water Corporation was separated from electricity corporation, so that each can develop separately and render service independently.

The national electricity corporation NEC act was passed also in 1982to assign NEC to look after the national grid ,at the same time state governments were assigned to take control of the regional power generating plants.NEC was regarded as a corporate entity directly after the NEC act was passed in 2001<sup>10</sup>

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<sup>10</sup> Annual report : National Electricity corporation 2009 – p- 11



**Since then it was assigned to carry out the following duties:**

1/Exploit the available energy sources to meet the country's requirements of power supplies for different purposes.

2/To benefit from the technological advancements in the field of electricity industry and service .

3/Enter into different investments which could enable NEC to develop its services capacities .

4/ Participate in increasing the national income .

5/To employ adequate managerial measures in performing its duties which could enable NEC increases its revenues.

The installed capacity by the end of 2009 was 2,238.6MW.1,342.8MW of this amount is hydro power ,180MW was generated from steam Power ,54.8MW from diesel power ,65MW from simple cycle GTs and 450MWfrom combined cycle. There is also an additional amount of electricity produced off –grid in some

different towns and cities across the country with total capacity of 146MW diesel.

Although NEC was very successful in maximizing the amount of power supply ,yet the generated amount is insufficient to meet the country's demand .The current five years plan is expected to fill the gap and meet the increasing and expected demands through the construction of a number of new power plants so that the total installed capacity reaches 5,586 MW.NEC has implemented much of this plan especially after it received finance made available by the Ministry of Finance and National Economy to replace the former funding systems from international funding agencies which was a setback to development enabling addition of only 500MW in about 40 years .NEC plans in the long term is to develop its generation capacity to 23,000MW by the year 2030 .

**The NEC organizational structure divides it into seven (7) directorates:**

1. The General Directorate of Planning and Projects.
2. General Directorate of Power Generation
3. General Directorate of power Transmission
- 4 .General Directorate of power distribution

5. General Directorate of Sales

6. General Directorate of Finance

7. General Directorate of Human Resources

## **2-8 Hydroelectric Power Generations**

The two principle hydro plants in Sudan are Roseires and SENNAR which are both located on the Blue Nile river .ROSERIRES ,By far the larger of the two ,is located about 70KM from the Ethiopian border .Sennar is located about 175km further downstream .since both reservoirs are primarily intended for irrigation purposes ,their operating regimes are similar .

The KHASHM ELGIRBA hydroelectric power plant is located on the Atbara River ,The dam is located about 50 km west of Ethiopian border .like the other two hydro sites on the system ,this installation was primarily designed for irrigation purposes ,power generation being a secondary consideration .

JEBELAULIA is the fourth existing hydroelectric Power plant. The dam is located on the White Nile river, approximately 40km upstream of Khartoum .The dam was Originally built by Egypt for the purposes of flood

control and enhancement of river flows during the low flow period .However, this role became largely redundant following the completion of the Aswan High Dam in 1960 and in recent years ,the dam has been converted into a hydroelectric generation plant .

The existing hydroelectric plant are discussed in more detail below.

### **Roseires hydro power station**

The Roseires hydro power station is at present the largest power plant in the Sudan with a total rated capacity of 280mw .

Tender documents were produced for raising of the embankment concrete dams, and for the associated mechanical and electrical works, with the idea that contracts would be let and construction started sometime in the mid nineties.

However due to a lack of sufficient funding for the project the Government decided to proceed with the raising using the ministry of Irrigation ,S Corporation in-house construction department .Construction of the embankment dams started in1969\1997 and was stopped in 1999for cash flow reasons .No further work has been undertaken since 1999.studies undertaken in this report assume the completion of this project by 2012<sup>11</sup> .

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<sup>11</sup> long tern power- system planning study – April 2007 – generation data book and hydrology data book p-4.1

## **Sennar**

The Sennar Hydropower plant is located on the left bank of the Blue Nile ,some 275km upstream form Khartoum .Although the barrage at sennar was completed in 1925, the hydroelectric plant, was not added until 1962 .The scheme comprises two generations each with an installed capacity of 7.5mw.

## **Khshelgirba**

The khashselgirba hydro power plant is located on the Atbara River with the dam located about 50km north of the Ethiopian border .The main dam is of the concrete buttress type and the hydro power installation provides 12mw of non-firm supply to the grid in kassala Region .The units were commissioned between 1961 and 1963.

## **Jebelaulia, hydro matrix, plant**

The Jebelaulia dam is site don the White Nile, about 40km upstream of Khartoum and was completed in 1937. It was built by Egypt for the for the purposes of flood control and enhancement of river flows during the low flow period .However, this role became largely redundant flooding the completion of the Aswan High Dam in 1960.Acontract for hydro plant at Jebelaulia was a awarded to VATech Hydro who installed a total of hydro matrix turbines in the existing dam between 2003and 2005, to provide a total installed capacity of 28.8mw .

## **Chapter Three**

### **Methodology of Research**

#### **3-1 The Field of Study procedures**

The author in this chapter, described the method and procedures followed by the implementation of this study, including a description of the study population and how to prepare its tool. The actions taken to ensure truthfulness and reliability, and the way they have followed for the application, and statistical treatments under which analyze the data and extract the results, as section specifically includes a description of the methodology of the study.

#### **3-2 Community and the study sample**

The research seeks to circulate the results related to the problem studied. The original study population consists of engineers, internal auditors and external auditors in technician and accountants.

The study sample was selected at random from the study population, where the researcher has distributed a number (60) questionnaire on the target of some accountants, administrators and responded (60) individuals which represents (100%) almost from the target, where the returned questionnaires filled in all the required information.

To get out the results as accurate as possible researcher keeps on the diversity of the study sample in terms of coverage on the following:

1. Individuals of different age groups (25-40 years, 41-55- years, 56-70 years).
2. Gender :( Male and Female)
3. Individuals from different qualifications (secondary School, B.Sc, M.Sc, Ph.D., other).
4. Individuals from different professional qualification (Engineering, Management, Accounting and others).
5. Individuals in terms of function (Accountant, Auditor, Administer, Technician and Other)
6. Individuals in terms of years of experience (1-5 years, 6-10 years, 11-15 years, 16 years and over).

### **3-3 Data Analysis and Testing Hypotheses:**

To answer the questions of the study and verification of hypotheses will be calculated median for each phrase of phrases questionnaire showing the views of a sample study of the impact on improving performance in the industrial organization where they were given class (5) as a weight for each answer "strongly agree", and the degree to (4) as a weight for each answer "I agree", and class (3) as a weight for each answer "neutral", and class (2) as a weight for each answer to " Class (1) as a weight for each answer "to strongly ". If all of the above and according to the requirements of the statistical analysis is to convert the nominal variables to the amount of variables, and then it will use the chi square test to see significant differences in the answers of the study sample phrases each hypothesis.



## Chapter Four

### Analyze and Result

1 - Age:

The following is a detailed description of the study sample according to the above variables (age):

Table (2) frequency distribution of the study sample according to the variable Age

Age	No	Percentage
25-40	39	65%
41-55	18	30%
56-70	3	5%
total	60	100%

*prepared by the researcher of the field study, 2013*

Table No. (2) and Figure (2) that the majority of the study sample in age (25- 40 years), he number of these individuals (39) members and by (65%) of

The total sample, and the number of individuals aged between (41 -55 years) (18) individuals and by (30%), as the number of individuals aged between (65-70 years) (3) individuals and by (5%).

## 2-Gender

Figure (2) Frequency distribution of the study sample according to the variable gender

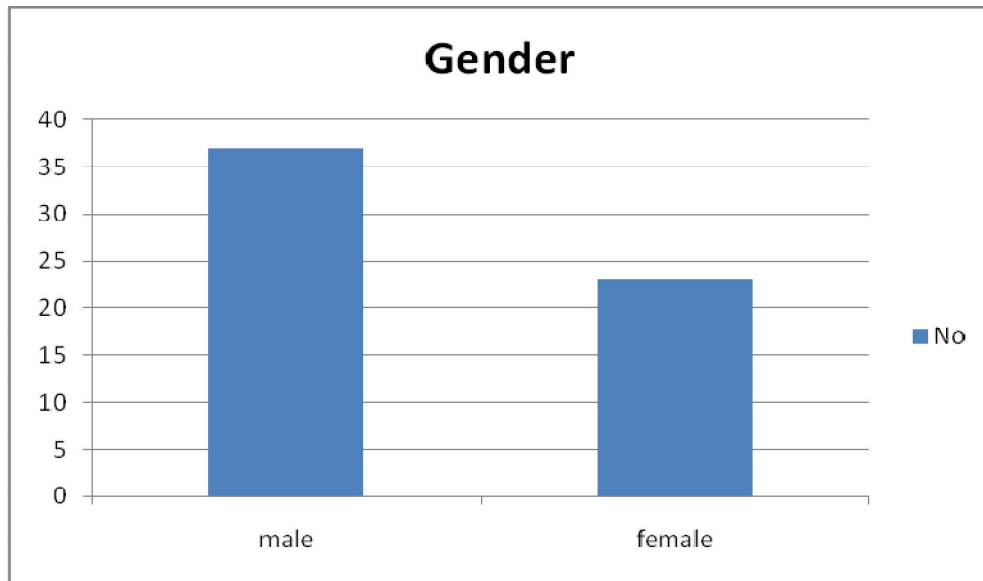


Figure (2) Prepared by the researcher of the field study, the Excel program, 2013

## 3- Qualifications

Table (3) frequency distribution of the study sample according to the variable Qualifications

Qualifications	No	Percentage
Secondary	5	8.3%
Undergraduate	36	60%
Master	16	26.7%
PHD	3	5%
Others	0	0
Total	60	100%

Prepared by the researcher of the field study, the Excel program, 2013

#### 4- Specialization

Figure (3) Frequency distribution of the study sample according to the variable Specialization:

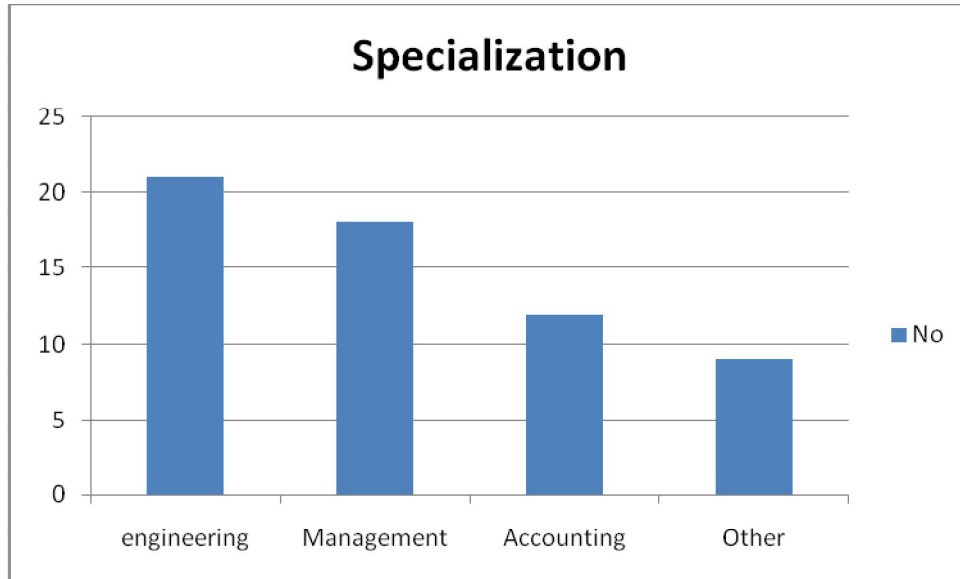


Figure (3): Prepared by the researcher of the field study, the Excel program, 2013

#### 5 - Occupation

Table (4) frequency distribution of the study sample according to the variable Occupation

Occupation	No	Percentage
administrator	24	40%
Accountant	9	15%
Auditor	3	5%
Technician	6	10%
Other	18	30%
Total	60	100%

Prepared by the researcher of the field study, the Excel program, 2013

## 6 - Experience

Figure (4) Frequency distribution of the study sample according to the variable experience:

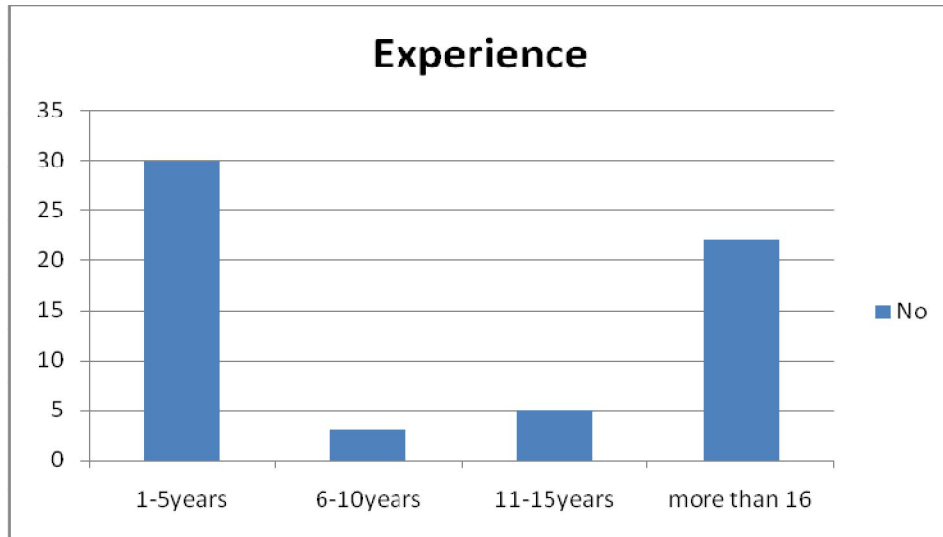


Figure (4): Prepared by the researcher of the field study, the Excel program, 2013

### 4-1 First hypothesis:

**1/ Implementing ISO-9001 system will lead to utilize recourse efficient.**

Table (5) frequency distribution of the answer the study sample to the first statement which says.

**Adopting ISO -9001 systems BY the top management will help to utilize recourse through implementation of it.**

Table (5) frequency distribution answer to the first phrase

Response	Frequency	Percentage
Strongly Agree	34	56.7%
Agree	20	33.3%
Neutral	2	3.3%
Disagree	4	6.7%
Strongly Disagree	0	0
Total	60	100%

*Prepared by the researcher of the field study, the Excel program, 2013*

Seen from the table(5) to (34) individuals in the study sample and rate (56.7%) agreed strongly that approved (20) members and by (33.3%) on it , and there was(2) individual (3.3%) natural(4) individual disagrees.

The second phrase:

**Most employees know the procedures of implementing ISO system in the organization**

Figure (5) frequency distribution of the study sample answer to the second phrase

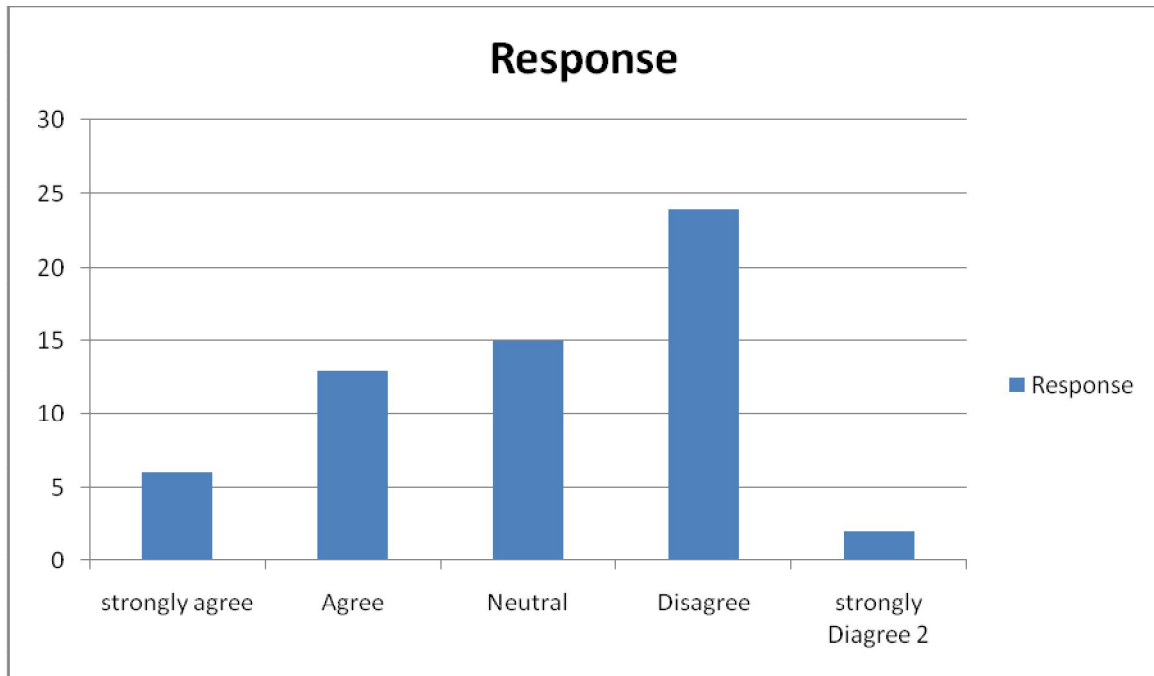


Figure (5): Prepared by the researcher of the field study, the Excel program, 2013

Seen from the figure (5) to (6) individuals in the study sample and rate (10%) agreed strongly that approved (13) members and by (21.7) on it, and there was(15) individual was neutral about it ,(24) individual (40%) disagree(2) individual strong disagree about it.

### **The third phrase**

**Most employees participate in the process of implementing ISO system in the company.**

Table (6) frequency distribution answer to the third phrase

Response	Frequency	Percentage
Strongly Agree	14	23.3%
Agree	25	41.7%
Neutral	12	20%
Disagree	9	15%
Strongly Disagree	0	0
Total	60	100%

*: Prepared by the researcher of the field study, the Excel program, 2013*

**Seen from the table(6) to (14) individuals in the study sample and rate( 23.3%) agreed strongly approved (25) members and by (41.7%)on it, (12) individual and (20%) natural about it and (9) individual(15%)disagree about it.**

**The fourth phrase:**

**Top management uses performance to ensure adequate performance and quality improvement through implementing ISO system.**

Figure (6) frequency distribution of the study sample answer to the fourth phrase

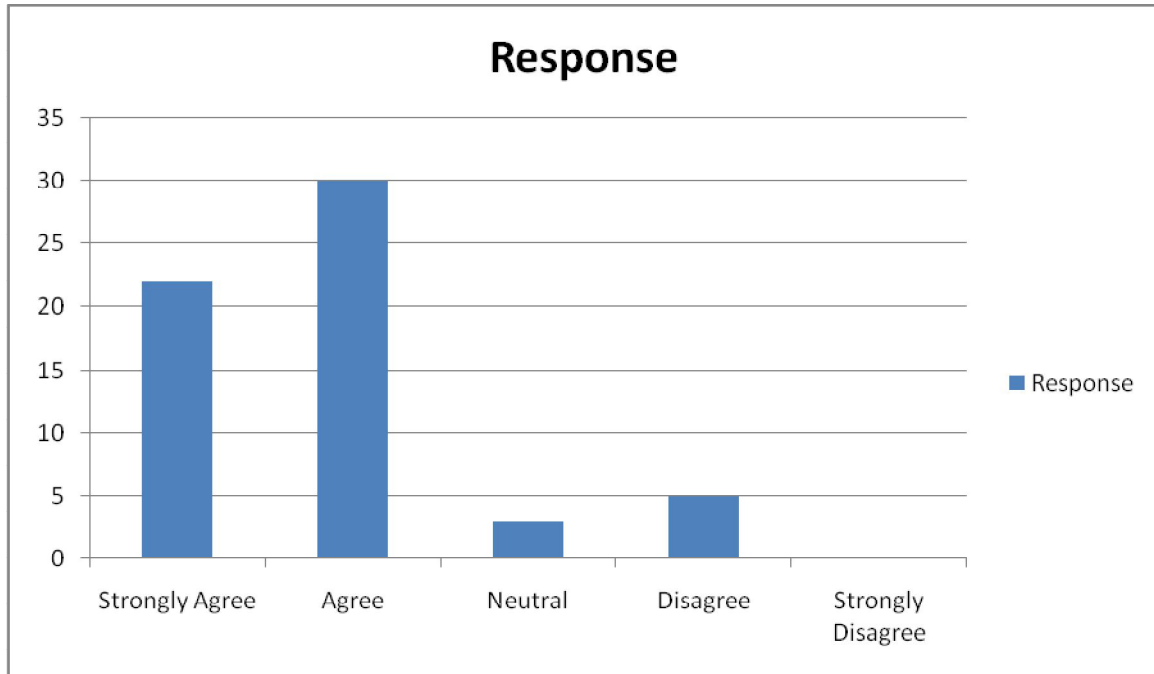


Figure (6): Prepared by the researcher of the field study, the Excel program, 2013

Seen from figure (11) to (22) individuals in the study sample and rate( 36.7%) agreed strongly that approved (30) members and by (50%) on it, (3)individual and by(5%) natural about it (5) individual disagree about it.

**The fifth phrase:**

**In your company most employees suggestion are taken in the account and implementing.**

Table (7) frequency distribution answer to the fifth phrase

Response	Frequency	Percentage
Strongly Agree	9	15%
Agree	26	43.3%
Neutral	16	26.7%
Disagree	6	10%
Strongly Disagree	3	5%
Total	60	100%

*Prepared by the researcher of the field study, the Excel program, 2013*

**Seen from the table(7) to( 9) individuals in the study sample and rate (15%) agreed strongly that approved (26) members and by (43.3%)on it,(16) individual and by(26.7) natural about it (6) individual disagree(10%)and (3) strong disagree about it.**



**The sixth phrase:**

**The company support employees to satisfy customer's needs.**

Figure (7) frequency distribution of the study sample answer to the sixth phrase

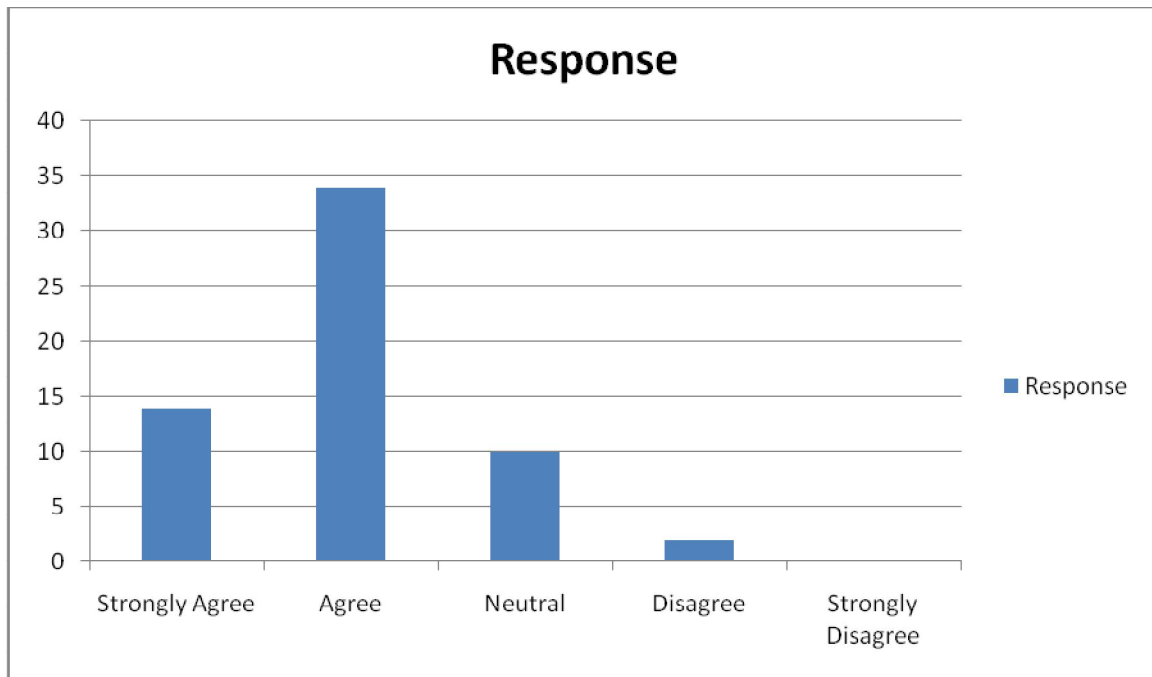


Figure (7): Prepared by the researcher of the field study, the Excel program, 2013

Seen from the Figure (7) to (14) individuals in the study sample and rate (23.3%)agreed strongly that approved by (34) members and by (56.7%)on it,(10) individual and by(16.7%) natural about it(2) individual and by(3.3%)disagree about it.

Table (8) frequency distribution answer to the mean first hypotheses items .

Response	Frequency	Percentage
Strongly Agree	16	26.7%
Agree	25	41.7%
Neutral	10	16.7%
Disagree	8	13.3%
Strongly Disagree	1	1.6%
Total	60	100%

*Prepared by the researcher of the field study, the Excel program, 2013*

**Seen from the table(8) to (16) individuals in the study sample and rate (26.7%) agreed strongly that approved by (25) members and by (41.7%)on it,(10) individual and by(16.7%) natural about it(8) individual and by(13.3%)disagree about it and one individual strong disagree.**

*The mean for one hypotheses items we see in the table(8). As we can see from the above result that the one hypotheses*

**(Implementing ISO-9001system will lead to utilize recourse efficient).  
Is accepted.**

#### **4-2The second hypotheses :**

**The awareness and perception of top managers of ISO that help there in the process of evaluating and measuring the system as well as achieve in the tended results.**

##### **The First phrase**

**The top management had a good hear and crease to implementing ISO system to achieve had goal.**

Table (9) frequency distribution answer to the first phrase

Response	Frequency	Percentage
Strongly Agree	21	35%
Agree	30	50%
Neutral	6	10%
Disagree	3	5%
Strongly Disagree	0	0%
Total	60	100%

*Prepared by the researcher of the field study, the Excel program, 2013*

**Seen from the table(9) to (21) individuals in the study sample and rate (35%) agreed strongly that approved (30) members and by (50%)on it,(6) individual and by(10%) natural about it and(3) individual and by(5%) disagree about it.**

**The Second phrase:**

**Top management involves major department heads and majors determine long objectives.**

Figure (8) frequency distribution of the study sample answer to the second phrase

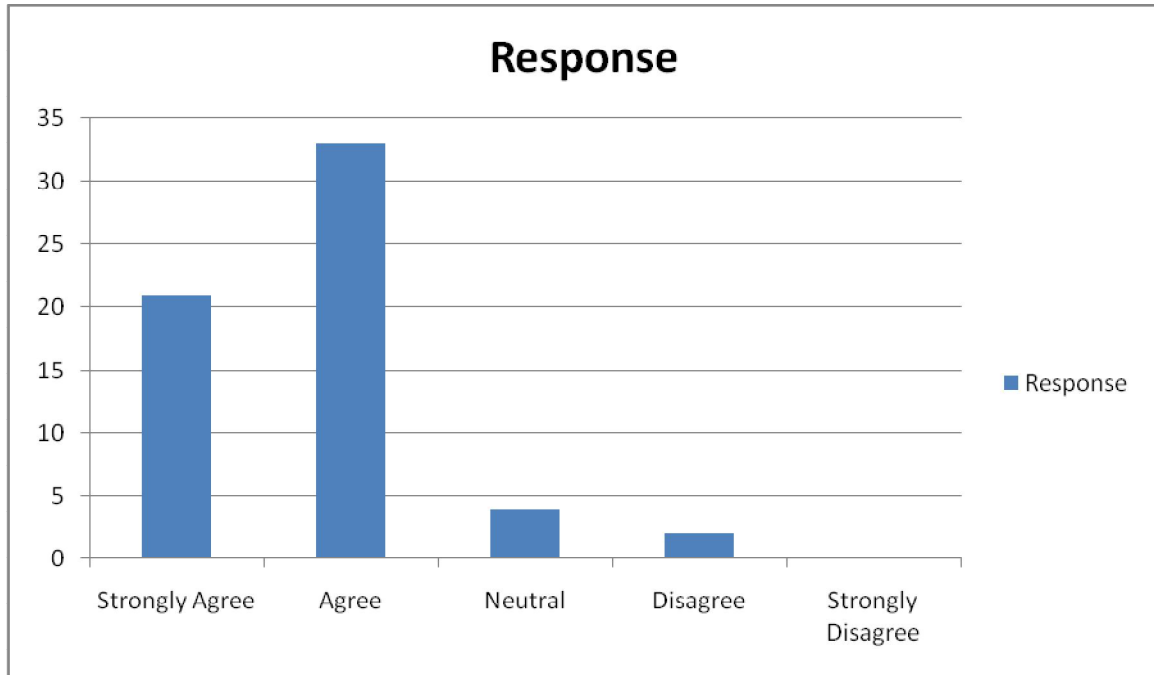


Figure (8) Prepared by the researcher of the field study, the Excel program, 2013

Seen from the figure (8) to (21) individuals in the study sample and rate (35%) agreed strongly that approved (33%) members and by (55%) on it, (4) individual and by (6.7%) natural about it and (2) individual disagree about it

**The third phrase:**

**The company uses information and performance measurement in the improvement of its process.**

Table (10) frequency distribution answer to the third phrase

Response	Frequency	Percentage
Strongly Agree	18	30%
Agree	30	50%
Neutral	7	11.7%
Disagree	3	5%
Strongly Disagree	2	3.3%
Total	60	100%

*: Prepared by the researcher of the field study, the Excel program, 2013*

**Seen from the table(10) to (18) individuals in the study sample and rate (30%) agreed strongly that approved (30) members and by (50%) on it,(7) individual and by(11.7%) natural about it and (3) individual disagree and (2) individual strongly disagree and by (3.3%) .**

**The fourth phrase:**

**The company has performance measurement system that evaluates the quality of its process.**

Figure (9) frequency distribution of the study sample answer to the fourth phrase

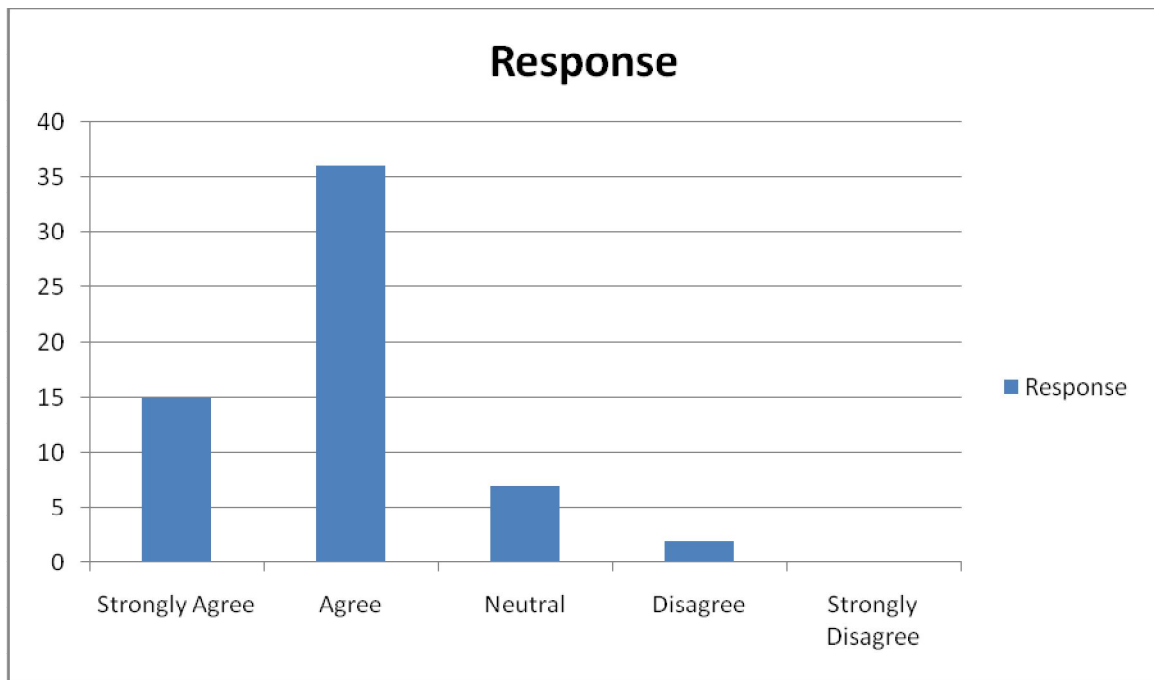


Figure (9): Prepared by the researcher of the field study, the Excel program, 2013

**Seen from the figure (9) to (15) individuals in the study sample and rate( 25%) agreed strongly that approved (36) members and by (60%) on it,(7) individual and by(11.7%) natural about it and (2) individual disagree and by(3.3%) about it.**

**The fifth phrase :**

**Top management review the ISO system planned in the travels to ensure the effectiveness of the planed.**

Table (11) frequency distribution answer to the fifth phrase

Response	Frequency	Percentage
Strongly Agree	34	56.7%
Agree	18	30%
Neutral	6	10%
Disagree	0	0%
Strongly Disagree	2	3.3%
Total	60	100%

*Prepared by the researcher of the field study, the Excel program, 2013*

**Seen from the table (11) to (34) individuals in the study sample and rate (56.7%) agreed strongly that approved (18) members and by (30%) on it, (6) individual and by (10%) natural about it and (2) individual strong disagree and by (3.3%) .**

**The sixth phrase:**

**The company has internal a auditing system use to inspect and monitoring the system and do very active to continuous improvement**

Figure (10) frequency distribution of the study sample answer to the sixth phrase

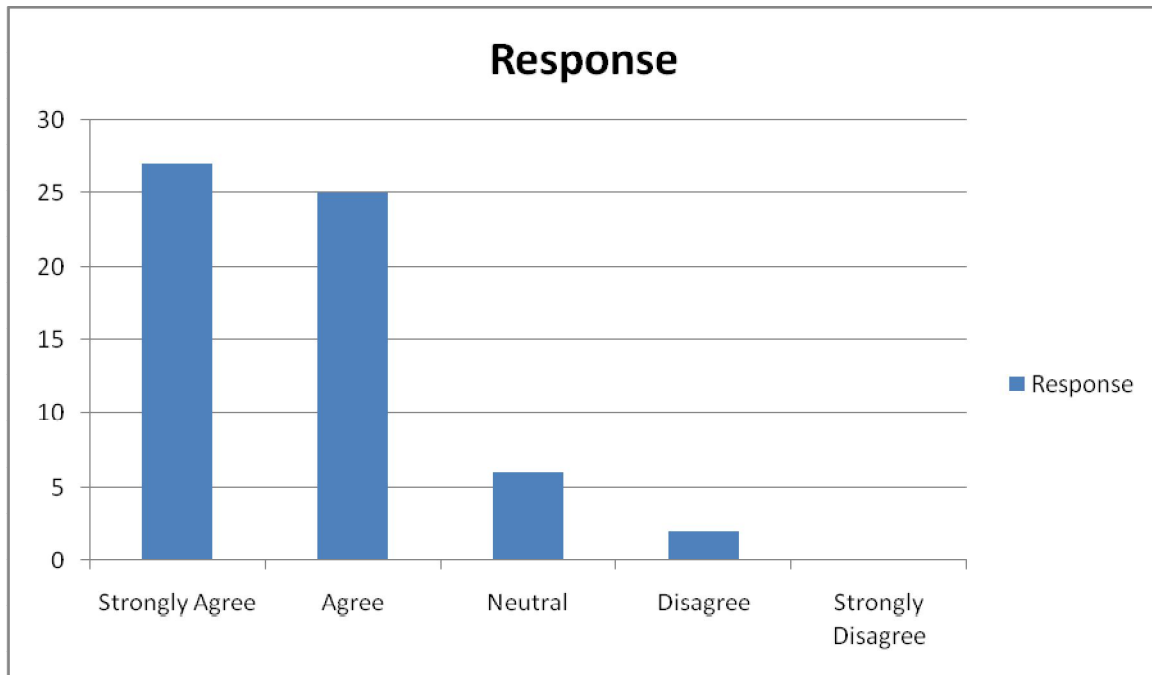


Figure (10): *Prepared by the researcher of the field study, the Excel program, 2013*

**Seen from the figure (10) to (27) individuals in the study sample and rate( 45%) agreed strongly that approved (25) members and by (41.7%)on it, (6)individual and by(10%) natural about it and (2) individual disagree and by (3.3%) about it.**



Table (12) frequency distribution answer to the mean tow hypotheses items .

Response	Frequency	Percentage
Strongly Agree	23	38.3%
Agree	28	46.7%
Neutral	6	10%
Disagree	2	3.3%
Strongly Disagree	1	1.7%
Total	60	100%

*Prepared by the researcher of the field study, the Excel program, 2013*

**Seen from the table(12) to (23) individuals in the study sample and rate (38.3%) agreed strongly that approved (28) members and by (46.7%) on it (6)individual and by(10%) natural about it and (2) individual disagree and by (3%) one individual strong disagree about it.**

*The mean for second hypotheses items we see in the table(12). As we can see from the above result that the tow hypotheses.*

**(The awareness and perception of top managers of ISO that help there in the process of evaluating and measuring the system as well as achieve in the tended results). Is accepted.**

### **4-3Third hypotheses:**

**Implementing ISO system enhances the performance of the company.**

**The first phrase:**

**The company uses modern techniques to evaluate the product and quality system.**

Table (13) frequency distribution answer to the first phrase

Response	Frequency	Percentage
Strongly Agree	25	41.7%
Agree	20	33.3%
Neutral	10	16.7%
Disagree	5	8.3%
Strongly Disagree	0	0%
Total	60	100%

*Prepared by the researcher of the field study, the Excel program, 2013*

**Seen from the table(13) to (25) individuals in the study sample and rate( 41.7%) agreed strongly that approved (20) members and by (33.3%)on it, (10)individual and by(16.7%) natural about it and (5) individual and by (8.3%) disagree about it.**

**The second phrase:**

**Adopting ISO system by the company increase the producing and profitability.**

Figure (11) frequency distribution of the study sample answer to the second phrase

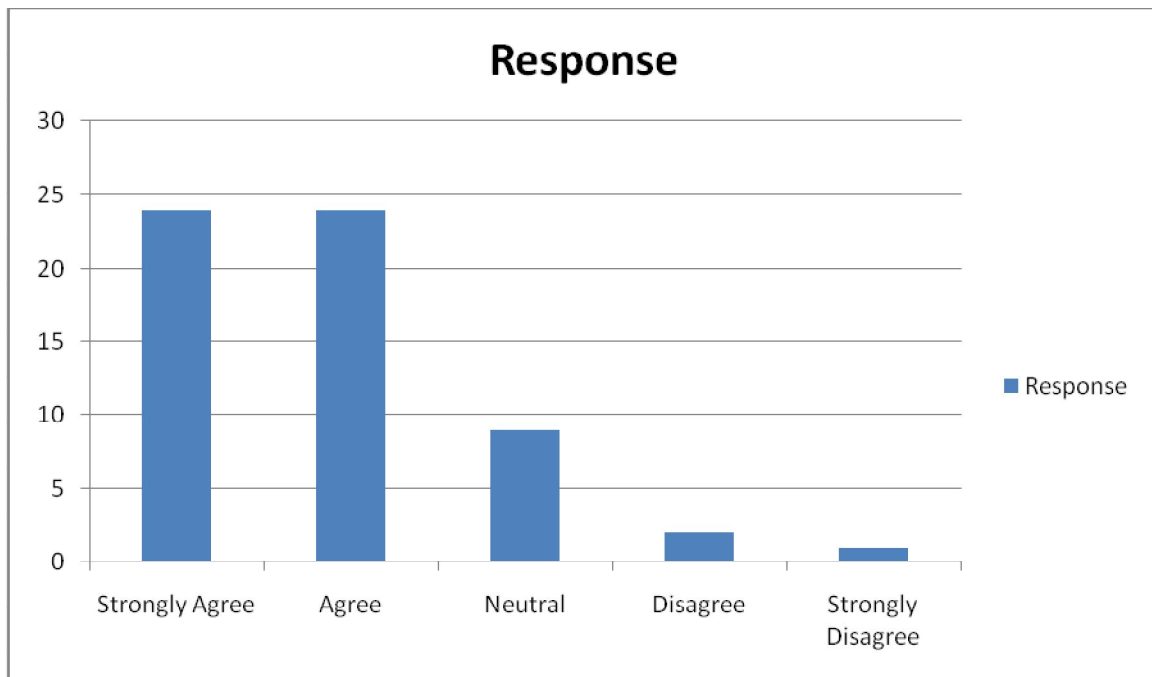


Figure (11): *Prepared by the researcher of the field study, the Excel program, 2013*

**Seen from the figure (11) to ( 24) individuals in the study sample and rate (40%) agreed strongly that approved (24) members and by (40%) on it,(9) individual and by(15%) natural about it and (2) individual and by (3.3%) disagree and one individual by (1.7%) strong disagree about It.**

**The third phrase:**

**The company use adequate recourse to achieve the goal.**

Table (14) frequency distribution answer to the third phrase

Response	Frequency	Percentage
Strongly Agree	19	31.7%
Agree	30	50%
Neutral	9	15%
Disagree	2	3.3%
Strongly Disagree	0	0%
Total	60	100%

*Prepared by the researcher of the field study, the Excel program, 2013*

**Seen from the table (14) to (19) individuals in the study sample and rate (31.7%) agreed strongly that approved (30) members and by (50%) on it, (9) individual and by(15) natural about it and (2) individual and by (3.3%) disagree about it.**

**The fourth phrase:**

**The company does recourse to cover the needs of training of employees.**

Figure (12) frequency distribution of the study sample answer to the fourth phrase

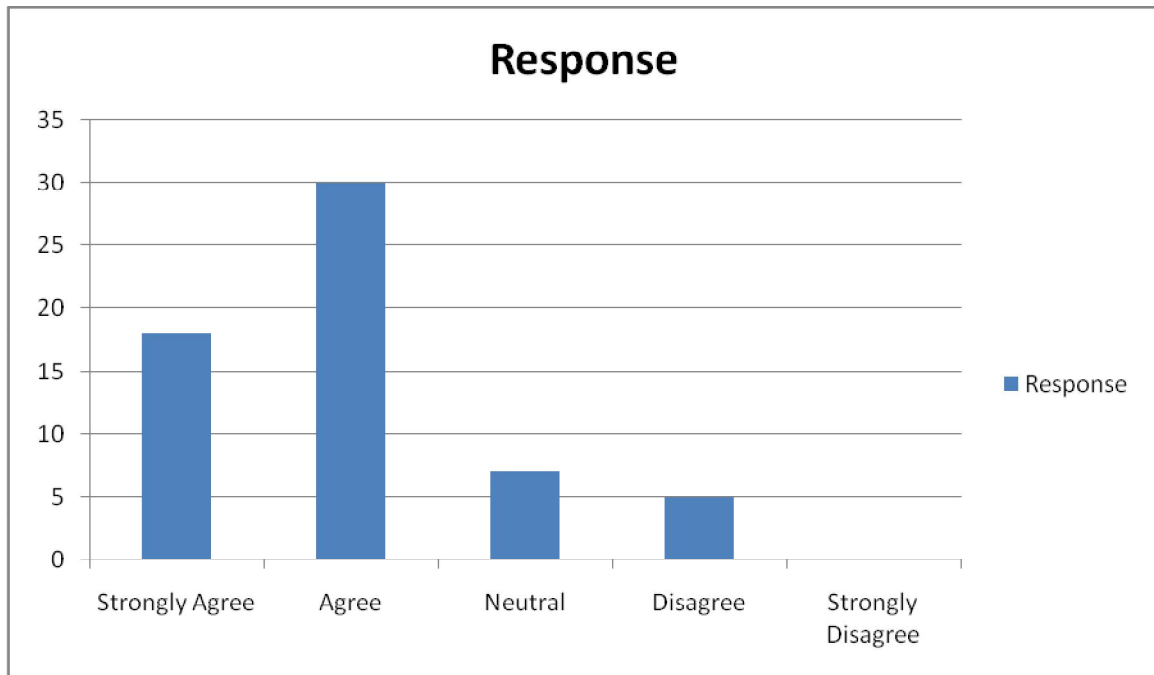


Figure (12): *Prepared by the researcher of the field study, the Excel program, 2013*  
Seen from the figure (12) to (18) individuals in the study sample and rate (30%) agreed strongly that approved (30) members and by (50%) on it, (7) individual and by(11.7%) natural about it and (5) individual and by (8.3%) disagree about it.

**The fifth phrase:**

**The company does good effect to reduce the scrape and cost**

Table (15) frequency distribution answer to the fifth phrase

Response	Frequency	Percentage
Strongly Agree	16	26.7%
Agree	27	45%
Neutral	17	28.3%
Disagree	0	0%
Strongly Disagree	0	0%
Total	60	100%

*Prepared by the researcher of the field study, the Excel program, 2013*

**Seen from the table(15) to (16) individuals in the study sample and rate( 26.7%) agreed strongly that approved (27) members and by (45%) on it, (17)individual and by(28.3%) natural about it .**

**The sixth phrase:**

**The company sees to customer opinion to provide customer needs effectively.**

Figure (13) frequency distribution of the study sample answer to the sixth phrase

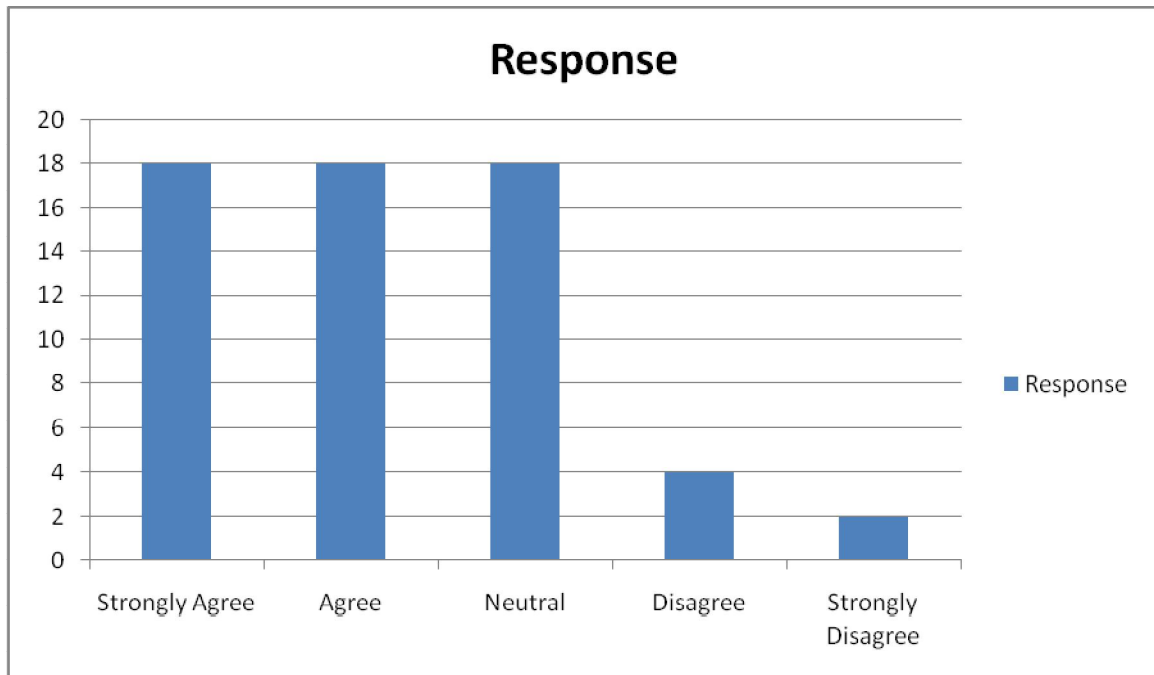


Figure (13): Prepared by the researcher of the field study, the Excel program, 2013

Seen from the figure (13) to (18) individuals in the study sample and rate ( 30%) agreed strongly that approved (18) members and by (30%) on it(18) individual and by(30%) natural about it and (4) individual and by (6.7%) disagree and (2) individual and by (3.3%) strong disagree about it.

Table (16) frequency distribution answer to the mean three hypotheses items

Response	Frequency	Percentage
Strongly Agree	20	33.3%
Agree	24	40%
Neutral	12	20%
Disagree	3	5%
Strongly Disagree	1	1.7%
Total	60	100%

*Prepared by the researcher of the field study, the Excel program, 2013*

Figure (14) frequency distribution of the study sample answer to the mean three hypotheses items.

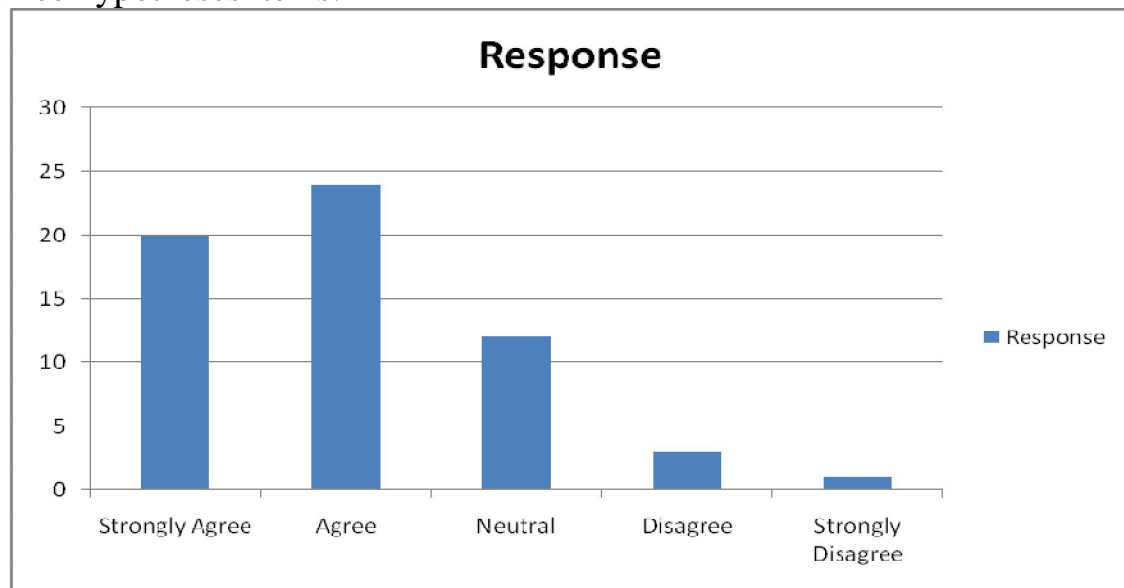


Figure (14): *Prepared by the researcher of the field study, the Excel program, 2013*

**Seen from the table (16) and figure (14) to (20) individuals in the study sample and rate (33%) agreed strongly that approved (24) members and by (40%) on it(12) individual and by(20%) natural about it and (3) individual and by (5%) disagree and (1) individual and by (1.7%) strong disagree about it.**

***The mean for third hypotheses items we see in the table (16) and figure (14). As we can see from the above result that the third hypotheses (Implementing ISO system enhance the performance of the company) is accepted.***



## **Chapter Five**

### **Conclusion and Recommendation**

#### **5-1 Conclusion**

The study finding revealed some factors statistically significant and proved that The Implementation ISO 9001: 2008 System in Industrial Organization and Its Impact on Improving Performance were follows:

1-(54) individuals in the study sample and rate (90%) agreed that there is a adopting ISO 9001:2008 by the top manager will help to utilize recourses through implementation of it.

2- (39) individuals in the study sample and rate (65%) agreed that most employees participate in the process of implementing ISO in the company.

3-(52) individuals in the study sample and rate (86.7%) agreed that Managers use performance to ensure adequate performance and quality improvement through implementing ISO 9001:2008.

4-(48) individuals in the study sample and rate (80%) agreed that the company support employees to satisfy customer needs.

5-(54) individuals in the study sample and rate (90%) agreed that the top management involves major department heads and managing in determine long objectives.

6-(48) individuals in the study sample and rate (80%) agreed that adopting ISO 9001: 2008 by administration increase productivity and profitability.

## 5-2 Recommendation:

According to the above findings, the study recommend to the fowling:

- 1- The company has to aware all employees to know the procedures of implementing ISO 9001:2008.
- 2- It's very essential to administration to give a chance to employees to participate in the process of implementing ISO in the company.
- 3- It's very important to top managers involve major departments heads and  
in determine long objectives.
- 4- The company should use information and performance measurement to improve the process.

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- [http://www.iso.org/iso/about/iso\\_members.htm](http://www.iso.org/iso/about/iso_members.htm)
- Web WWW.ISO.Org
- [www.iso.org](http://www.iso.org) : iso 2009-o2/5000/iso center secretariat Geneva - switzerland /sc2

## Appendix (1):

### First Hypotheses

Npar Test

Data set

Descriptive Statistic

Maximum	Minimum	Std Deviation	Mean	N	
25.0	1.0	9.62808	12.8	5	frequency

Chi- Square

Frequencies

Residual	Excepted N	Observed N	
.0	1.0	1	1
.0	1.0	1	8
.0	1.0	1	10
.0	1.0	1	25
.0	1.0	1	16
.0	1.0	5	total

Test statistic

Frequency	
.000	Chi- Square
4	df
1.000	Asgmp-sig

a.1/cells (100%) have expected Frequencies less than 5.

The minimum expected cells Frequencies is 1.

## Second Hypotheses

Npar Test

Data set

Descriptive Statistic

Maximum	Minimum	Std Deviation	Mean	N	
25.0	1.0	9.62808	12.8	5	frequency

Chi- Square

Frequencies

Residual	Excepted N	Observed N	
.0	1.0	1	1
.0	1.0	1	2
.0	1.0	1	6
.0	1.0	1	28
.0	1.0	1	23
.0	1.0	5	total

Test statistic

Frequency	
.000	Chi- Square
4	df
1.000	Asgmp-sig

a.1/cells (100%) have expected Frequencies less than 5.

The minimum expected cells Frequencies is 1.

### Third Hypotheses

Npar Test

Data set

Descriptive Statistic

Maximum	Minimum	Std Deviation	Mean	N	
24.0	1.0	10.78425	12.6	5	frequency

Chi- Square

Frequencies

Residual	Excepted N	Observed N	
.0	1.0	1	1
.0	1.0	1	3
.0	1.0	1	12
.0	1.0	1	24
.0	1.0	1	20
.0	1.0	5	total

Test statistic

Frequency	
.000	Chi- Square
4	df
1.000	Asgmp-sig

A.1/cells (100%) have expected Frequencies less than 5.

The minimum expected cells Frequencies is 1.

التاريخ: 2013/03/19م

السادة / الشركة السودانية للتوليد الحراري

لعناية السيد / المدير العام

الموقر

السلام عليكم ورحمة الله وبركاته

الموضوع: الدارس / عبدالقادر عبدالله محمد

بالإشارة لاعلاؤه ارجو بدايةً أن اعبر لكم عن وافر الشكر والتقدير على دعمكم لمسيرة الجودة الشاملة والامتياز .

كما ارجو شاكرًا مواصلة الجهود معنا في دفع هذه العجلة في تقديم الدعم المعنوي والمعرفي لباحثين الماجستير والدكتوراة .

○ عنوان البحث : تطبيق نظام ISO 9001:2008 واثره في التنمية وتحسين الاداء

○ اسم الباحث: عبدالقادر عبدالله محمد

○ الدرجة العلمية : ماجستير بالكورسات

ووفقنا الله وإياكم ،،،

د. الطيب ابراهيم على

مدير المركز

## Appendix (2)

### Personal data:

Please put(√) in the following expressions which is suitable to you.

#### 1- Age

25-40 years  41-55 years

56- 70 years

#### 2/ Gender

Male

Female

#### 3-Education level:

Secondary School  B.Sc  M.Sc

PhD  Others

#### 4-Scientific Specialization:

Accounting  Engineering  Management  others

#### 5-Occupation Level:

Manager  Accountant  auditor  Technician

Other

#### 6- Experience:

1- 5 years  6 – 10 years

11 -15 years  more than 16 years



## First Hypotheses

1/ Implementing ISO-9001 system will lead to utilize recourse efficient.

Please put ( ✓ ) to indicate your agreement or disagreement with the following statements about your opinion about following expressions.

No	Item	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	adopting ISO -9001 system BY the top management will help to utilize recourse through implementation of it					
2	Most employees know the procedures of implementing ISO system in the organization					
3	Most employees participate in the process of implementing ISO system in the company					
4	Top management uses performance to ensure adequate performance and quality improvement through implanting ISO system					
5	In your company most employees suggestion are taken in the account and implementing					
6	The company support employees to satisfy customers needs					

### The tow hypotheses :

The awareness and perception of top managers of ISO that help there in the process of evaluating and measuring the system as well as achieve in the tended results.

No	Item	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	The top management has a good hear and focus to implementing ISO system to achieve its goal.					
2	top management involves major department heads and majors determine long objectives					
3	The company uses information and performance measurement in the improvement of it s process.					
4	The company has performance measurement system that evaluate the quality of its process					
5	Top management review the ISO system planned in the travels to ensure the effectiveness of the planed					
6	The company has internal Auditing system use to inspect and monitoring the system and do very active to continue improvement					

**Three hypotheses:**

**Implementing ISO system enhances the performance of the company.**

No	Item	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	The company uses modern techniques to evaluate the product and quality system					
2	Adopting ISO system by the company increase the producing and profitability					
3	The company use adequate recourse to achieve the goal					
4	The company do recourse to cover the needs of tarring of employees					
5	The company do good effect to reduce the scrape and cost					
6	The company sees to customer opinions to provide customer needs effectively					