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SOSYAL BİLİMLER ENSTİTÜSÜ
İŞLETME ANA BİLİM DALI

KİMYA SEKTÖRÜNDE KALİTE STANDARTLARI ÜZERİNE BİR ARAŞTIRMA: GAZİANTEP ÖRNEĞİ

A STUDY ON QUALITY STANDARDS IN THE CHEMICAL INDUSTRY: THE CASE STUDY OF GAZIANTEP

YÜKSEK LİSANS TEZİ

DUA'A ISMAIL YACOUB ALSAIFI
Tez Danışmanı: Doç.Dr. Sadettin PAKSOKİLİS
OCAK- 2015

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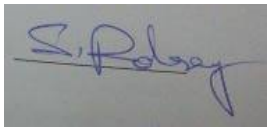
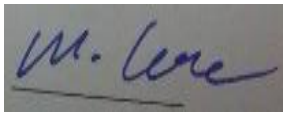
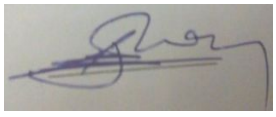
Doç.Dr. Sadettin PAKSOY	(Jüri Başkanı / Danışman)	
Yrd. Doç. Dr. Mustafa CİNOĞLU	(Üye)	
Yrd. Doç. Dr. Cuma ERCAN	(Üye)	

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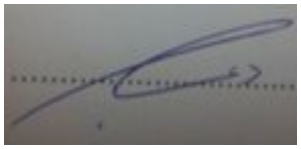

ÖZET

KİMYA SEKTÖRÜNDE KALİTE STANDARTLARI ÜZERİNE BİR ARAŞTIRMA: GAZİANTEP ÖRNEĞİ

ISMAIL YACOUB ALSAIFI, Dua'a
Yüksek Lisans Tezi, İşletme Ana Bilim Dalı
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Bu tez çalışması, teorik ve uygulamalı bilgileri kapsayan beş bölümden oluşmaktadır. Teorik bilgiler; kimya sektöründe kalite standartları ile ilgili bilgileri içermektedir. Uygulamalı bilgiler ise, Gaosb'de faaliyet gösteren kimya işletmelerine uygulanan anketlerle elde edilen bilgilerdir.

Bu çalışma ile, Gaziantep kimya sektöründeki firmaların gelişimi açısından, mevcut kalite yönetim sisteminin analizi amaçlanmıştır. Ayrıca bu çalışma, kimya sektöründe faaliyet gösteren işletmelerin aralarındaki etkileşimi de ortaya çıkarmayı amaçlamıştır.

Bu bağlamda bu çalışmada bazı hipotezlerle ilgili bilgi toplamak amacıyla 26 sorudan oluşan anket formu hazırlanmıştır.

Anketler, Gaosb'ta faaliyet gösteren kimya işletmelerinin kalite yönetim departmanları çalışanları ile yapılmıştır. Gaosb'de 138 kimya işletmesinin 56'sına (%41) anket uygulanmıştır.

Bilindiği gibi Gaziantep, Türkiye'nin Orta Doğuya açılan kapısı olarak görülmektedir. Kaliteli üretimin ihracata olumlu yansıyacağı da açıktır.

Anketlerden elde edilen verilere göre, kalite yönetim sistemlerinin kimya sektöründeki gelişmeyi etkilediği görülmüştür. Aynı zamanda kalite yönetim departmanlarının faaliyetleri arasında etkileşimler saptanmıştır.

Sonuç olarak, işletmelerin kalite yönetim departmanlarında çalışan personelin yüksek öğrenim görmüş ve yetenekli çalışanlardan oluşturulması gerektiği sonucuna varılmıştır. İşletmeler bu sayede hizmet içi eğitim masraflarından kurtulacaklar. Aynı zamanda işletmeler, kalite yönetim departmanlarını iyileştirerek kaliteli ürün üretebilecekler. Öte yandan araştırma sonuçları, çalışanlara hizmet içi eğitim uygulanmasının çalışanları işletmeye bağlılıklarının arttırdığını ortaya koymaktadır. Yine araştırma sonuçlarına göre, Gaosb'ta faaliyet gösteren işletmelerin kalite yönetim sistemlerine önem vermeleri gerekmektedir. Böylece işletmeler, kaliteli ürün üretip hatalı ürün üretilmesi riskini azaltabilecekler ve karlılıklarını artırabileceklerdir.

Anahtar kelimeler: Kalite, Kalite Standartları, Gaziantep Organize Sanayi Bölgesi.

ABSTRACT

A STUDY ON QUALITY STANDARDS IN THE CHEMICAL INDUSTRY: THE CASE STUDY OF GAZIANTEP

ISMAIL YACOUB ALSAIFI, Dua'a
Master's Thesis: Department of Business
Supervisor: Associate Professor Dr. Sadettin PAKSOY
January 2015, 135 Pages

This thesis includes theoretical and practical within five chapters. The theoretical part composes quality standards and related data at chemical sector. For the practical part, data are obtained by implementing questionnaire to show the chemical plants and activities at Gaosb.

This study aims to analyze the development of the chemical sector firms at Gaziantep with its quality management system. Also this study aims to focus on occurring activities at the chemical sector and their intra-effects.

In this context at this study with the aim of related data collecting, a questionnaire which is consisted of 26 questions was prepared. The questionnaires were done at Gaosb for showing the activities of chemical plants with the workers of quality departments. At Gaosb there are 138 chemical plants, the questionnaire was implemented on 56 of them (41%).

Gaziantep as known is the Turkish opened gate to the Middle East. The qualified product will effect positively and clearly on the exports.

According to the data of the obtained questionnaires, the quality management systems effect on the development of the chemical sector. At the same time the in among effective quality departments were determined.

As conclusion, in the quality department of the plants, it is necessary to appoint high educated and skilled working employees thus it will save the costs of training program. In the same time, quality departments of plans will be improved and the products will be qualified. Moreover the implementation of workers' training will increase their loyalty. On the other hand according to conclusions it is necessary to pay attention to quality system due to its importance. Thus a qualified product will be produced and the risk of defective product can be reduced and profitability can be increased.

Keywords: Quality, Quality Standards, Gaziantep Organized Industrial Zone.

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I would like to thank all my friends in all my life's stages.

Finally I would like to dedicate my achievement to all of world's children; because they are the hope of the future, the peace of the present and only childhood makes me feel as myself.

With my all respects

Dua'a ALSAIFI

ABBREVIATION

Acronym	Definition
API	American Petroleum Institute
ASTM	American Society for Testing and Materials
BC	Before Christ
BDT	Best Demonstrated Technology
BSc	Bachelor's
CAGR	Compound Annual Growth Rate
CE	European conformity
C.W.Q.C.	Company Wide Quality Control
EEA	European Economic Area
EFTA	European Free Trade Area
EMS	Environmental Management System
EU	European Union
EUR	Euro Currency
FDI	Foreign Direct Investment
Gaosb	Gaziantep Organized Industrial Zone
GAP	Southeastern Anatolia Project
GDP	Gross Domestic Product
GOIZ	Gebze Organized Industrial Zone
GOST	Russian Standards and Technical Specifications
GSO	Gaziantep Industrial Chamber
ISO	International Standardization Organization
Nem	Normal European Modeling Standards
OHSAS	Occupational Health & Safety Assessment Series
OIZ	Organized Industrial Zones
OSB	Organized Industrial Zones
PS	Palestinian Quality Mark
PVC	Polyvinyl Chloride
Q.	Quality
Q.A.	Quality Assurance
Q.C.	Quality Control
Q. Dept.	Quality Department
QIZ	Qualified Industrial Zones
QMS	Quality Manual
R&D	Research and Development
SME	Small and Medium Enterprise
SOP	Standard Operating Procedure
SPC	Statistical Process Control
SQC	Statistical Quality Control
TL	Turkish Lira
Trans. by	Translated by
TSE	Turkish Standards Institution
TQC	Total quality control
TQM	Total Quality Management
USA	United State of America
USD	American Dollar

INTRODUCTION

Industrial is an important sector and has an essential effect in global economic development and growth; especially in the Middle East and European Union which included Turkey as the gate of the Middle East to European Union and vice versa.

Turkish government for decades has started to concentrate on improving the Turkish industries especially focus on chemical sectors which included petroleum industries, petrochemical plastic pharmaceutical paint dyes and detergents.

The huge development of Turkish industry in the amount of products exports, the increasing of Turkish qualified industrial zone with its investments and the observed increase in the consuming of Turkish products by local society; all of that indicates to that interest of industrial field and its sectors by Turkish government.

The GAOSB which can be considered as one of the most important industrial zones in Turkey that because of its important role which it plays in reviving the Turkish economy, creates new job opportunities and developing or upgrading the local area and its neighborhood.

To support this development in this industrial zone the factories and firms interest in following and using the quality system and management for raising the level of quality products and services, in addition, to protect the environment from the toxic and chemical industrial waste by using the newest and the most modern well known techniques and procedures in the manufacturing operations and processes, also to remove and dispose those wastes.

This study included five chapters divided into theoretical and practical sections, where the first chapter was a historical entrance such a preamble to the quality development during the history and in the second section it was previous studies which show some related studies reflecting to the quality standards, organized industrial zones, and also about chemical industries sector.

The second chapter is a theoretical chapter which presented general concepts of quality, chemical industries sector and its effective factors; also in the end of this chapter an overview of the chemical industries in Turkey will be given.

The third chapter was the main introduction for the study it identifies Gaziantep organized industrial zones, its importance and some important statistics.

The fourth chapter is the practical chapter to study the relationships between the variable and to notice the effects of the quality standards on the development of chemical sector at Gaosb in this chapter it is determined the variables hypothesis, objective, domain and the importance of this study then it is presented and put the study's queries to be as the main path of the study by answering those queries. It is determined the study's sample and limitations, furthermore it is analyzed the data and evaluated the finding of the practical study which were collected by the obtained questionnaire, where SPSS program and Excel were used as a statistical and analyzing programs.

Finally, the fifth chapter is divided into two main parts that consists of conclusion and recommendations.

In the end of the study such appendices is attached; required tables which are related to the study and the obtained questionnaire also are attached.

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FIRST CHAPTER
HISTORICAL OVERVIEW

1.1 HISTORICAL ENTRANCE

The oldest concerned civilization of quality was Babylonian at the 18th BC in the time of Hammurabi's reign where his rules include 282 rule related to trade and it said that who trades with a bad goods he has to fix its defects. And here some of those rules as an evidence of the origin of the quality:

"104. If a merchant give an agent corn, wool, oil, or any other goods to transport, the agent shall give a receipt for the amount, and compensate the merchant therefore. Then he shall obtain a receipt form the merchant for the money that he gives the merchant.

105. If the agent is careless, and does not take a receipt for the money which he gave the merchant, he can not consider the unreceipted money as his own.

215. If a physician make a large incision with an operating knife and cure it, or if he opens a tumor (over the eye) with an operating knife, and saves the eye, he shall receive ten shekels in money.

218. If a physician make a large incision with the operating knife, and kill him, or open a tumor with the operating knife, and cut out the eye, his hands shall be cut off.

219. If a physician make a large incision in the slave of a freed man, and kill him, he shall replace the slave with another slave.

220. If he had opened a tumor with the operating knife, and put out his eye, he shall pay half his value.

221. If a physician heal the broken bone or diseased soft part of a man, the patient shall pay the physician five shekels in money.

222. If he were a freed man he shall pay three shekels.

223. If he were a slave his owner shall pay the physician two shekels.

229 If a builder build a house for some one, and does not construct it properly, and the house which he built fall in and kill its owner, then that builder shall be put to death.

230. If it kills the son of the owner the son of that builder shall be put to death.

231. If it kills a slave of the owner, then he shall pay slave for slave to the owner of the house.

232. If it ruins goods, he shall make compensation for all that has been ruined, and inasmuch as he did not construct properly this house which he built and it fell, he shall re-erect the house from his own means.

233. If a builder build a house for some one, even though he has not yet completed it; if then the walls seem toppling, the builder must make the walls solid from his own means.

235. If a shipbuilder build a boat for some one, and do not make it tight, if during that same year that boat is sent away and suffers injury, the shipbuilder shall take the boat apart and put it together tight at his own expense. The tight boat he shall give to the boat owner.

236. If a man rent his boat to a sailor, and the sailor is careless, and the boat is wrecked or goes aground, the sailor shall give the owner of the boat another boat as compensation.

237. If a man hire a sailor and his boat, and provide it with corn, clothing, oil and dates, and other things of the kind needed for fitting it: if the sailor is careless, the boat is wrecked, and its contents ruined, then the sailor shall compensate for the boat which was wrecked and all in it that he ruined.

238. If a sailor wreck any one's ship, but saves it, he shall pay the half of its value in money". (http://eawc.evansville.edu, 2014).

The above rules give us that the quality was required also in Hammurabi's kingdom and any one did not follow those rules of quality he had been punished by paying amount of many or crops or he would lose his life.

Since old Era where the slogan of "Juran" council –the American who was concern of quality- shows two ancient Egyptian one of them is working and another is measuring the quality.

As the historical facts mentioned in 15th century BC to the commitment of pharaohs with quality of the Egyptian temples building, and addition to that, Islam

presented and encouraged by Holy Quran verses and Sunnah to care of the importance of work and its quality and one of this verse "And say, Do deeds! Allah will see your deeds, and (so, will) His Messenger and the believers. And you will be brought back to the all Knower of the unseen and the seen then He will inform you of what you used to do" (Alhilali & Muhsin Khan, 1404H,276). And according to Sunnah: "That God loves us to master our work".

Stewart Stewart (1767):

He defined quality such the product must matches design standards where the responsible of that is worker who produces the product.

Stewart had a role in understanding of worker's role thus he puts principles and ideas to motivate works such as rewards to raise performance and product's quality instead of blame the workers.

Fredrick Taylor (1880):

He saw, the good product is the responsibility of firm management such as non-determination of responsibilities, the absence of cooperation between sections and lack of motivation.

Ronald Fisher (1920):

He had used statistic to determine the quality of work and he was a statistician in agricultural field and he was the supervision on foundation of statistical quality council in India.

Walter Shewahart (1925):

He is one of the statistical quality methods developers who had put scheme to determine the deviation of manufacturing process from the specifications where it facilitates data analysis, and had kept an archive of industrial process data.

He had designed a department to improve the performance and he is the setter of path of "Plan-Do-Review check".

And he is the writer of "Economic control of quality manufactured product" that was in 1931.

He is also the proposer of the 7 tools of quality which will be discussed later in this study.

Dodge-Romig (1930):

They are the setter of sampling rules and systems for any product without taking whole the lot of product to test, and they had designed tables for that aim; but the main condition to use these methods with related tables; the taken sample must be reflective of the original quality of the same product.

W. Edward Demig (1940):

He is the leader of quality revolution in the world, where he caused Japan exceeding on USA in product quality, despite he is An American where his ideas in quality was ignored and rejected in USA so he presented it to Japan -after losing in 2nd war-, his ideas are as following:

1) Determination of responsibilities.
2) Team work.
3) The policy of zero defects.
4) Workers motivation.
5) Training workers with all new technology which related to their job.
6) Attention to raw materials quality.
7) Control the suppliers.

In more details after the 2nd war Japanese focus started to concentrate on high quality goods production after their loss in that war; so revolution of industry start to produce what a special and high quality product to emulate all the product in whole world, here the force of competition presented (appeared) between American and Japanese goods that was in the last of forties (40s) of the 20th century, while Europeans in that time were entering the markets with their goods to compete others by prices or (comfortable prices).

Deming in the dimension of workforce he "Except for the importance of training, he scarcely considers this factor. For him, improvement is basically a managers' work" (Martinez-Lorente et.al, 1998: 19)

In the other hand, at employee attitudes and behavior he found "motivational campaigns are useless". (Martinez-Lorente et.al, 1998: 19)

Also in the dimension of process flow management "he focuses on the need of maintain the process under statistical control. He criticises the zero defects approach and sampling inspection." (Martinez-Lorente et.al, 1998: 19)

Finally we can mention the Deming's fourteen points of quality which are as the following: (http://www.pp-s.com, 2014).

1) Find stability to keep the improvement of product and service going on.
2) Adopt the philosophy to live with the lowest or non level of delay, mistakes and defective manufacturing.
3) The mass or total inspection has not to be depended; so the statistical methods are the required to build the quality in.
4) Stop the practice of evaluate the business according to price.
5) Problems make the management continually work on the system to be improved.
6) Follow the newest methods for training.
7) Follow the newest methods of supervision of manufacturing to focus on the quality not quantity.
8) To make all company's employees work effectively they have to work in zero environment of fear.
9) Remove all barriers between sections and departments.
10) Remove all work standards which impose numerical quotas.
11) The hourly worker has to be given the right of pride of workmanship.
12) Set a high program of education and training.
13) To achieve numerical goals or new level of productivity the new and modern methods have to be set and provided.
14) "Create a structure in top management that will push on the above points every day."

Dr. Kaoru Ishikawa (1950): he is the setter of "scheme of reason and effect" which is famous in the analytical tools of quality; he was Japanese scientist who presented many ideas in quality of work principles where he confirmed on the importance of workers role in developmental decision making at firm, training of worker to use statistical quality tool to improve their efficiency, and he also confirmed on the importance of customer or satisfaction neither he is final customer

or he is a dependent customer where he depend on that product to get the power of his work or job.

"He considers that the number of suppliers has to be two. Only one supplier can be dangerous." that was in the dimension of supplier relationship also he "emphasises the importance of quality circles." at workforce management dimension. In role of quality department "he emphasises the involvement of all employees in studying and promoting quality control. It has not to be an exclusive domain of specialists. He does not make any specific comment about quality departments". (Martinez-Lorente et.al, 1998: 19)

Joseph M. Juran (1954):

He had a many references in quality and he believed of process and services development to meet customer needs and he is also the setter of "(The Juran trilogy) an approach to cross-functional management, which is composed of three managerial processes: quality planning, quality control and quality improvement. Without change, there will be a constant waste, during change there will be increased costs, but after the improvement, margins will be higher and the increased costs get recouped." (http://en.wikipedia.org, 2012- 2014).

In 1955 in Japan the quality concept appeared at the level of firm (company) wide quality control (C.W.Q.C.) and it is a general concept of quality in all parts and there was quality for the firm and their was not a department or section concerned of this responsibility.

"He considers that for important purchases it is well to use multiple sources of supply" that was in the dimension of supplier relationship. (Martinez-Lorente et.al, 1998: 19)

He considered in the dimension of the employee attitudes and behavior that "motivation does not assure a zero defects production" (Martinez-Lorente et.al, 1998: 19).

Finally in what identified by Juran’s Quality Trilogy which was for managing quality (quality planning, quality control and quality improvement) and his Quality Planning Roadmap.

"Juran identified 8 milestones as integral to a quality planning roadmap:

(http://www.pp-s.com, 2014).

- Determine who are the customers.
- Determine the needs of those customers.
- Develop a product that responds to those needs.
- Optimize the product features to meet your needs as well as customer needs.
- Develop a process that is able to produce the product.
- Optimize the process.
- Prove that the process can produce the product under operating conditions.
- Transfer the process to operations."

Dr. Genichi Taguchi (1960):

He is the owner of "Taguchi lose function". Main article: Taguchi methods.

"Taguchi had made a very influential contribution to industrial statistics. Key elements of his quality philosophy include the following:

(http://en.wikipedia.org, 2014)

1) Taguchi loss function, used to measure financial loss to society resulting from poor quality,
2) The philosophy of off-line quality control, designing products and processes so that they are insensitive ("robust") to parameters outside the design engineer's control; and
3) Innovation in the statistical design of experiments notably the use of an outer array for factors that are uncontrollable in real life, but are systematically varied in the experiment."

Philip B. Crosby (1960):

In the process flow management dimension "he focuses on the need of achievement of zero defects through prevention." (Martinez-Lorente et.al, 1998: 19).

He had believed of approach of the non-defect product by preventing errors or avoiding it not to treat or handle it and the quality cost it is a result of a defective product not of a high quality one. And he is the first scientist carry the thoughts of "zero defects" that it is the performance standard of quality, also he is the writer of "quality is free" which was one of the bestseller books.

In 1962 quality circle consisted of 7 to 12 person of various categories of work team who are working as voluntary such as "workers, engineers, inspectors, sales guys… etc), where they meet weekly to discuss problems and all product

quality related matters; that is for improving the performance and product quality so this concept expanded to USA and western Europe in the beginnings of seventies.

As we mentioned above about "zero defects" American concept which need not to have any defects and here the worker has to be committed with all work standards without discussing and evaluate it and that what Ishkawa "quality circle" 's creator saw, so he considered that this concept will not able to recognize all quality problems.

Armand V. Feigenbaum (1980):

In 1980 TQM concept appeared by Feigenbaum which before was total quality control, Feigenbaum he was affected by Japanese concept of quality and that made responsibly of quality mainly one of production management tasks but another activities which include quality control are secondary responsibility.

The concept of the quality from the source (upstream) and mistakes prevention had been implemented and they applied "zero defect" method instead of discover it, USA hastened to adopt these methods to compete Japanese high quality in industry.

He thought in the dimension of supplier relationship that "the importance of long term relationships and reduction in the number of suppliers is not considered", also in the dimension of workforce management he considered that "Empowerment and teamwork are scarcely considered.", finally at the dimension of role of the quality department "he emphasises the need to have a management function whose only area of operation is in the quality control jobs". "He considers that, although quality is everybody’s job, it may become nobody’s job is this department does not exist." (Martinez-Lorente et.al, 1998: 19).

Malcolm Baldrige (1987):

He is the first scientist used and implemented TQM principles at educational field in his point of view the success of educational foundation depend on beneficiary or recipient satisfaction and sharing worker's opinions for developing, the foundation due to his contributions in this field; American government had done an award carried his name.

John S. Oakland (1990):

This philosophy of Oakland was (is) a good management is the base of quality, where take into consideration customer desires and need at the moment of developmental decisions making; so the interests theories and contributions of quality after another successive which we will mention later in this study as Kaizen and Poka Yoke …etc).

The following diagram summarizes the sequence of quality development during the last century.

Figure 1.1. Contributors in the Improvement of Concept of Quality, (http://www.rajeshtimane.com , 2009)

The following table (1.1.) simply shows how the quality developed to reach its own updated frame.

Table 1.1. quality improvement Translated by me (KARIMA, 2007: 5)

From	To
Make Assure from quality	Plan to quality
Quality is quality management responsibility	Quality is every individual in the organization responsibility
There is not person without mistakes	It must refuse or reject the bad quality immediately
Quality control means checking of the absence of errors	Quality control means the prevention of errors occurrence
Production is the responsible of quality measurement	The customers are the quality evaluators
Quality is a set of policies of the organization	Quality is practicing process of determined goals
Quality it is just technical job	Quality is technical managerial and financial job
Quality is costly activity	The low and rejected quality, it is the only thing which needs high cost
The Q.C. staff is exist at the locations which allow them to correct the defects	The Q.C. locations are exist where they prevent the defects occurrence
The main job for Q.C staff is checking or testing in the different execution stages	Q.C. staff starts its job from the consumers of the product and finishes to them.
The daily activity of quality management is directed to pull or take samples from production and sort or classify them to approved or rejected, and that leads to increase the quality costs	The main daily activity aims to try producing of products which are zero-defects that leads to decrease the quality costs

1.2. PREVIOUS STUDIES

1) Nilson, Johnson, Gustafsson study (2001)

The Impact of Quality Practices on Customer Satisfaction and Business Results: Product versus Service Organizations

This study is about the customer satisfaction's differences among product and service organizations where it has focused on customer's evaluation of performance.

This study also has the research inside the organizations to analyze the modality of essential internal quality practices of product versus service organization effect on customer satisfaction and business results.

In this study they used to make a quality survey with a 482 companies in Sweden as a sample population which divide in two major part which were (360 product and 122 service organizations) with using PLS method, and the proposed

framework included five general area 1) employee management 2) process orientation 3) customer orientation 4) customer satisfaction 5) business results.

The most important contribution for this study was how the framework links quality practices to performance and allows theoretically identifying that both of product and service organizations are similar and different with taking into account the impact of quality practices on customer and business results. The most important contribution for this study was how the framework links quality practices to performance and allows theoretically identifying that both of product and service organizations are similar and different with taking into account the impact of quality practices on customer and business results. "Overall, our results support the notion that customer satisfaction and subsequent profitability is a more chain-like set of events for products." (Nilson et.al, 2001:22). "Our unexpected finding was that customer satisfaction did not have a greater impact on business results for services." (Nilson et.al, 2001:23).

2) Gröndahl, Martinsson Study (2011)

Impact of Organizational Culture on Quality Management

The aim of this study is rising the realizing the relation which joins the quality management practices with organizational culture that is achieved by involving in improvement project in project in production unit in Hilti Group which is a global corporation. The competing values framework has been used as a model and according to this model dimensions the production unit has been evaluated. The strongest influence at the unit was rational culture which is supportive to many of quality management practices and their possibility in different organizational cultures. One of the results when the empowerment between employees increases; the higher performance will be achieved. Then the conclusion of this study was to evaluate organizational cultures by using frameworks and models which were difficult because of cultural concept are complex and multi-layered. Finally in this study the recommendations were for each suggested practice as the following:

- Process management has to put standards for process, develop the work description and to prevent the process from bad quality instead of controlling and correcting.

- Top management support has to take full responsibility for quality to create high quality process to reach the goal, and it has to empower employees to contribute.
- Workforce management has to use group incentives, allow more creativity and a person who is closest to process has to be listened.

3) Abo-Alhol, Ismail, Sapuan, Hamdan, Study (2005)

The Effectiveness of Quality Circle Participation in Industrial and Service Organizations in Malaysia

There is a lot of positive results are given by quality circle proponents when Q.C.'s are used either at manufacturing or service sector and this study determined where Q.C. more effective performance in manufacturing or service sector. While that evaluation contains: technical aspects, length of participation, training, member's feelings about Q.C.s, job satisfaction and job commitment.

This study shows the effects of 109 member participation at Q.C.s from 5 Malaysian companies which are involved in this survey and the results shows that the members from the manufacturing organization are more enthusiastic, more satisfied and committed in job than members who belong to service organizations.

The questionnaire was used answered by 130 out of 300 after one month from the time where it has been sent. The structure of "the questionnaires were designed to examine the level of training received, the purpose of QCs participation, the success contributors, suggestions, communication, leadership, job satisfaction, job commitment and intention to quit." (Abo-Alhol et.al, 2005:26).

And also this questionnaire was divided into 5 parts which are:

Part I: technical aspects of QCs

Part II: QC process

Part III: effectiveness of organization and employee contribution to the QC

Part IV: QC and organization

Part V: background of the respondents.

And the numerical findings which were got; reached to the conclusion which we previously mentioned to that higher positive responses were appeared and found in manufacturing QCs members.

4) Piskar Study (2007)

The Impact of Quality Management System ISO 9000 on Customer Satisfaction of Slovenian Companies

This study is divided into two parts theoretical and empirical where the first part concentrates on literature review and the second part has been done gathering a 212 responses of Slovenian companies already awarded or holders of ISO 9000 quality standard's certificate by 2002.

By posing 8 questions which the questionnaires have been included so the results were according top those questionnaires that the ISO 9000 quality standard's effect on customer satisfaction directly but in contrary of that the business success was not affected directly of ISO 9000, "the direct impact of the standard on business success; i.e. on the increase in the number of new customers, sales and customer profitability and loyalty, cannot be perceived" (Piskar, 2007:59) that what this study concluded, and also it showed many meaningful solution and useful data or information for all whom concerned of quality system and customer satisfaction.

5) Atem, Yella Study (2007)

Continuous Quality Improvement Implementation and Sustainability

The aim of this study to determine the reason of inability of proceeding the improvement and commitment of quality management implementation and to identify the causes of failure in putting the plans to know the pathway of correct implementation.

The study methods were by making personal interviews with the organization's employees and phone calling and the main method was by distributing questionnaires to the service and manufacturing organizations these questionnaires were the most important base for analyzing in this study, specially the responses from four companies which were ABB, Bombardier, SWEDBANK and Deva Mecaneyes. The found impeded reasons for continuous quality improvement implementation and sustainability were as following:

- The management can't identify the problem and the problem and the method of measurement.
- The implementers can't choose the correct parameters for improvement.
- The implementers are not qualified.
- The management doesn't care of improvement programs.

- The losing of data integrity between the team members (bad communication).
- The scare of trying new idea by team members, resistance of change.

Finally the solutions and corrective steps for the previous problems were divided into two phases 1) he selection which includes, defining the program, focus program on improving shareholder's value and choose program base on a holistic perspective, 2) "The implementation phase includes; commitment of top management to plan and execute project, laid emphasis on quality data minimize the number of concurrent projects, encourage risk taking, and spend time and resources on value adding activities." (Atem & Yella, 2007: 2).

6) Hong, Phitayawejwiwat Study (2005)

The Impact of ISO 9000 Certification on Quality Management Practices in Thailand

The aim of this study to determine the ISO 9000 on quality management practices in Thai industry and this study is dependent on two previous studies at the theoretical side and those two studies were Rao et al (1997) and Quazi et at (2002). The statement of problem was that the gathered and collected data or information still not enough and almost inadequate which is related to quality management system and its impact and effects on industry so according to that this study totally depends on that two studies so the main aspects which were conceptualized by Rao and Qazi were leadership, information and analysis, strategic quality planning, human resource development, quality assurance, supplier relationships, customer orientation, and quality results. This study 245 companies participated, 237 manufacturing and 8 service organizations the most of the sample were taken from the largest manufacturing organization according to the finding of this study the ISO 9000 registed companies have more employees than non ISO registed one and also this study grouped the companies to seven categories such as wood product textile… etc. Also this study found the highest quality management practices is at the ISO 9000:2000, then ISO 9000:1994 then non ISO registed companies the conclusion of this study was that the requirements of ISO 9000 standardization made a particular impact on five of the quality management practices but "quality results" is the only aspect of quality that has an-unexpected results, also this study found that the difference between ISO 9000:1994 and ISO 9000:2000 registed companies is very small and that return to ISO 9000:2000 registed companies are new member to ISO

9000:2000 so still there isn't long time for implementation. Finally this study recommends focusing on the perceptions of different levels of employees in the future studies and researches.

7) Qandil Study (2008)

Impact of Total Quality Management System Implementation on the Competitive Policies in Industrial Organizations "Case Study on the Industrial Sector in Gaza Strip"

The aim and purpose of this research to study the effect of TQM system variables implementation as independent variables on the competitive policies which are followed in Palestinian industrial organization as dependent variable in addition to that it identifies the actual status of TQM system in Palestinian industrial organization and to present the applied competitive policies in those organizations. To achieve the purpose of this study a questionnaire has been designed as an empirical study for the variable to examine the study hypothesizes. The study sample were the top management employees in the industrial organization which awarded with ISO 9000 quality standards certificate, Palestinian quality mark (PS) or the supervision mark, where 121 questionnaires were (90.9%).

This study found that those organizations concern a lot of competitive policies and its implementation in inequality levels. Also it presents the statistical relation between all the TQM system variables and competitive policies. Finally this recommended increasing the awareness of TQM dimensions and the necessity of putting the strategic objectives policies and it encourage the organizations to raise its competitive capability to keep pace with the new global economic requirements.

8) Musbeh study (2011-2012)

The Importance of Industrial Zones on Economic Growth within the Gaza Strip: a Case Study of Gaza Industrial Estate

The aim of this study to show the impact of industrial zones on the GDP (Gross domestic product) and also it presents the relation between the qualifications of cities and industrial zones with its areas situation, the number of factories and labors and addition to all of that the surrounded conditions. Also this study aims to give a perception to what this industrial zones management presents for the investors inside these zones at Gaza strip and also the role of this zone's investment to create

new job vacancies. About the study sample it contains (7) companies (3) of them are industrial and the rest are trade companies all of those 7 companies are inside the Gaza industrial city, the method of study was questionnaire filling by the employees of those company, and the results of this study were the given incentives for the investors are low with high rents and operation costs the negative impact of the political instability and the subways trade it is considered one of the worst affective on the industrial zones status inside Gaza. This study shows also that the current government inside the strip did not give any enough finance to export their products of the zone; that leads to make many factories to close and transform to another zones out of Gaza.

It obvious in this study that the companies depends on the raw material, the self finance is the most in proving of capital, also the industrials inside this zone are diverse and the used technologies in the production lines are modern. The recommendations of this study were the incentives has to be increased, to give exemption of taxes decreasing of the rents, to raise the given facilities and services to the projects owners at this zones inside Gaza strip, providing programs to attract local and foreign investors, try to treat the situation of Palestinian division, close the subways between Gaza and Egypt, and helping the factories to export their products.

9) Gaffiney Study (2005)

Jordan's Qualified Industrial Zones: A Qualified Success?

This study take the Jordanian experience an example for the industrial zone and focus on the strength and weakness points and what were the results of its establishment.

Mainly QIZs' establishment was to raise and refresh the economic situation in Jordan specially after Gulf countries specially Kuwait to Jordan cause of Jordan government support to Saddam Husain against to Kuwait so with the increase of the unemployed persons in Jordan the idea of establish qualified industrial zone (QIZs) in Jordan which is an agreement between three countries Jordan USA and Israel that was in 1995.

In this study used the direct interviews with the contact persons to collect the data also by return to the government statistics.

This study focused the light on how the approvals of the shipment of produced goods from QIZs which will be sent to USA were taking a lot of time to be

prepared by QIZs division in Jordanian industrial and trade ministry, overtime, these approvals about an hour are finished.

Also shows that the Jordanian industries developed with a high quality especially textiles and garment and the foreign investment capitals are attached by these zones but also there were some obstacles which obstruct the development of QIZs.

Finally, the researcher put the conclusions that all the projects do not always gain all of its objectives and some times it start to gain them, overtime some novelties appear to the field so it impedes the process of development; so many of QIZs lose their economic importance then in the year of 2004 it return to it first importance and the Jordanians themselves are started their own investments but the peace process between Jordan and Israel will be the catalyst for the true normalization cause the peace process is frozen for 10 years.

10) BARIN Study (2009)

Industrial Firm Relocation: The Case of Gebze Organized Industrial Zone.

This study focus on the factors of relocation process of industrial activities from Istanbul to Gebze city and those factors include law cost labor to push the economic movement in Istanbul surrounding; so this study implement "in Gebze organized industrial zone (GOIZ) that is because 1/100.000 scale environment management plan of Istanbul has determined GOIZ as the potential where the firms can relocate" (Barin, 2009: iv).

This study covered 37 firms which are relocated from Istanbul so the results showed that the transport, site and buildings the most important factors which are push the firms to relocate from Istanbul to the GOIZ.

11) RABAYA Study (2013)

Status and Challenges of Total Quality Management Application in Selected Palestinian Chemical Industries

This study aimed to evaluate the actual status of chemical industrial in Palestine especially in the (pharmaceutical, food and detergents industries) furthermore, to identify the obstacles and changes which face the implementation of TQM in the Palestinian industrial firms.

The study population is contained of Palestinian industrial factories of pharmaceutical, food and detergents manufacturers.

The study sample includes 40 companies which are randomly chosen and the data are collected by questionnaire to study the variables and test the hypothesis of study.

The study reaches to number of important results, one of them that there is a clear interest and concern by the industrial firms of study sample to implement the TQM system and the most field in TQM implementation is sustainable improvement then statistical tool utilization and feedback then the lowest concern of implementation is for employees involving and development.

The study conclusion is the importance of the TQM philosophy implementation by the companies which has not implemented this philosophy yet.

Finally the study recommends focusing on the sustainable development by continuous training for employees; to improve their skills, also listen to their opinions and take in on the account.

To achieve the maximum benefit of workforce, also it recommends giving enough concern for using the statistical methods and quality control tools because it helps to determine and analysis the quality problems.

12) Yacoub Study (2007)

The Impact of Using Total Quality Standards the Effectiveness of Industrial Costs System

This study aims to examine the role of TQM standards on the industrial cost system efficiency where the following and commitment of TQM standards leads to decrease the industrial costs in the firms that occurs by avoiding of negative deviation occurrence with the correct implementation of TQM. According to the previous the firms will be stable and available in the current market with a probability to open or enter new markets whether they are local or global.

The problem of study is the not involving of the workers in setting of the actual standards to improve the firm's performance and that leads to reduce the serious and desire of the workers to be totally involved or committed and that makes them feel that this is not their responsibility it is the top management's this situation happens because the workers do not recognize the TQM objectives which are looking for achieving of all employees and whole firm's goals.

Also this study reveals the importance of TQM implementation in industrial firm development.

The used methods in this study to get the correct results are the inductive and deductive approaches, where 50 questionnaires are distributed and collected from the workers in the industrial firms at Sudan.

The hypotheses of this study are:

1) There is a positive relationship between the high quality and good priced products and the firm's goals with its customers.
2) There is a positive relationship between ISO certificate awarding and TQM implementation and staying in the current markets and opening new gates.
3) The good implementation and using of TQM standards good practices at the firms lead to the required quality.
4) There is a positive relationship between concern of using the standards of TQM and development of the industrial cost system efficiency.

Where the results were as the following:

1) That TQM provides the best products with good price that because of good practices in production unit from the moment or stage for the product.
2) The success in the markets depends on firm how it can decrease the typical product cycle for the desired goals.
3) It is not necessary that customers will desire product with a good quality certificate, they are looking for the quality of the product not to its certificate so the firm has to have a sustainable development system.
4) TQM standards lead to reduce the industrial costs.

Finally this study tenders some recommendations which were:

1) The necessary of joining the product's quality with its cost.
2) The quality culture has to be utilized and raise the workers awareness of TQM.
3) The modern measurement tools have to be used in quality control.
4) It is important and useful to put actual standards for the firm's performance which are derived from the firm's conditions and environment.

13) Abu Nawwas Study (2012)

Impact of TQM Application on Employees Performance

Application Study on chemical Industrial Public Company Abi kmash-Libya

This study aims to identify the impact of implementation of TQM system at employees' performance at the general company for chemical industries at Abu kmash and that is by analyzing the relationship between the familiarity degree of TQM and employees' performance, and the degree of personal commitment in TQM implementing with the employees' performance finally it analyzes the role of top management in TQM implementing efficiency.

To achieve the study goals the researcher designed a questionnaire aims to study all variable of study to examine the study hypotheses by choosing 94 persons who present more than 10% of the total workers in the company.

The study hypotheses are there is a relationships with statistical significant

1) Between the familiarity of workers of TQM system and their performance.
2) Between the degree of TQM system implementation efficiency and workers' performance.
3) Between the degree of workers' commitment of TQM implementation and workers' performance.
4) Between the supporting of top management to implement the TQM system and the degree of TQM implementing efficiency.

The study reached to the results that there is a high awareness in the workers of the company with TQM, and the advantage of concern of TQM implementation leads to concern of training operation and sustainable education, and the obstacles in implementation of TQM system is the absence of incentives system to push the TQM implementation process; so the study recommends to update the management with TQM system and to follow the incentive system to push the workers to implement and to commit with TQM system.

14) AL-arage Study (2010)

The Implementation of International Standard OHSAS 18000 in Jordanian Human Drugs Industrial Companies and their Impact on Human Resource Performance

This study aims to discover the impact of OHSAS 18000 implementation on human resources performance.

To achieve the study objectives the researcher designed a questionnaire included 39 questions to collect basic information from the study sample and analyze them and that is by using SPSS program the sample of study contains of 296 individual who are working at quality sections.

The importance of this study depends on the newness of OHSAS 18000 which is still new implemented at the developing countries; so the study gives this new specification an attention by making an empirical study to show one of this specification sides and focusing on it.

Finally after data analysis and hypotheses examination the results were; the analysis reveals that the implementation level of health policies and occupational safety in Jordanian pharmacopeia manufacturing companies is high and the same of implementation level of OHSAS 18000 in the planning, operating, testing and correction acting, over viewing and sustainable improvement.

There is and impact of OHSAS 18000 implementation on human resources performance.

15) Karima Study (2006/2007)

The Methods of Improvement of the Industrial Product Quality and their Effect in Reducing of Costs: Case Study National Foundation for Juice and Beverages Sijico Jamal Ramadan Unit

This thesis studies the relationship between the quality improvement and reducing cost and that what led to make the researcher to put the main question, what is the relationship between the cost and quality improvement?

And this relationship is indirect relationship so the sub question has to be put which are:

1) The absence of quality cost can be evaluated.
2) How the quality can be improved?
3) How the quality improvement impact on reducing the cost?

Then the hypotheses are:

1) The quality level in firm can be noticed.
2) Quality improvement leads to reduce the cost of absence of quality.
3) The quality improvement is the joint between the high quality product and low cost.

The reasons of this study are:

1) The increasing in the competition at the international markets.
2) The traditional idea which says that the quality improvement contributes in raising of the cost, so to refute this idea this study was done.
3) The role of quality in decreasing the profitability, competitiveness and improve the internal environment of the firm.

The main objective of this study is identifying the relationship between quality and cost which are the main variables of the competition, and to know the tool of quality improvement.

Two resources are used for collecting data the theoretical side by references, books, articles, magazines and internet with the empirical side by distributing a questionnaire and personal interviews, then this study results were:

1) The quality level must be noticed cause of high level of the cost of quality absence evaluation.
2) The quality improvement leads to reduce the cost of quality absence (or lack of quality).
3) The quality sustainable improvement will produce a high quality and low cost (priced) products.

Ad finally this study recommended to:

1) The quality must be concerned.
2) It has to be stopped at the quality level.
3) The firm has to give the human resources more attention and raise the incentive system and motivation methods.
4) Using scientific methods and tools at quality control.
5) Give the customers more attention by studying their need and desires which are always changeable.
6) The firm must concern of maintenance.
7) The firm must give the control tools more attention and it must train and make expert employees to be able to use these tools.

8) Relook for the cost of lose and the additional cost which sometimes returns to lack of quality.
9) An organizational culture must be built to be a base for raise the quality culture between the employees in the unit.

16) Paksoy, Paksoy, Marangoz Study (2010)

TQM Perception in Turkey: A Comparison of Industries

This study aims to examine the TQM perception in the southern of the Anatolia project (GAP) region and to find the relation between educational level, experience, gender and TQM perceptions.

The (GAP) is a developing Area so the researchers wants to determine the business perceiving the TQM, and how it is implemented and the according to the differences between the business and industries and the results shows, that iron-steel industry is the most optimistic type of industries but in the opposite the textile is pessimistic.

The limitations of this study the small and mid-sized enterprises (SMEs) and population in (SMEs) at (GAP).

The method of this study is by filling questionnaire which is sent randomly to (GAP)'s (SME) the cities of (GAP) are Kilis, Adiyaman, Gaziantep, Batman, Diyarbakir, Mardin, Siirt, Sanliurfa and Sirnak of those 2000 questionnaires, the returned 1396 which are rated 70%.

SECOND CHAPTER

GENERAL CONCEPTS

2.1. ESSENTIAL CONCEPTS OF QUALITY

2.1.1. What is Quality?

Quality Definitions:

- "Quality in business, engineering and manufacturing has pragmatic interpretation as non-inferiority or superiority of something; it is also defined as fitness for purpose." (www.en.wikipedia.org, 2014)
- "Quality in manufacturing, a measure of excellence or state of being free from defects, deficiencies and significant variations.

  It is brought about by strict and consistent commitment to certain standards that achieve uniformity of a product in order to satisfy specific customer of user requirements." (http://www.businessdictionary.com, 2014).
- "Quality: a subjective term for which each person or sector has its own definition. In technical usage, quality can have two meaning: 1. the characteristics of a product or service that bear on its ability to satisfy stated or implied needs; 2. a product or service free deficiencies. According to Joseph Juran: quality means "fitness for use", according to Philip Crosby it means "conformance to requirements" (http://asq.org, 2014) "According to Christian Meria quality means "the ability of product to meet customer's requirements with lowest cost" -translated by me from- (Mutwalli, w. date: 4).
- "Quality: product attains even exceeds consumer's expectation, the ability of product to live up its job needed, product has to meet the subjected specifications which are put during design stage and the level of requirements interpolation which is expected by service customer." –Translated by me from- (Quality Dictionary and Accreditation, Center of Quality Assurance, Alexandria university, w. date: 17).

Quality in my opinion according to above: to get the best in every thing.

"There are five aspects of quality in business context:
(http://en.wikipedia.org, 2014)

1) Producing: providing something.
2) Checking: confirming that something has been done correctly.
3) Quality control: controlling a process to ensure that the outcomes are predictable.
4) Quality management: directing an organization so that it optimizes its performance through analysis and improvement.
5) Quality assurance: obtaining confidence that a product or service will be satisfactory. (Normally performed by a purchaser)"

2.1.2. 8 Principles of Quality Management

"Quality management principles are the fundamental truth or laws that from the basis of quality management." (http://transition-support.com, 2014).

- "Quality management principles:

A quality management principle is a comprehensive and fundamental rule or belief, for leading and operating an organization, aimed at continually improving performance over the long term by focusing on customers while addressing the needs of all other stakeholders." (http://www.microwavecomponentsinc.com, 2014).

1) Customer-Focused Organization

"Organizations depend on their customers and there should understand current and future customer needs, meet customer requirements and strive to exceed customer expectations." (http://www.microwavecomponentsinc.com, 2014).

"Management should understand (and anticipate) the customer's needs and requirements, and strive to exceed customer expectations in meeting them." (http://www.businessdictionary.com, 2014).

"Consistent customer focus is the single most essential factor of every business success. Being "best in class" means predicting and exceeding customer expectation. The whole company organization needs to be aligned accordingly." (https://de.dqs-ul.com, 2014).

Customers focus according to previous definitions is any organization has to care of, understand, and exceed all customer's requirements, desires and expectations.

2) Leadership

"Leaders establish unity of purpose and direction of the organization. They should create and maintain the internal environment in which people can become fully involved in achieving the organization's objectives."
(http://www.microwavecomponentsinc.com, 2014).

"Management should establish unity of purpose and direction, and create and maintain an environment in which everyone can participate in achieving the organization's objectives." (http://www.businessdictionary.com, 2014).

"The degree to which the purpose, focus and internal environment of an organization fit together is a question of leadership. Managers create the internal environment in which people develop their skills and apply them for the benefit entire organization. Important tools to achieve this are management by example the consideration of involved stakeholders inside and outside the organization and the development of a clear vision of the organization's future." (https://de.dqs-ul.com, 2014).

Leadership is how to be premier to attract all the surrounding to achieve the planed aim and to keep this success continuous to get the maximum effective participation of people in the same environment.

3) Involvement of People

"People at all levels are the essence of an organization and their full involvement enables their abilities to be used for the organization's benefit."
(http://www.microwavecomponentsinc.com, 2014).

"Involvement of people: management should involve all people at all levels so that they willingly contribute their abilities in achieving the organization's goals."
(http://www.businessdictionary.com, 2014).

"Every organization is only as good as its employees. To allow them to apply their abilities and release their potential, it is necessary to involve them in the decision-making process. Doing that requires promoting commitment and problem-solving skills on all levels and to encourage the employees to take the initiative in seeking opportunities for improvement." (https://de.dqs-ul.com, 2014).

Every thing has a essence and base, the same in any organization; employees are that essence so when they share all of their own energy and their full feeling of

affiliation towards the organization; so that makes them want to recruit all of their abilities, experiences and energies for the benefit of the organization to solve organization problem and improve the whole of this organization.

4) Process Approach

"A desired result is achieved more efficiently when related resources and activities are managed as a process." (http://www.microwavecomponentsinc.com, 2014).

"Management should recognize that the objective is achieved more efficiently when activities and associated resources are managed together as a process." (http://www.businessdictionary.com, 2014).

"Results can be achieved more efficiently if necessary activities and resources are bundled and managed as a process. For this purpose, individual process steps need to be defined, inputs and outputs determined and the interfaces with the organization's function identified. Finally, in order to ensure the smooth running of organizational processes, possible error causes need to be identified and responsibilities determined." (https://de.dqs-ul.com, 2014)

By looking to all above definitions, the process approach is to manage all related activities as one process; so that is by determining the required activities, measuring inputs and outputs, risk evaluating determining of responsibilities and to design the process according to procedures, activities, sequences, quality standards, training, equipment, methods data and materials to achieve the desired result.

5) System Approach to Management

"Identifying, understanding and managing a system of interrelated process for a given objective improve the organization's effectiveness and efficiency." (http://www.microwavecomponentsinc.com, 2014).

"Management should recognize that indentifying and understanding interrelated processes and managing them as a system, is more efficient and effective in achieving the organization's objectives." (http://www.businessdictionary.com, 2014).

"Each organization is a complex entity; that is why it is important to identify, manage and understand individual processes and their interactions within the

organizational workflow. This is the only way for organizations to establish objectives effectively and efficiently." (https://de.dqs-ul.com, 2014).

According to the previous definitions system approach to management can be as determining and understanding management of related processes as a one system that leads to improve the effectiveness and efficiency of organization and reaches organization's goals.

6) Continual Improvement

"Continual improvement should be a permanent objective of the organization." (http://www.microwavecomponentsinc.com, 2014).

"Management should aim at steady, incremental improvement in the organization's overall performance as a permanent objective." (http://www.businessdictionary.com, 2014).

"If you cause to improve, you cease to be good". Behind this simple statement lies the realization that competence and quality are not static, but dynamic values; that applies to organizations as well as to the people working there. That is why it is important for the success of organization that continuous improvement of products and systems becomes the ultimate goal of each employee." (https://de.dqs-ul.com, 2014).

The most important aim goal or objective of any organization has to be continual improvement; and that comes by making it the goal for individuals in organization and implementing all essential concepts of improvement.

7) Factual Approach to Decision Making

"Effective decisions are based on the analysis of data and information." (http://www.microwavecomponentsinc.com, 2014).

"Management should base its decisions solely on the analysis of data and information." (http://www.businessdictionary.com, 2014).

"Efficient decisions are base on the analysis of data and information. Appropriate decisions, based on experience and entrepreneurial intuition, can only be reached when these data and information are reviewed and verified continuously." (https://de.dqs-ul.com, 2014).

Otherwise to get an effective decision and correct one it is completely based on data analysis and that occurs with taking all measurements, collect information

and data with correct methods and procedures, recognize the importance of using statistical techniques, experience and intuition.

8) Mutually Beneficial Supplier Relationships

"An organization and its suppliers are interdependent, and mutually beneficial relationship enhances the ability of both to create value."
(http://www.microwavecomponentsinc.com, 2014).

"Management should enhance the interdependent relationship with its suppliers for mutual benefit and in creation of value."
(http://www.businessdictionary.com, 2014).

"All thing are interdependent, organizations particularly depend on way for both parties to make the maximum contribution to the creation of mutual value. Indispensable to that end is transparent communication, agreement on common goal while taking account of the customer's interests, and cooperation in the development and improvement of products." (https://de.dqs-ul.com, 2014).

Organization and supplier depend on each other there is a mutual relationship between them which is based on their interest to enhance and increase it for both of them add to that the community.

2.1.3. Concepts and Definitions in Quality Management

2.1.3.1. Quality Control (Q.C.)

"Quality Control (QC) is a system of routine technical activities, to measure and control the quality of the inventory as it is being developed. The QC system is designed to:

(http://www.ipcc-nggip.iges.or.jp, 2014).

(i) Provide routine and consistent checks to ensure data integrity, correctness, and completeness;

(ii) Identify and address errors and omissions;

(iii) Document and archive inventory material and record all QC activities.

QC activities include general methods such as accuracy checks on data acquisition and calculations and the use of approved standardised procedures for emission calculations, measurements, estimating uncertainties, archiving information and reporting. Higher tier QC activities include technical reviews of source categories, activity and emission factor data, and methods."

"An aspect of the quality assurance process that consists of activities employed in detection and measurement of the variability in the characteristics of output attributable to the production system, and includes corrective responses." (http://www.businessdictionary.com, 2014).

"A process that is used to ensure a certain level of quality in product of service, it might include whatever actions a business deems necessary to provide for the control and verification of certain characteristics of a product or service." (http://www.wisegeek.org, 2014).

"All processes can be monitored and brought "under control" by gathering and using data. This refers to measurements of performance of process and the feedback required for corrective action, where necessary. Once we have established that our process is "in control" and capable of meeting the requirements, we can address the next question: "are we doing the job correctly?" which brings a requirement to monitor the process and the controls on it." (Oakland, 2003:7).

According to the above definition Q.C. can be defined as a system or set of actions to produce a product or service meets customer's requirements, enhance the quality of products and find the problem causes to decrease or vanish it.

Quality Control cannot be separated of other section or firm's departments so the departments which are in a close relationship with Q.C. department are as following: Trans. by me (BUCAK, 2011: 27)

"

- Marketing, market research and sales.
- Product design and development engineering.
- Production (engineer, supervisor and workers).
- Laboratory and research units.
- Packing and shipping.
- Repair and maintenance.
- Customer service.
- Top management."

Important terminologies of quality controls:

1) statistical quality control (SQC)
2) Total quality control (TQC)
3) Statistical process control (SPC)

4) Company wide quality control (CWQC)
5) Total quality Management (TQM)
6) Six sigma (6σ)

1) Statistical Quality Control (SQC)

"Taken together, and applied a manufacturing operation, the words statistical quality control mean this statistical with the help of numbers, or data, quality we study the characteristics of our process, control in order to make it behave the way we want it to behave" (Western Electric Co. INC, 1956: 3).

1) "A method of monitoring, controlling, and improving a process through statistical analysis. Its four basic steps include: (http://reliabilityweb.com, 2014).
2) Measuring the process.
3) Eliminating variances in process to make it consistent.
4) Monitoring the process.
5) Improving the process to its best target value."

"A production strategy designed to ensure product quality that provides inspectors with tools to help organize technical and statistical data obtained during inspection." (http://www.toolingu.com, 2014).

So from above (SQC) depends on analysis of tests results for quality characteristics with using statistics and this method one of important methods in quality control for industrial products.

2) Total Quality Control (TQC)

"Feigenbaum presented quality in holistic perspective. According to him, quality must encompass all the phases in the manufacturing of product. This includes design, manufacturing, quality checks, sales, after-sales services, and customer satisfaction when the product is delivered to the customer. Given that these factors controls to control the above-mentioned phases.

- New-design control
- Incoming material control
- Product control
- Special process studies

Since these controls affect the quality of the product, they must be used to influence the quality of the product." (Ten step supplemental paper, 2004: 2)

"Application of quality management principles to all areas of business from design to delivery instead of confining them only to production activities. Popularized by the US quality pioneer Armand Val Feigenbaum (1920-1951) in his book "Total quality control". (http://www.businessdictionary.com, 2014).

"Total quality control is an effective system for integrating the quality development, quality maintenance, and quality improvement efforts of the various groups in an organization so as to enable production and service at the most economical levels which allow full customer satisfaction." (KIM-SOON, 2012: 4)

TQC can be defined as an overall control for whole operation otherwise to control any operation from A to Z from design stage to final product stage.

3) Statistical Process Control (SPC)

"A statistical tool that involves inspecting a random sample of the output from a process and deciding whether the process is producing product with characteristics that fall within a predetermined range." (www.wiley.com, 2014).

"The goal of statistical process control is to make a process stable over time and then keep it stable unless planned changes are made." (http://www2.uncp.edu, 2014).

"Application of statistical methods and procedures (such as control charts) to analyze the inherent variability of a process or its outputs to achieve and maintain a state of statistical control, and to improve the process capability" (http://www.businessdictionary.com, 2014).

It is used method in supervision, controlling and improving processes by remove any resource of defects during the process and the charts for the processes help to discover the point of defect or mistake to treat or remove it.

4) Company Wide Quality Control (C.W.Q.C)

"Japanese-style total quality control (TQC) is different than traditional U.S. TQC, and there are Japanese managers have coined the phrase "company-wide quality control" (CWQC) to distinguish this difference. The Japanese use TQC to refer to a narrower concept, Kaoru Ishikawa defines TQC as the "system for integrating quality technologies into various functional departments (i.e.,

engineering, production, sales, and service) to achieve customer satisfaction." By contrast. Ishikawa defines CWQC as a means to "provide good and low cost products, dividing the benefit among consumers, employers, and stockholders while improving the quality of people's lives". (Sullivan, 1986:77)

From the reference which title is the 7 stages in CWQC it will be mentioned to these 7 stages as following stage "1 inspection after production (product oriented), stage 2 quality control during production (process oriented), stage 3 quality assurance involving all departments (system oriented), stage 4 education and training (humanistic aspect of quality), stage 5 product and process design optimization for more robust function (society oriented) stage 6 the Taguchi loss function (cost oriented). Stage 7 quality function deployment to define the "voice of the customer" in operational terms (customer oriented)." (Sullivan, 1986:78-83)

"The CWQC philosophy is characterized by customer orientation, cross functional management and process rather product orientation. It refers to quality of management and the quality of work being done" (Shahin, w. date: 2).

"CWQC strategy or total quality control strategy "involve the whole company-every division and every worker at every level-and requires the integration of such formerly independent functions as raw material purchasing, work procedure analysis, work procedure management and inspection" (Macedo & Usano, 1992: 385) (http://www.systemdynamics.org)

5) Total Quality Management (TQM)

"Management centered on quality and based on the participation of everybody which aims at the customer satisfaction and at the improvement of the company's personnel, of the company and of the society." (Prod 2100-2110, total quality management, w. date: 4)

"Total quality management (TQM) an integrated effort designed to improve quality performance at every level of the organization." (www.wiley.com, 2014).

"TQM is the way of managing for the future, and if far wider in its application than just assuring product or service quality- it is a way of managing people and business processes to ensure complete customer satisfaction of every stage, internally and externally, TQM combined with effective leadership, results in an organization doing the right things right, first time" (www.dti.gov.uk, 2014).

From all above and previous knowledge we will say TQM is a method of management focus on quality achievement continuously, in all of production stages and ensures of improvement of quality and performance.

6) Six Sigma (6σ)

"Six sigma is a business management-strategy which seeks to improve the quality of process outputs by identifying and removing the causes of defects and minimizing variability in manufacturing and business processes. A six sigma process is one in which 99.99966% of the products manufactured are statically expected to be free of defects" (Aized, 2012: 9)

"Six sigma is a management method, can be used in every processes of the company. Main goal of this method is, to reduce all costs of every process in the company and create processes with more quality, less defect. Technical goal of six sigma is to reach 3.4 defects per million ratio in a process." (Akgüneş, 2003: 11).

"In statistical terms, the purpose of six sigma is to reduce process variation so that virtually all the products or services provided meet or exceed customer expectations. This is defined as being only 3.4 defects per million occurrences. Six sigma was developed be Motorola in the 1980s but has its roots in statistical" (http://www.businessballs.com, 2014).

Six sigma can be defined as the ability of manufacturing to produce a high ratio of outputs with determined specification, and aims to improve the process to not to get defects more than 3.4 defect per million probability of defects occurring.

Quality Circles (Q.C.):

"Quality circle is a small group of 6 to 12 employee doing similar work who voluntarily meets together on a regular basis to identify improvements in their respective works areas." (Welekar & Kulkarni, 2013:814.).

"A quality circle is a small group of employees from a common work area who get together regularly to indentify and generate solutions for problems which the encounter in their work situations." (Mohrman & LawlerIII, w. date: 4).

"QCs are small groups of volunteers from the same work areas who meet regularly to identify, analyze, and solve quality and related problems in their area of responsibility." (Abo-Alhol et.al, 2006: 970).

"Quality circles/ quality control circles/ participative work improvement circles, etc. are all names for a participative management technique that involves the workers in the solving of work related problems." (Ellis, 1982: 44)

According to the previous definitions, quality circles are small groups of employees are managed and supervised by a supervisor or team leader and he train them to be able to solve problems and find solution for problems, how to work as a team and to use the proper methods to solve problems such as statistical methods.

Five s (5S):

"The "5S" practice is a well recognized methodology used to improve the work environment. Once used primarily by the Japanese, this concept is quickly gaining popularity in many western countries. It has evolved into a formal technique that is useful not only for improving the physical environment, but also for improving total quality management (TQM) processes," (TenSteps supplemental paper, 2003: 1).

"The 5S method begins each program of improvement. It is the tool for helping the analysis of processes running on the workplace. The 5S is the methodology of creation and maintaining well organized, clean, high effective and high quality workplace." (Michlska & Szewieczek, 2007: 211).

"The philosophy of the 5S has its roots in Japan. Name 5S is the acronym of five Japanese words of the following meanings: (Michlska & Szewieczek, 2007: 211).

- Seiri (sort)
- Seiso (shine)
- Seiketsu (standardize)
- Shitsuke (sustain)."

"An organizational methodology originating in Japan that, when implemented, reduces the waste of recourses and space while increasing operational efficiency. The 5S elements, translated into English, are sort, set in order, shine, standardize and sustain and are applied in some companies' efforts to achieve "lean manufacturing". (www.businessdictionary.com, 2014).

According to the above definitions, 5S can be described as a starting point and a successful change key for any improvement in the worksite or workplace, and it is a simple method explain how to create and establish clean workplace which non of chaos and organized very well; where finding thing easily and quickly without lag

or lateness. And the creator of this method is the Japanese engineer "Hiroyuki Hirano" who was an expert at Toyota Company in 1995 he create this method which based on a simple idea which says "good production system is create safe and clean workplace or work environment".

Poka Yoke:

"Japanese approach to "mistake proofing" in all aspects of manufacturing, customer service, procurement, etc. it employs visual signals that make mistakes clearly stand out from the rest, or devices that stop an assembly line or process if a part or step is missed. Its older name is baka yoke (fool proofing)." (www.businessdictionary.com, 2014).

"Poka-Yoka (poh-kah yoh-keh) was coined in Japan during the 1960s by Shigeo Shingo who was one of the industrial engineers at Toyota. Shigeo Shingo is also credited with creating and formalizing zero quality control (Poka-Yoke techniques to correct possible defects source inspection to prevent defects equals zero quality control)." (http://thequalityportal.com, 2014).

"Poka Yoke is quality management concept developed by Matsushita manufacturing engineer named Shigeo Shingo to prevent human errors from occurring in the production line. Poka Yoke (pronounced "Poh-kah Yoh-kay" come from two Japanese words "Yokeru" which means "to avoid" and "poka" which means "inadvertent errors". Thus, Poka Yoke more or less translates to "avoiding inadvertent errors" (www.siliconfareast.com, 2014)

According to the previous knowledge, Poka Yoke means prevention of production from the inadvertent errors and to avoid defects, in case of defect's occurring the Poka Yoke techniques help to discover it and correct it. Poka Yoke aims to get zero defects in final products, that happens by good design of process or find method, procedure of techniques to avoid any mistakes or discover it and that is coming by directing the worker's attention to that mistake to let him determines the cause of it and correct it before being product's defect.

Kaizen:

"Kaizen is a Japanese term meaning "change for better" the concept of Kaizen encompasses a wide range of ideas : it involves making the work environment more efficient and effective by creating a term atmosphere, improving everyday

procedures, ensuring employee satisfaction and making a job more fulfilling, less tiring and safer." (www.investopedia.com, 2014).

"Kai-zen (Kahy-zen) noun 1. A business philosophy or system that is a basis, as to improve productivity. 2. An approach to one's personal or social life that focuses on continuous improvement." (http://dictionary.reference.com, 2014).

"Kaizen is a system that involves every employee- from upper management to cleaning crew. Everyone is encouraged to come up with small improvement suggestions on a regular basis. This is not a once a month or once a year activity" (Ahmad Khan, 2011: 178)

Kaizen it is a Japanese concept means change to better and that leads to say that Kaizen indicate to incremental continual improvement at all organization's sides not only at production process or stages and all the work team has to involve at this process; from all levels of organization that means from highest management to lowest level of organization. Kaizen aims to reduce waste or lose of resources and also to raise the productivity.

Benchmarking:

"Benchmarking is a process of improving performance by continuously indentifying, understanding, and adapting outstanding practices and processes found inside and outside an organization (company, public, organization, university, college, etc.)" (Kelessidis, 2000: 2)

"Benchmarking of business processes is usually done with top performing companies in other industry sectors. This is feasible because many business processes are essentially the same from sector to sector." (Kelessidis, 2000: 2)

"There are four basic types of benchmarking:

- Internal- a comparison on internal operations and processes
- Competitive-specific competitor to competitor comparisons for a product or function
- Functional-comparisons of similar functions within the same board industry. Or to industry leaders
-Generic-comparisons of business processes or functions that are very similar, irrelevant of the industry." (www.businessball.com, 2014).

"Benchmarking standards, or a set of standards, used as a point of reference for evaluating performance or level of quality, Benchmarks may be drawn from a

firm's own experience from the experience of other firms in the industry, or from legal requirements such as environmental regulations."
(www.businessdictionary.com, 2014).

Benchmarking can be defined as a continuously competitive processes for company performance with a pioneer or best company in the same class or type, and that for knowing how the company achieves high level of performance, use data to set the objectives and improve develop the processes; that is to achieve the superior performance.

Quality Objective:

"Specified level of quality, that must be by a product to be deemed acceptable." (www.businessdictionary.com, 2014).

"A quality objective is a quality oriented goal. A quality objective is some thing you aim for or try to achieve. Quality objectives are generally based on derived from an organizations quality policy and must be consistent with it. They are usually formulated at all relevant levels within the organization and for all relevant functions." (www.praxiom.com, 2014).

Quality objective is a result that the organization seeks to achieve it toward the quality in determined time and it an actual implementation of the vision and organization policy toward the quality.

Quality Measure:

"Quantitative measure of the effect a rule (or the result of a rule) that assigns numeric values to a specific quality indicators. The essential distinction between quality indicators and quality measures is that quality measures take on numeric values, while quality indictors refer only to unquantified attributes of care related to quality." (Shanghnessy, Hittle, 2002: 11)

Quality measures can be defined as a helping methods and tools to measure or quantify manufacturing processes, final product, employee's performance and status, firm system and all related measurable data to gain a highest level of quality of process.

Quality Conformance:

"Level of effectiveness of the design and production function in effecting the product manufacturing requirements and process specifications, while meeting process control limits, product tolerances, and production targets." (www.businessdictionary.com, 2014).

"Quality conformance is the level of quality of product produced and delivered through the production or service process of the organization as meeting the specified quality or the ability to hold to the specified quality of design. It is the level of effectiveness of design and production meeting specifications." (www.ask.com, 2014).

From the above, quality conformance is the level of quality of the all of product; production, system, processes, and all work stages meeting the manufacturing specifications and requirements and in some ways meeting also the customer's satisfaction.

Process:

"Sequence of interdependent and linked procedures which, at every stage, consume one or more resources (employee time, energy, machines, money) to convert inputs (data, material, parts, etc.) into outputs. These outputs then serve as inputs for the next stage until a known goal or end result is reached."
(www.businessdictionary.com, 2014).

"A process is a set of activities that are interrelated or that interact with one another. Processes use resources to transform inputs into outputs. Processes are interconnected because the output from one process becomes the input for another process. In the effect, processes are "glued" together by means of such input output relationships." (www.praxiom.com, 2014).

Briefly, process can be defined, a set or group of related and interactive activities which transfers the product from form or shape to another.

Procedure:

"A fixed, step-by step sequence of activities or course of action (with define start and end point) that must be followed in the same order to correctly perform a task." (www.businessdictionary.com, 2014).

"A procedure is a way of carrying out a process or activity. According to ISO 9000 procedures. May or may not de documented. However, in most cases, ISO 9001 expects you to document your procedures." (www.praxion.com, 2014).

In other hands procedure is a group of necessary activities to achieve a specified job and those processes divided in consecutive stages.

Method:

"An established, habitual, logical, or prescribed practice or systematic process of achieving certain ends with accuracy and efficiency, usually in an ordered sequence of fixed steps." (www.businessdictionary.com, 2014)

"A procedure, technique, or way of doing something, especially in according with a definite plan." (http://dictionary.reference.com, 2014).

According to the above definitions, method can be defined as a technique to do something in required way and it is based on a fixed instructions to get the desired results.

SOP, Standard Operating Procedure:

"Written procedure prescribed for repetitive use as a practice, in accordance with greed upon specifications aimed at obtaining a desired outcome." (www.businessdictionary.com, 2014).

"An SOP is a procedure to your operation that describes the activities necessary to complete tasks in accordance with industry regulations. Provincial laws or even just your own standards for running you business." (http://www.brampton.ca, 2014).

SOP it can be defined as a written steps of instructions for the correct method of procedures so it helps to achieve the exact work in direct way and in shortest period of time without any risk or with the minimum risk in the worst case it is supposed to be followed by the all of worker and employees.

Quality Manual:

"An official document produced by business that details how its quality management system operates. A typical quality manual will include the company's quality policy and goals, as well as a detailed description of its quality control system that might include staff roles and relationships, procedures, system and other

resources that relate to producing high quality goods or services." (www.businessdictionary.com, 2014).

"Quality manual a key document of QMS that outlines all existing practices and describes the interaction between processes, all of which affect the QMS." (www.tooling.com, 2014).

In another sentences Q.M. it is a document in the organization and it identifies to the official authorities and agents the organization system and all methods and used tools for getting the required level of quality.

Production:

"Production is a process of transforming (converting) inputs (raw materials) into outputs (finished goods). So, production means the creation of goods and services. It is done to satisfy human wants. Thus, production is a process of transformation." (http://kalyan-city.blogspot.com, 2012- 2014).

"As Per Carl Heyel (16 Feb 1908-sixteenmay2000) "production is the process of remodeling raw materials or bought parts into completed merchandise on the market" (http://shrinkfittingservices.biz, 2014).

In another words we can identify production as a process of transforming the main combinated elements of this process; such as raw material, human efforts technology and capital to useful service or product and to useful intermediated material.

Corrective and Preventive Action:

"Corrective action is undertaken to eliminate the cause of non-conformity in order to prevent occurrence (J.Emslie , 2005:5) corrective actions are steps that are taken to eliminate the causes of existing nonconformities and potentially undesirable situations don’t happen again" (www.praxion.com, 2014).

"Preventive actions are steps that are taken to remove the causes of potential nonconformities or potential situations that are undesirable." (www.praxion.com, 2014).

Corrective and preventive action according to the previous definitions it is an improvements which are entered to organization processes to remove and eliminate all the causes of non-conformities or undesirable situations where it is in the case of

corrective action depends on forbidding it's recurrence but in the case of preventive action depends on forbidding it's occurrence.

Quality Assurance Q.A.:

"Activities include a planned system of review procedures conducted by personnel not directly involved in the inventory compilation/development process. Reviews, preferably by independent third parties, should be performed upon finalised inventory following the implementation of Q.C. procedures. Reviews verify that data quality objectives were met, ensure that inventory represents the best possible estimates of emissions and sinks given the current state of scientific knowledge and data available, and support the effectiveness of the Q.C. programme." (http://www.ipcc-nggip.iges.or.jp, 2014).

"Quality assurance is a set of activities intended to establish confidence that quality requirement." (www.praxion.com, 2014).

In another words, quality assurance it is all planned and a necessary organized activities to provide the minimum in the product or service to meet the determined quality of requirements or needs, quality assurance more comprehensive than quality control and it comes from quality control has to be controlled by quality assurance and quality control follows the system which had been set by quality assurance management.

2.1.3.2. 7 Tools of Quality

1) Cause and effect diagram

"Cause and effect diagram is a tool helps identify, sort, and display possible cause of a specific problem or quality characteristic." (http://balancedscorecard.org, 2014).

This diagram shows how to find the reasons and causes of any problems happen during the work process that means fishbone diagram or cause-and-effect diagram is a meaningful tool to analyze problems by involving the responsible of occurrence or the responsible of the main elements or factors of incidence.

2) (Flow chart) (Stratification or Run Chart)

"They show the steps in a process (e.g. flow of materials, sequence of operations) they can be used to compare intended changes with the actual situation.

They can be used to initiate process improvement activities." (www.beyonlean.com, 2014).

Flowchart a presentation of the data by charts and drawing to be understood easily with a short time and minimum efforts and it also shows the relationships between the put or planned process and the actual one during the determined time and it gives a chance to compare between the plans and actual process and where are the differences happen. We mention here that charts and drawings attract the viewers more than tables and written data.

3) Histogram

"A histogram is a bar graph representing the frequency individual occurrences or classes of data. A histogram shows basic information about the data set, such as central location (mean, media, and mode), width of speared (range or standard deviation), and the shape." (http://www.pqsystems.com, 2014).

Histogram one of the simplest, and the most important tools of data analysis, and that is for how it describes the data distribution, and the conformance between the actual data distribution,) e.g. normal distribution. In fact it is a data graph or diagram presents or shows a huge amount of data and information in simple shape that can be easy to understand it and that makes you able take the correct decision in an important managerial matters and cases.

4) Pareto Charts

"The PARETO procedure creates Pareto charts which display the relative frequency of quality-related problems in a process or operation. The frequencies are represented by bars that are ordered in decreasing magnitude. Thus, a Pareto chart can be used to decide which subset of problems should be solved first or which problem areas deserve the most attention." (www.okste.edu, 2014).

Pareto chart is a curve which orders the causes of the problem depends on it's effects size, and it orders from the most important to the lowest one. Pareto charts are used when we have a problem with many or multi solutions. And we have to mention that Pareto chart or curve has another name it is called 80-20 law which says in most time 20% of causes (reasons) cause 80% by results but it is not constant but almost happens with small deviation.

5) Scatter Diagram

"A scatter diagram is a graphic representation of the relationship between two variables. Scatter diagrams help terms identify and understand cause-effect relationships." (Institute for health care improvement, Boston, Massachusetts, USA, 2004: 1)

Scatter diagram can be defined as a chart or a graph which is used for showing values of two variables for a group of data. Scatter diagram can mention to different types of mutual relations between variables.

6) Control Charts

"A control chart is a device intended to be used at the point of operation, where the process is carried out, and by the operators of that process. Results are plotted on chart which reflects the variation in the process. (OAKLAND, 2003: 70)

Control chart: a graph that shows where a sample of data falls within the common or normal range of variation." (www.wiley.com, 2014).

In another words control chart shows a statistic which includes point present the mean and standard deviation and the maximum and minimum limits and this chart is used in forecasting of future performance in cause of controlled process, and in determining the resources of variation in the process; then remove those variations to return the process to be under control.

7) Check Sheet

"The check sheet is a form (document) used to collect data in real time at the location where the data is generated. The data it captures can be quantitative or qualitative. When the information is quantitative the check sheet is some times called a tally sheet." (http://en.wikipedia.org, 2014).

Check sheet can be also described, as a simple document which is needed to be under study and this document is designed to regist data and information quickly and easily, these data can be quantitative and qualitative. And it is used to monitor the patterns of performance and recurrence of it and this is the start point to solve problems scientifically.

2.1.3.3. 8 Dimension of Quality

8 Dimension of quality by Garvian are:

1) Performance	2) Features	3) Reliability	4) conformance
5) Durability	6) serviceability	7) Aesthetics	8) Perceived Quality

By the previous 8 dimensions, the product quality easily can be measured that because of the product physical characteristics.

Briefly, now these dimensions will be defined one by one.

"1) Performance: of course, performance refers to a product primary operating characteristics. Because this dimension of quality involves measurable attributes, brands can usually be ranked objectively on individual aspects of performance." performance is ability of product to meet in mission and also presents the essential properties of the product. (Garvin, 1987: 104)

"2) Feature: are the "bells and whistles" of products and services, those characteristics that supplement their basic functioning." in simple words features are the secondary properties of the product and an ability of adding another functions to update and develop the product. (Garvin, 1987: 104)

"3) Reliability: This dimension reflects the probability of a product malfunctioning or falling within a specified time period." also we can identify the reliability as the maximum period of product being able to perform its job and it is the ability of the product to work within its shelf life. (Garvin, 1987: 104)

"4) Conformance: a related dimension of quality is conformance, or the degree to which a product's design and operating characteristics meet established standards." conformance in simple words is the extent of compliance with the required standards by manufacturer to achieve or meet customer's needs. (Garvin, 1987: 105)

"5) Durability: a measure of product life, durability has both economic and technical dimensions. Technically, durability can be defined as the amount of use one gets from a product before it deteriorates." so from above we can say durability is the maximum time or period of product can be used without the need for substitution of any of its part, or fixing it by replacement of any part or piece of this product. (Garvin, 1987: 105)

"6) Serviceability: a six dimension of quality is serviceability, or the speed, courtesy, competence, and ease of repair." in another words serviceability is the ability of the manufacturer to fix the product and quickly; in case of product's breakdown, and how much the manufacturer takes the complaints of customer into consideration. (Garvin, 1987: 106)

"7) Aesthetics: the final two dimensions of quality are the most subjects. Aesthetics-how a product looks, feels, sounds, tastes, or smells- is clearly a matter or personal judgment and reflection of individual preference." in my own word aesthetics is the properties and characteristics which are related to sense and recognization and it is also how the product can effects on and attracts the customer by its out looking. (Garvin, 1987: 107)

"8) Perceived Quality: consumers do not always have complete information about a product's or service's attributes; indirect measures may be their only basis for company brands." perceived quality briefly that this dimension depends on all of previous dimension and the fame of the manufacturing company and the name and reputation of product. (Garvin, 1987: 107)

2.1.3.4. Overview for Quality Standards, Related Certificates and Documents

In this section it will be focused on the most important international and Turkish quality standards, quality certificates, and organizations concern of quality.

ISO, ISO and System:

ISO is an international organization for standardization, the main seat of this union is Geneva.

This organization unites the measurements and standards, recently ISO becomes the most important mark or certificates in the quality fields and the purpose of ISO not only indicates to quality measurements but also advertizes the firm's products and raises the firm exports. ISO system helps firms to decrease the internal cost (expenses) and raise the quality productivity and efficiency, ISO always looking for continuous improvement also it can prevent from any nonconformity. Addition to previous the importance of ISO becomes 1) in increasing of the competitive ability of the firm by continuous improvement. 2) Providing professional documentation of the firm process and system. 3) Improve the relationship with customer. 4) Helps the firm to do the self-evaluation. 5) Raise the employees and work morality by motivate

them with working under documented and qualified system. 6) The stability of quality with continuous development.

ISO standards have many specification such as ISO 9000 which includes a set of measurements which can be implemented on any company system whether it small, big or medium it also covers all firms system type whether industrial or service. ISO 9000 is divided into four parts; 9001, 9002, 9003 and 9004, the most comprehensive part is 9001 and it is used in the firms which work in design development manufacturing and service sectors also ISO 9001 treats all sides of research prevention and correction actions during production and it concerns about employees training also about documentation and data control and analysis.

-ISO 9001: 2000 Job Domain:

This specification is used by the organizations which need to show it ability of providing a high quality product which meets the customer requirements and specifications, the purpose of this specification it to gain customer satisfaction by a good implementation of system and always looking for the continuous development of the followed system.

-ISO 9001 Philosophy:

The following diagram shows it

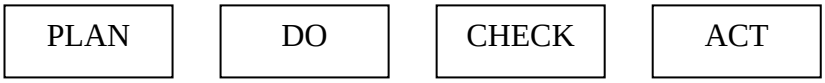

Figure 2.1: ISO 9001 Philosophy

And the meaning of these four words at Diagram (2.1.) is, plan: say what you say, do: do what you say, check: prove what you say, act: learn from the mistakes and develop the work.

There is a group of reasons leads to commonness of ISO 9000 system such as:

- The appearance of economic blocks specially EU.
- The intense competition in global markets.
- The global interest of total quality.

- The easiness of ISO implementing.
- The reflects of ISO implementing on the performance efficiency.

ISO and Environment (ISO 14000):

Because of the thesis subject which concerns about chemical industrial and relationship with the quality systems and standard,s it is indicated to standards which prevent and protect the environment from negative effects of chemical industries so it was worth while to high light the ISO 14000 which is environmental management.

ISO 14000 aims to adopt the environmental management which is more effective efficient and flexible in the firm's system. "ISO 14000 grants the firms a chance for providing technology and follow best global practices such essential guidelines standards for whole firm which show the procedure of establishment, maintenance, auditing and the continuous improvement for the environmental system of firm.

ISO 14000: a set of rules and norms for environmental management of industrial production. ISO 14000 applies to all businesses and is designed to reduce environmental damage and industrial waste. The ultimate goal of these guidelines is to promote useful and usable tools to businesses to help them manage their environmental impact." (www.answer.com, 2014).

"ISO 14000 series: family of related, auditable, international standards and supplementary management system (EMS). First published in 1996 (and continually updated) by the international standards organization (ISO). These standards are designed to provide step by step (structured) approach to setting environmental objectives, achieving them, and verifying that they have actually been achieved. Through these standards a firm can manage the impact of its products (goods and services) and processes on the quality of environment."
(www.businessdictionary.com, 2014).

"Environmental management system (EMS) such as ISO 14000 are seen as mechanisms for achieving improvements in environmental performance and for supporting the trade prospects of "clean" firms. The potential advantages of EMSs are clear, but the adoption of ISO 14000 is very recent, practical issues are emerging, among them the need for an emphasis on performance improvement and for simplification of certification; the potential for regulatory streamlining; and the trade consequences." (Pollution prevention Abatement handbook, 1998:129)

TSE:

Is an acronym of Turkish standards institute, which is public founding follows special rules and structures and it is an independent entity. It has been established in 18/11/1960 to prepare all related standards of all items and products with the methods and procedures. This mark is approved only by TSE and it is used only with TSE permission. The Turkish standards are only the approved standards by TSE, these standards are voluntary in case of approval by the ministry is will be compulsory and if it is done it will be the same in whole of Turkey and will be published in formal or official journal.

The Tasks of TSE:

- To prepare all standards and to check these prepared standards are accepted within the TSE rules then they declare it according to public and private sector required.
- To publish the approved standard and encourage to implement it.
- To make and prepare a technical studies related to standards and use the foreign studies in the standards field to implement it in Turkey, also establish a collaboration relationships with the foreign companies and organization which are work at this fields to make a collaboration will all universities, scientific association and council and all related organization, also to publish the standardization with using publication form and prepare an archive of standard to be used in case of need by whom concern of standards fields and this archive will be a national archive.
- To make related studies of standards and to found laboratories to test the accuracy of standards implementing, also to train the employees to keep the development of standards work with open courses for this purpose.
- Prepare studies for encouragement the production of high quality and comfortable standards and documents.

CE marking (CE):

"The CE marking is European marking for certain products group in conformance with the CE directives with essential health and safety requirements CE means conformities European in other words European conformity.

The product cannot be placed for service in the market without complying with the provision of directive in the member countries in European Union. These

CE marking can be regarded as the product trade passage for Europe and many other countries worldwide that also accept and follow CE mark requirements.

CE marking is independent of the quality requirements of the product as it applies with mandatory European safety requirements." (http://www.acarkalite.com, 2014).

"CE marking: mandatory mark that indicates conformity with legal and technical directives of the European Union (EU) in effect since 1993, it is not a mark of quality but serves as a "passport" for EU-wide free flow of with range of industrial products." (http://www.businessdictionary.com, 2014).

"The CE-marking that a product complies with the fundamental safety legislation. When a product bearing the CE-mark is used for its intended purpose or for an unintended but reasonably foreseeable purpose, it should be safe. The focus is solely on safety level. A manufacturer who markets a product on the European market is responsible for the CE-marking. The CE-mark can be seen as self-declaration of compliance with the fundamental safely requirements of the applicable directives." (Hoeven, 2012: 6)

According to the previous definitions, CE-mark is an indication of the permission of CE-mark labeled product to enter freely to European market, it is just like a "passport" of entering of this product to EEA (European Economic Area), and CE means European conformity which means that the product follows all the European Economic Area requirements.

Simply in the following steps, it will shown how to acquire CE-mark: (HOEVEN, 2012:7)

"

1) Define which directives/norms apply.
2) Execute conformity assessment.
3) Apply safety requirement.
4) Execute risk analysis.
5) Draw up technical construction file.
6) Draw up directions for use.
7) Draw up declaration of conformity.
8) Affix CE-marking"

"Notified Body: is any public or private body designated and authorized by the related public authority from among the carry out conformity assessment procedures." (http://www.economy.gov.tr, 2014).

CE-marking is required in European Economic Area (EEA) and European Free Trade Area (EFTA) also Turkey which is neither a member of EU nor the EFTA or EEA it has implemented many of the CE-marking directives so it requires CE-marking for many products.

There are 31 Turkish notified body and the first of them I Turkish Standards Institution (TSE).

2.2. GENERAL CONCEPTS AND DEFINITIONS AT CHEMICAL INDUSTRIES SECTOR

2.2.1. The Development of Chemical Industries

Chemical industry had been started by producing the chemical bases which had included the soda (hydrate) NaOH and H_2SO_4 producing and utilizing addition to previous in the starting stage of chemical industries development, also the manufacturing of bleaching powder had appeared. The development of chemical industries completely related with the raising of population and their requirements to the chemicals, the community development measure appears by the increasing of its requirement and the ratio of amount of goods or products consuming; e.g. some of chemicals such as the bleaching powder increased and developed parallel to the textile industries, addition to that the increasing of demand of soap glass and paper increased of alkali preparation as raw material for those industries. It has to be mentioned, that all of the previous information of chemical industries was in the 17^{th} century. After that chemical industries successive step by step such electrochemical, petrochemical industries and manufacturing. Due to the direct correlation between chemical industries and health sector by pharmaceutical industry, the development of chemical industries has effected on this sector and all related industries; so that led to the development of this sector, the same happened in the construction sector, where the cement and concrete manufacturing have developed construction sector significantly in whole the world. Thus the development of life style and sectors are effected and effective of chemical industries and it development and improvement.

Finally it can be mentioned to most important chemical industries fields as the following:

- Manufacturing
- Petrochemicals industries
- Electro chemicals industries
- Pharmaceutical industries
- Plastic and polymers industries
- Cosmetics industries.

2.2.2. Concepts of Chemical Industries

Industrial Facility:

It is an economic unit which produces and manufactures product or group of products and services it is managed by one owner or more also it is located in the same site or it can be many distributed branches at different geographic area and it has industrial activities such as manufacturing, extractive, etc.

Chemical Factory:

It is a processing and manufacturing factory to treat the chemical materials; it aims to provide the finished products of chemicals as a finished product or raw material for another processes, these operations are biological chemical or separation processes; due to that the chemical factories require a special techniques and industrial units such as the fluids system which specially found and used in petroleum refining factories, polymers factories and pharmaceutical factories, we have to mention that these previous type of factories are considered as the most important of chemical factories. Chemical factories are characterized by using a high quality control system to preserve and maintain the validity and accuracy of operation functioning.

Organized Industrial Zones (OIZ):

"Organized Industrial Zones (OIZs) are designed to allow companies to operate within approved boundaries with high quality infrastructure. The main objectives in establishing OIZs are to promote industries in less developed regions, enabling relationships among industries to grow and allowing more cooperation between industrial firms that increase production overall along with an increase in profits." (Deloitte, 2014: 61).

It is specialized zones or areas aim to improve and develop the industries, where they include many factories in the same closed area whatever these factories are heavy or light industries. Those industrial zones usually are heavy; due to that

they are established at the edge of cities or outside of cities, where it must have the transportation which are often included the railways; usually it located near the highways which nearby the ports or airports to facilitate materials and products transport.

These zones mainly have an infrastructure of all facilities as an electricity, water, sanitation and telecommunications; where these zones are divided into plots which are various in size of area according to the requirement.

Industrial zones take into account and implement essentially the quality management system and environmental management and that's for preserving the environmental system.

1) There are many parameters to choose the location of any industrial zones which are as the following: (Serfioui, 1999: 43-44)

"

- production and markets parameters:

1) Availability of manpower,
2) Availability of raw materials,
3) Size of markets for industrial products,
4) Importance of utilities,
5) Means of transports and communications

- general environment parameters:

1) financial environment
2) regional and local environment

- The parameters of town requirements concerning the setting up of industrial zones

1) demography
2) economic structure of the town
3) employment distribution between sectors
4) availability of site for industrial zones development

- parameters related to state action or policy

2) incentive to industrial decentralization
3) main orientation for regional economic vocation"

Unit Operation:

According to chemical engineering it is the main and essential stage in any process, and the process includes several unit operations. The essential operations in chemical engineering include the following five types:

1) fluids transportation
2) heat transfer
3) mass transfer
4) thermodynamic operations
5) mechanical operations

Industrial Planning:

It is a strategy aims to face the future by organized and prepared plans to achieve determined goals and objectives with non-random methods. Industrial planning one of important management factions and it helps to set all the tools methods and equipment for the work to perform the job in the best way that means in shortest time and lowest cost and effort.

Manufacturing Industries:

It is industries which contain a physical and chemical transformations of organic and inorganic materials to produce products manually or artificial such as food drink tobacco textile leather wood furniture paper petroleum chemicals and it derivatives plastic cement metals machines and equipments industries.

Productivity: (Production Efficiency):

It is the relation between the input and output of the process so it can be considered as a ratio of the input to the output; there are many definitions of productivity such as the following:

- It is the efficiency of the organization to convert the input to output.
- It measures the efficiency of the individuals and machines to produce products from the raw materials.
- The best utilization of the available raw material for producing desired products, goods and services.

Productivity becomes in the highest ratio when the output is more than input, the importance of the productivity refers to the organization situation, also when the productivity of the organization increasing the individual; salary is going to be higher than before and the life quality of the personals will be more comfortable.

In the other side of productivity effects the organization will reduce its production costs and its product, prices so in this case it compete many organizations and rises the competitive level, so the profits will increase and that will return to the community with law price so the standard of living in general will increase.

Clean Production:

It is the continuous implementation of the integrated environmental strategy of production and service operation which aims to raise the economic efficiency, reduce the risks on human and environment and develop the productivity.

This clean production preserves the raw material and energy, removes the toxic material, reduces the emissions and toxic waste and that occurs by reducing the harmful impacts during the life period of product which started from raw material extraction till disposal stage, this principle can be implemented by training, developed knowledge improved technology and change the behavior and habits for the better.

2.3. THE QUALITY EFFECTIVE FACTORS IN CHEMICAL SECTOR

In general there are factors affect on the quality in industrial sector it will be summarized in the following:

- Markets: the effect of market comes from the consumers where consumers are the resource of the feedback of product of service quality evaluation and how they are satisfied of the quality and their opinions and complaint. On the other hand the markets competition shows the order of the finest product.
- Workers (employee): the effect of workers comes where their experiences appear and their own skills to handle the production operations and how their job performance to release a high quality and free of defect product, also the worker's ability to work in the standards operation procedure (SOP) which leads to reduce the defects and save time tools and materials, we have to mention the role of worker in testing raw materials.
- Capital: in this factor it will be important to mention that it is the most important factor, this importance refers to the essential role of capital that all factors can be available if the capital is huge, the company can provide all of skilled workers high quality equipment and modern tools and the finest sorts of raw material. All previous factors will be high cost; so the capital can provides it; according to that the ability of the capital to provide all factors of quality helps the firm to raise the level of the

quality of its own products or service. Additionally, it has to be mentioned, that high capital can also play a role to release the product in a compatible price so that positively affect on the firm's competitiveness.

- Management: to preserve the quality, quality control department has to be supported y the top management. The management can guide the firm to success by its creative and inventive approach according to the above the management affects of the quality of product by correct taken decision in the correct time where takes into account the cost and how that affect on the industrial process progress, also management experience its ability to take the decision in short time, centralization and decentralization and initiative all these factors determine the ability of management to create a good work environment to raise the quality of the product.
- Raw material: the quality of the used raw material in industrial process affects on the final product quality, suppose that a raw material was used, which does not need treatment process so that will reduce the cost of manufacturing and the operation time, in other hand; sometimes in chemical industries, chemicals negatively affect on environment so it is important to choose the raw material carefully which it has to be Eco-friendly (Environment friendly), additional to previous raw material which it's suppliers well-known that affects on quality of product in two apposite paths; that the raw material test sometimes will not be accurate cause it is supplied from a well-known supplier; but the positive point in this case if there is and faced problem the supplier will give a fast and immediate corrective action for the consumer to save his reputability. The raw material effects as a factor on quality of products is huge and important point this study will not be enough to mention all the cases of its effects.
- Tools and technical equipment: specially this factor depends on all the previous factors and also it affects on all of those factors, but in the case of this factors affects on raw material and vice versa it will be important to mention that the selection of tool depending on the raw materials will give a good result in quality and how it flexible to be modified according to raw material manufacturing requirements, refers to that the productivity will increase and the defects will decrease, taking to the account the easiness of using these tools helps the worker to perform his job in a good way with shorts time and less effort that leads to high productivity and high quality of products.

2.4. CHEMICAL INDUSTRY IN TURKEY

Turkey had the highest amount of FDI in chemical manufacturing in 2007 with more than USD 1.1 billion. Moreover, Turkey was able to attract an impressive level of FDI to the chemicals industry. FDI inflows to the industry increased CAGR 27% from 2008 to 2012 nearing almost USD 1 billion in 2012. (Deloitte, 2014: 11).

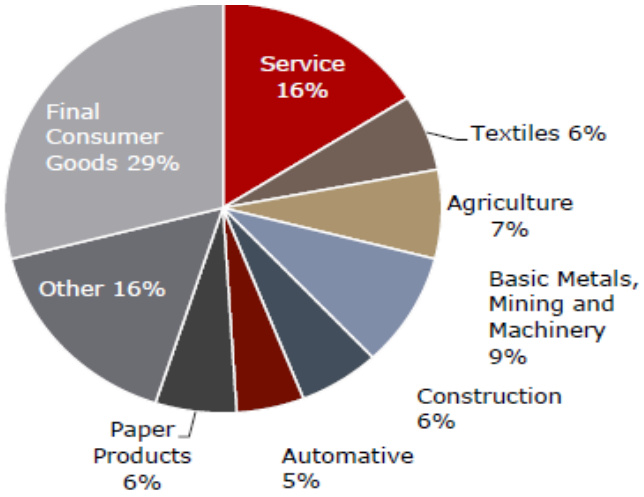

Diagram 2.1.: Distribution of Chemical Outputs across Various Industries in Turkey in 2012. (Deloitte, 2014: 14).

By noticing the previous diagram (2.1.), the chemical industries are not only producing chemicals as final products but also to produce chemicals, which are used as inputs for manufacturing process.

According to the below diagram (2.2.), Turkey's exports growth became 20 billion USD in 2012 which was 12 billion USD in 2007 we can notice also the decreasing of this exporting at 2009 and 2010 which were in the period of global crisis in year of 2008.

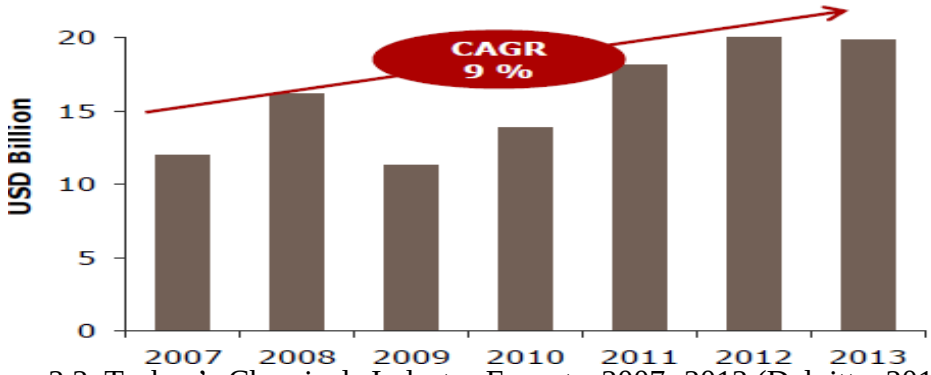

Diagram 2.2. Turkey’s Chemicals Industry Exports, 2007- 2012 (Deloitte, 2014: 18).

It can be mentioned here to the most important chemicals industries' sub-sectors which are, the paint and coating, the fertilizer, the detergent, cosmetics and personal care, the plastics, the rubber and inorganic chemicals.

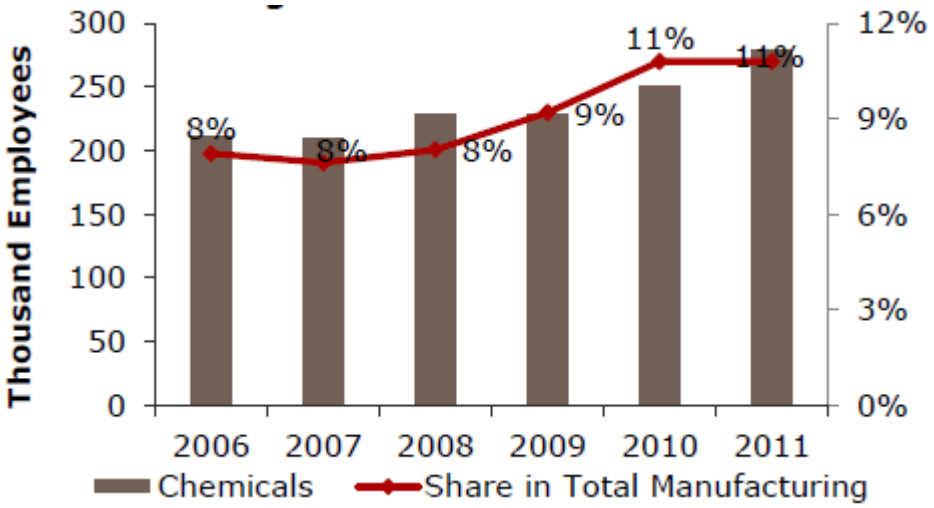

Diagram 2.3. Number of Workers in Chemical Manufacturing (Deloitte, 2014: 52).

According to the above diagram (2.3.), it can be seen, how the chemical manufacturing sector can attracts many employees to involve in this sector

THIRD CHAPTER
GAZIANTEP ORGANIZED INDUSTRIAL ZONE IDENTIFICATION AND IMPORTANCE

3.1 GAOSB HISTORY

In this part of this chapter it will be discussed briefly guidelines for industrial development which will be into two directions:

1) Phase of planning and development of industrial area.
2) Elements of industrial.

3.1.1. Phase of Planning and Development of Industrial Area

"- Site selection and assessment: the location of an industrial area will ultimately influence its environmental, economic and social performance. The assessment and choice of location needs to extend beyond compliance and involve a more rigorous investigation of opportunities for resource efficiencies, waste product exchanges, as well as ecological, economic and social opportunities and constrains." (Sands & Shepherd, 2010: 18) addition to the previous site selection and assessment depends of the quality and governmental statistics, analysis results also depends on the geographic approach which can be determined by the resources of raw material or energy in that region; also the climate such as the wind direction also the type of soil or if there is a seismic activity

"- Structure planning and subdivision: once an appropriate location has been identified for an industrial development, it is necessary to determine the form and layout of the area. This may be achieved via a local structure plan and/ or the subdivision of the area. The structure planning and subdivision phase involves two distinct stages; 1) structure planning and subdivision design and layout and 2) construction of the subdivision." (Sands & Shepherd, 2010: 28).

Structure planning and subdivision stage includes consecutive operations start with planning of the structure of the industrial then divides the area to plots

according to industrial needs, then determine the required facilities for each industrial plot such as electricity water communication and sanitation this stage is one of the important steps for industrial zone development which has all the required facilities for the industries and that leads to encourage investors and attracts them to invest in that area. The importance of structure planning and subdivision comes from the coordination between the resources and industrial, also raise the scientific achievements which will be gained by those industrial blocks, provide comfortable designs to admire the visitors of the area and to keep any ancient or historical monuments which leads to increase the aesthetic of the area and appear the ingenuity of designs.

"- Lot development: lot development contains two distinct stages 1) design of the built from and, 2) building construction." (Sands & Shepherd, 2010: 46) "*built form: the advantages of sustainable implementing of built form that attracts the investors, appearance of risk management raising of markets benefits by increased industry reduce the costs and preserve the environment. *building construction: building construction involves a considerable use of resources including materials, energy and water and often produces vast amounts of recyclable waste that is generally directed to landfill it is also a complex phase that involves a number of trades and contractors and has significant potential to cause a range of pollution related issues" (Sands & Shepherd, 2010: 58)

"- Operational occupancy: the operational phase is the largest phase of an industrial development. Resource consumption and social and economic activities all peak within this phase. Traditional management of industrial developments is often fragmented, with little cooperation between business to enable synergies and the efficient use and reuse of resources." (Sands & Shepherd, 2010:64).

3.1.2 Elements of Industrial

There are five elements or key areas which achieve the sustainable industrial development at each previous mentioned phase of planning and development process which are; governance, ecology, resources, economy and community.

"- Governance: the importance of governance structures and the critical role they play in achieving sustainable development cannot be underestimated. Achieving sustainable industrial development requires the integration and coordination of traditional planning and development practices so that a multidisciplinary approach

can be achieved at each stage of the process. An appropriate centralized management body should be identified to suit the development and many are different for each phase of planning, development and operation." (Sands & Shepherd, 2010: 10).

"- Ecology: the consideration of ecology as part of industrial development is a cornerstone of eco-industrial development. It requires the identification of existing environmental conditions together with strategies of protect significant assets and manage any impact on land water or air resources. Matters to consider include land form, landscape, water ways, groundwater, and buffers to and from proposed development." (Sands & Shepherd, 2010: 12).

"- Resources: For the purpose of this guideline the term “Resources” applies to land, water, energy, waste and materials used or consumed during industrial development and operation. Strategies for the supply and use of resources as part of the planning, design, construction and operation of industrial areas should promote innovation and efficiency; consider opportunities for the use of renewable resources and the reuse and recycling of all resources." (Sands & Shepherd, 2010: 12).

"- Economy: The economic success of a development depends on a variety of factors. These include the location of the development and its connectedness to freight and other transport networks as well as to critical suppliers and product markets. Other factors include the availability of services and infrastructure; the diversity and complimentarily of uses; and the ability to react flexibly and adaptively to future economic, social or environmental changes." (Sands & Shepherd, 2010: 13).

"- Community: Industrial development should address potential social impacts and develop strategies and designs to maximise the benefits to the community from employment, services and infrastructure. This approach needs to commence at the site selection phase for sustainable industrial development and carry through to the ongoing operational phase." (Sands & Shepherd, 2010: 13).

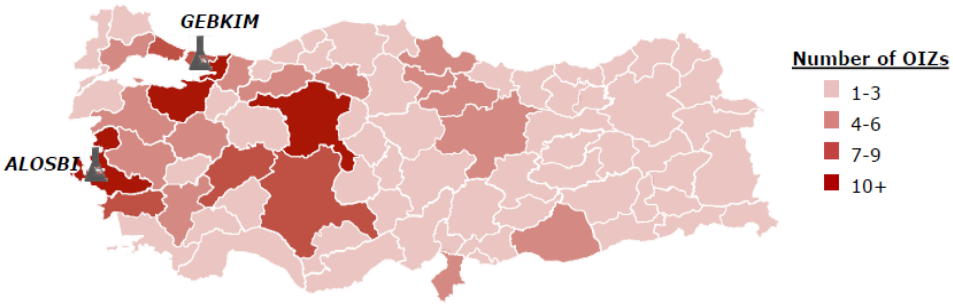

Diagram 3.1. Distribution of OIZs across Turkey. (Deloitte, 2014: 61).

According to the previous diagram (3.1.), that can be noticed Gaziantep city has 1-3 OIZs, and that will be our next section to discuss Gaosb.

3.1.3. Gaosb Historical Development

The Enterprise of this zone started at 1960 and infrastructure has been finished at 1969 then at 1972 work has been started up.

Gaosb is divided to 5 industrial organized zones, and briefly we will explain the historical and the updated information.

Zone (I):

At 1969 the land has been sold and owned where it was established at 210 hectares and the infrastructure with all plots were prepared, nowadays in zone (I) there are 147 SMEs are active.

The consumed kilowatts of electricity per month are 38500000, 3,250,000 m^3 /month of natural gas, 120,000 ton of water and 22,000 person work inside this zone.

Zone (II):

In 1980 the statistical repots indicates to the high development and improvement of the exports exported products of the zone also the desiring investors increased to face the industrial requirements.

The extension work started in 1987 for the zone (II) where it is established at 450 hectares of lands and the infrastructure is finished in 1997 where this zone contained 277 plots 274 of it are active companies as textiles, food, chemical industries, plastic industries, where the consuming of electricity is 87 million KW/month, 200,000 ton of water and 9,750,000 m^3 /month of natural gas that 36,000 person work at this zone.

Zone (III):

This zone was established in 1994 to face the increasing of desiring of investment at Gaosb according to that this zone was founded on 540 hectare of land,

up to date there are 252 firm active in this zone where the total of industrial plots are 275 plots. The consuming of electricity is 117 million KW/month & 250,000 ton/month of water and 4.5 million m^3 /month of natural gas; also the total working person in this zone is 34,000 persons.

Zone (IV):

The work of establishment started in 1998 and buying the land of this zone and 2002 all the works are prepared and finished. Up to date there are 82 active firms, 28 firms under building and 140 industrial plot are prepared.

The consuming of electricity for this zone is 570,000,000 KW/month, 30,000 ton of water per month and 12.5 million m^3 /month of natural gas, also the working persons number in zone is 28,000 persons.

Zone (V):

This zone is established on 11 million m^2 in June 2013 at the industrial zone to receipt new investors; due to that lands are prepared an allocated for this aim.

350 plots are prepared and allocated for industrial objective. And for the continuous demand for lands by the investors so around 1 million m^2 of land has been sold for providing investors needs and to start prepare lands with infrastructure.

The statistics of zone V are textile 345companies, food 178 companies, plastic 58 companies, chemicals 48 companies and other industries 143 companies so the total of previous is 800 companies.

This zone has 24 million metric of area, and its capacity of employment is120.000 workers.

The energies statistics are; 300.000.000 KHW of electricity per month, 600.000 ton of water per month and 30.000.000 m^3 of natural gas per month.

In the side of exporting in the year of 2012 this zone exports was 5.879 milliard dollars and it exports to near of 173 countries.

"Distribution of natural gas which used in the OIZ (organized Industrial Zones) Year 2008 was in Gaziantep 102.544.102 Sm^3, where the total of all other OIZs 4.526.123.713 Sm^3" (Cansiz, 2010: 98).

Gaziantep will be port city:

The head of GSO (Gaziantep industrial chamber) Adil Konukoğlu in the subject of Hassa-crossroad project which will make Gaziantep a port city.

Where the government will make highways according to the request of 5th industrial area management of Gaziantep and that will decrease the distance between Gaziantep and Iskenderun port by Hassa-crossroad highway in 31Kms only.

This developmental project is an important step in this field and southern area of Turkey and that will increase the exports of Gaziantep city and will make it more developed city and it will not only for Gaziantep but also Kilis, Hatay, Kahramanmaraş, Şanlıurfa, Adıyaman and all the southern area of Anatolia.

3.2. FACTORIES STATISTICS OF GAOSB

In the previous section we focus the light on some zones statistics while this section will give the numbers of factories and firms generally in Gaosb; the following tables will give these statistics:

Table 3.1. Chemical Industries Factories at Gaosb.

Chemical industry type	Zone			
	I	II	III	IV
Paint and dyes industries	5	12	11	1
Hygienic & cleaning products	6	6	4	2
chemicals	7	4	9	1
Metal industries	2	4	5	1
Plastic	6	19	12	8
PVC	1	5	3	-
Petroleum products	-	4	-	-
Total	27	54	44	13

And the second table (3.1.); gives the numbers of firms in each zone in whole sectors including the chemical sector in Gaosb.

Table 3.2. Gaosb Number of Firms.

Zone Number	Zone			
	I	II	III	IV
Number of firms	135	258	215	53

The total of all Gaosb's firms is 661 firms which are found in the list of firms of Gaosb in the industrial area website as it is shown in table (3.2.).

Table 3.3.The invested area in OIZ, finished plots, production and employment data (Cansız, 2010: 120-124)

Finished Gaosb	Start-End Date	2010 year given credit for activities	Total Gaosb area	Number of plots	The located Plots number	Employees Number	Passing product-ion plots	The average Cost/Total Gaosb Area
I	1971-1988	8.528.291	260	172	172	16.000	172	32.801
II	1987-1998	67.760.022	500	281	281	27.800	266	135.520
III	1994-2000	0	540	298	297	18.200	216	0
IV	2005-2008	5.924.096	1030	134	134	8.800	45	5.752
Gaziantep-nizip	2004-2008	3.927.563	100	33	0	0	0	39.276

Table 3.4. The Sectors Distribution of Located Business Inside & Outside of OIZ (Cansız, 2010: 81)

Sectors	The Number of Business which Located at OIZ	The Percentage of Business which Located at OIZ	The Number of Business which Located Outside of OIZ	OIZ outsider percentage	The Number of industrial Business
Chemical material and manufacturing products	532	5	3719	1	4251
Manufacture of coke, refined petroleum products and nuclear	9	0	90	0	99
Manufacturing of rubber and plastic products	807	8	8.184	3	8.991
Non-metallic & Other Mineral Products Manufacturing	419	4	11.914	5	12.333
Pure Metal Manufacturing	665	6	5364	2	6029

According to the table (3.4.), it can be noticed how the chemical industries in the OIZ have a good ratio in whether at the occupation in OIZ or at the whole industries at Turkey.

3.3 GAOSB IMPORTANCE

The importance of Gaziantep refers to its location in the south of Turkey which makes it the gate to the Middle East, also the nearness to the Mediterranean Sea redounds it a strategic, industrial and economical importance in the same time.

In another hand, the project of highways or crossroads which will make Gaziantep a portal city and that will contribute in increasing the exports of Turkish southern and will facilitate the importing in many industries, according to that Gaziantep will raise the economic status in Turkish southern such as Kilis Kahramanmaras, Hatay, Urfa, and Osmanya.

Gaziantep one of the most important industrial center in Turkey; that is because of the industrial investment which gives the chance for the investors and Turkish capital to invest in Gaziantep with a high facilities and completed infrastructures which are lower cost than other cities.

The development of Gaosb is continuous and fast, where the consumed energy of Gaosb around 5.5% of total of Turkey in industrial sector, and here we can mention that in the year of 2011 the consumed natural gas was 214 million m^3 comparing with the next year 2012 where it increased to come to 350 million m^3 of natural gas, so that indicates to the development of industries and the increasing of need of energy resources.

Gaosb it is not only one of the important industrial zone in Turkey it is also has got one of the highest level of exports where in September 2012 the exports was 513.672.000 dollar and that made Gaziantep in the 5^{th} place of exports in Turkey.

Addition to previous we will mention that Gaosb will be the biggest industrial zone in Turkey, it has got the highest number of textiles firms in Turkey, it is the biggest exporter to Iraq in Turkey, and has got a lot of plastic factories and heavy machines.

The highest management of Gaosb supports the manufacturers by R&D department by presenting the solutions and suggestions for their faced problems.

In the environmental side; the quality safety and environmental system always are updated systems with the modern technologies; that is for keeping up with all requirements and facing all needed specifications, Gaosb is committed to all rules and in structures to preserve the environment, and all of Gaosb's agents and suppliers show the same commitment too, that is appears in all plans and objectives which are responsible to reduce pollution and prevent from all related risks.

In the end of this section it has to be mentioned that TSE invests 5 million TL in Gaosb.

According to the statistic of the year of 2010 in the month of February that shows some of treatment plant for waste water at OIZ, is said that there was a project under 2nd stage of construction continuing in the Gaosb IV with 1.100 hectares of area, 90.000 m^3/day of waste water and flow rate 60.000 m^3/day.

Also there was at Gaosb in I, II and III zones another treatment plant of waste water which was still in the 1st stage of putting into the operation.

This 2014 in the period of January and November the percentage of exports by Gaziantep increased by 2.2 % which come 6,250,000,000 USD and that according to the (GSO) statistics, so this year comparing with last year of 2013 in the same period the exports amount was 5,893,315,000 USD so this refers to the both of high quality and modern used technology and supporting of high managements, this increasing of exports will be continuous. (http://www.gso.org.tr , 2014).

Özel OSB Anadolu Teknik Lisesi (Private OIZ Anatolia Technique High School) :

This school one of the most important group of schools which is includes 10 different training programmes to prepare trained skilled graduated students who are able to start working in any of industrial or working fields, and those 10 programs are; textile, machines and metals, Auto industry, electrical and electronics, Industrial Automation, plastic, furniture and interior design and food and chemical industries.

This school will feed the Gaosb of a skilled labour school advantages and how it is more special than others it does not only prepare a skilled labour it also gives them a paid dorms and Gaosb paid for this school to meet the students studying costs; so here we can mention how the Gaosb a main plays role in providing the society of skilled labour in many required fields in industry sector. And that will raise the level of life in city at the social and economic status.

Also Özel OSB Anadolu Teknik Lisesi learns four main languages which are English, Arabic, German, and Russian so in this case the graduated students will be able easily to work in any country.

The ministry of education and ministry of industry according to the signed protocol which is signed with EU, it allows for these school students to take a

summer training programmes in any of European Union countries, that means the trained students will know and be familiar to work at new conditions and countries.

Finally this school offers a high quality life style.

FOURTH CHAPTER
THE IMPACT AND EFFECT OF QUALITY STANDARDS IN CHEMICAL SECTOR AT GAOSB

4.1 STUDY, SUBJECT, PROBLEM, VARIABLES, HYPOTHESIS, OBJECTIVE, DOMAIN AND IMPORTANCE

4.1.1. Study Subject

The Impact and Effect of Quality Standards in Chemical Sector at Gaosb

4.1.2. Study Problem

Recently the industrial zones in the whole world are affected by the development of quality systems and standards, if the quality systems or standards are implemented correctly or incorrectly the effects will appear in the level of improvement of the industrial zones in general and the specified factories in special cases. In this study the chemical sector in Gaziantep industrial zone is chosen to study the effects of quality standards at this sector in this zone and does that contribute in increasing of economic development in Gaziantep city or Turkey.

4.1.3. Study Variables

In this study there are two types of variables:

- Dependent variable, which is the development of chemical sector at Gaosb.
- Independent variable, which is the efficiency of quality system.

4.1.4. Study Hypothesis

This study will verify the following hypotheses which are:

1) There is indirect relationship or effect of the quality systems and standards on the development of chemical sector at Gaosb.

2) The quality systems and standards effect on the development of the utilized methods and techniques in chemical factories, which are used to save the environment.

4.1.5. Study Objective

This study has got several objectives which are as following:

- To reveal the effect of quality standards at chemical sector in total development at Gaosb.

- To study the relationship between quality standards in factories of chemical sector and their effects on the work and employees conditions, and on the environment.

- To identify the Gaosb role in the local productivity and its ratio of GDP (Gross Domestic Product) in Turkey or by comparing to another industrial areas in Turkey in chemical sector.

4.1.6. Study Population

This study population will be at Gaosb (Gaziantep Organized Industrial Area) specially the chemical sector at this industrial area. Which are 138 factories recorded on Gaosb website.

4.1.7. Study Importance

The importance of this study and the reasons of selecting this subject returns to the following:

- To encourage the coming new studies in the same subject and field.

- To reveal the economical importance of quality standards implementation at industrial areas.

- To make addition or add a new study of research in use in development planning system at Gaosb and the Turkish southern.

4.2. STUDY QUERIES

In this study few queries are posited which will help us to draw a previous image for the initial results by answering these following queries or questions:

The main question of the study: do the quality standards contribute in the development of chemical sector at Gaosb?

Sub questions:

1) Is there a development or any special characteristics at chemical sector at Gaosb comparing with other Turkish industrial zones?

2) Is there any relationship between quality standards development and the chemical sector efficiency?
3) Is there a relationship between quality standards development and Gaosb development of productivity and economic efficiency; especially in exports amount?
4) Is there a relationship between quality standards and the commitment in preserving the environment?
5) Is there a relationship between quality standards development and each of: number of work hours, quality department budget and the easiness of implementing of quality system?
6) Is there a relationship between the implemented quality system and the quantity of defects?
7) Is there a relationship between the quantity of defects and founding maintenance unit?
8) Dose the delay of the salary affect on the product quality?
9) Dose the staff turnover affects on the product quality?
10) Is there a relationship between quality system and training and improvement skills of the workers?
11) Does the hugeness of the order (indent) of products affects on its quality?
12) Is there a relationship between the highest management's supporting and the amount of quality department budget?
13) Is there a relationship between the type of awarded quality certificate and the times of auditing either internal or external?
14) Is there a relationship between the shift and ratio of defects?
15) Is there a relationship between the degree of commitment in quality department and each of: level of highest management supporting, quality department budget, and educational level of quality department staff and the number of work hours?

4.3. THE STUDY'S SAMPLE AND LIMITATIONS

4.3.1 The Study's Sample

The study's sample includes (56) chemical factories in Gaosb, where they answered the distributed questionnaires by their quality department officers to cover the required sides of this study.

The ratio of sample to the population is as the following equation:

Done Questionnaires # / Taken Study Population # = Ratio

56/138 = 41%

4.3.2 Study Limitations

This study is faced by some limitations and obstacles which are as following:

1) The difficulty of data collecting which was done by using questionnaire method.
2) The weakness of communication with the factories' staff that because of weakness of Turkish languages skills.
3) Selection and determination of chemical sector makes the study restricted in one direct and the results only can be generalized in chemical sector.
4) The rapid development which occurs at Gaosb complicates the study procedures to keep the data and results updated.
5) The bulkiness of Gaosb leads to not roaming inside the zone.

4.4. DATA ANALYSIS AND FINDINGS EVALUATION

4.4.1. The Used Quality System

it can be noticed from the below table (4.1.) And diagram (4.1.) that the repetition of the used quality system are 25 factories are using ISO system which means 44% from 56 factories which are the study's sample total, 24 factories are using TSE system which means 43%, 5 factories are using both of ISO and TSE system with a ratio of 9%, then there is 1 factory using ISO, TSE and other quality systems which ASTM, Nem and BDT, which gets 2% ratio and another 1 factory is using ISO, TSE, CE and other quality systems which are API and GOST.

Finally there is not any factory using Sigma quality system.

Table 4.1. The Used Quality System (Practical Study, 2014)

Quality system awarded certificate	ISO	TSE	ISO+TSE	ISO TSE other	ISO TSE CE other	six Sigma	CE	Other	Total
Repetition	25	24	5	1	1	0	0	0	56
Ratio (%)	44	43	9	2	2	0	0	0	100

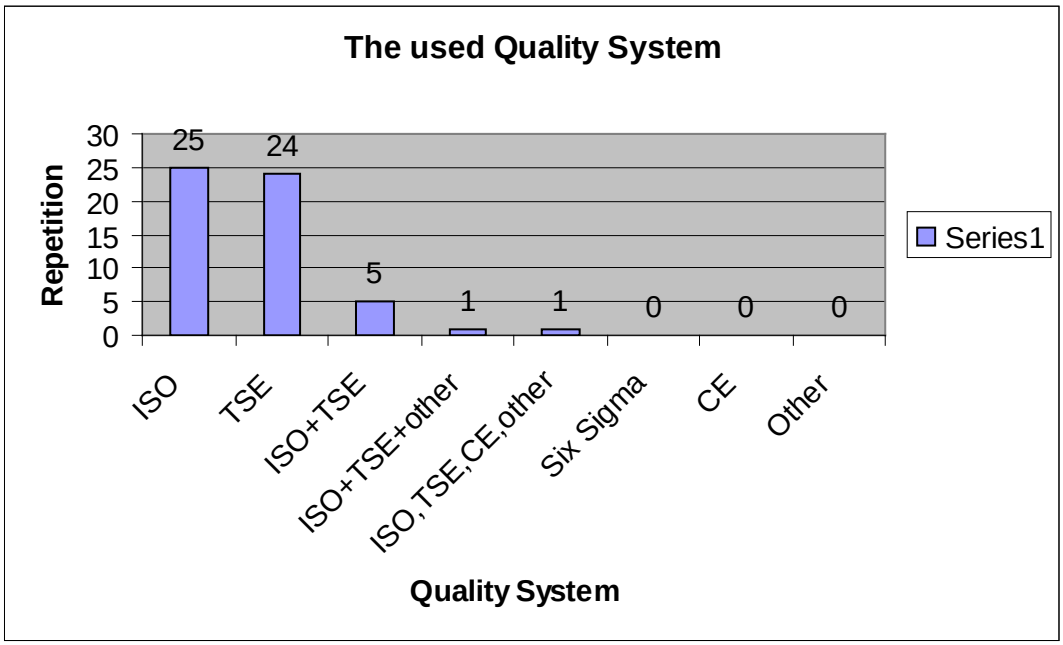

Diagram 4.1. The Used Quality System (Practical Study, 2014)

4.4.2. The Time of Taking Test Samples

According to the results of the below table (4.2.); and diagram (4.2.); there are 28 factories take test sample one per hour which represents about 50% from the study's sample, where 10 factories take test sample before lunch which represents 18% from the study's sample, then there are 15 factories are taking test sample in the shift end which gets a ratio of 27%, finally there are 3 factories take test sample in different times one of them takes test sample in each quality inspection round, another takes test sample in the end of production and the last of those 3 factories uses a new quality system of taking test sample.

Table 4.2. The Time of Taking Test Samples (Practical Study, 2014)

Taking test sample time	One per hour	Before lunch	Shift end	other	**Total**
Repetition	28	10	15	3	56
Ratio (%)	50	18	27	5	100

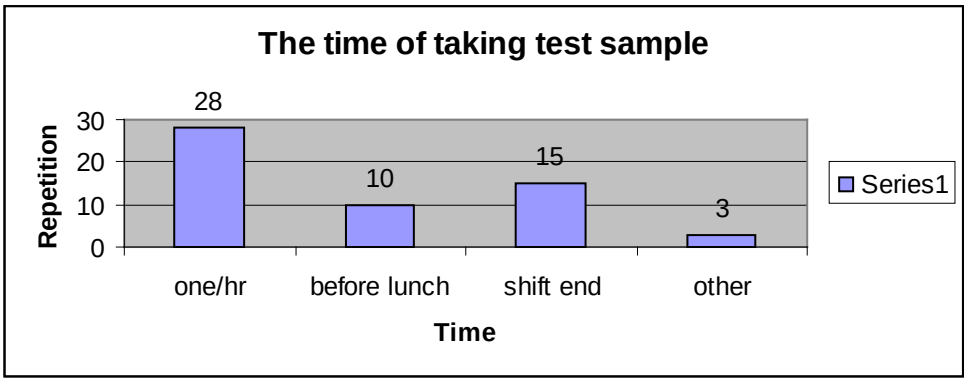

Diagram 4.2. The Time of Taking Test Samples (Practical Study, 2014)

4.4.3. The Time of Internal Audit

By taking an analytical look to the results of below table (4.3.) and diagram (4.3.) it is found that there are 19 factories do the internal audit once per month which represents 34% of under studied factories total also there are 26 factories do it once per 3 months and that represents 47% then there are 8 factories do it once per 6 months that means the ratio is 14 % and furthermore, there is not any factory does the internal audit once per year, but also there are 3 factories do it in other of the set choices; one of those 3 is always it does the internal audit the other is weekly does it, the last of those 3 does it twice per month, where those 3 factories represent a ratio of 5%.

Table 4.3.The Time of Internal Audit (Practical Study, 2014)

Internal audit time	Once/month	Once/ 3 months	Once/ 6 months	Once/year	other	**Total**
Repetition	19	26	8	0	3	56
Ratio (%)	34	47	14	0	5	100

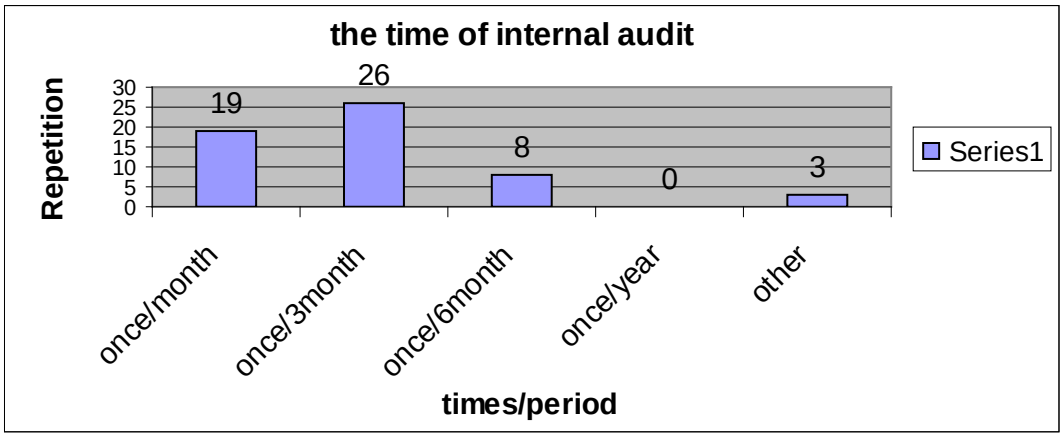

Diagram 4.3. The Time of Internal Audit (Practical Study, 2014)

4.4.4. The Time of External Audit

From the practical study's results, it is found that 1 factory has got an external audit once per month which is unusual results that because of ISO and TSE system it always makes the external audit at the most once per 3 months so that 1 factory gets ratio of 2% of the total sample, also, another 1 factory makes the external audit once per 3 months so it ratio also was 2% then it is found, 28 factories get normal external audit time which make that audit once every 6 months which represents 49% of the total sample then there are 25 factories make the external audit once in year which represents 45% of total sample.

Finally there is 1 factory makes the external audit in other time but did not give any explanation; so it represented ratio 2% of total study's sample.

Table 4.4. The Time of External Audit (Practical Study, 2014)

External audit time	Once/month	Once/ 3 months	Once/ 6 months	Once/year	other	**Total**
Repetition	1	1	28	25	1	56
Ratio (%)	2	2	49	45	2	100

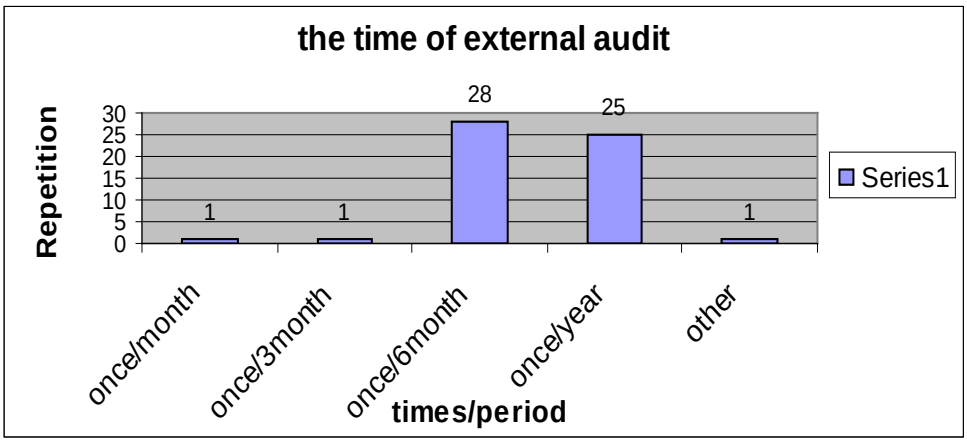

Diagram 4.4. The Time of External Audit (Practical Study, 2014)

4.4.5. The Educational Level of Quality Department Staff

It is clear from table (4.5.) and diagram (4.5.) that the most of the quality department staff are university graduates with a BSc degree which represents 66% of the total ratio where there is only 1 factory it's staff are higher educated which represents 2% of total ratio and the second highest ratio is 32% which is represented by high school educated quality department staff's factories which were 18 factories.

Finally there is not any factories has got quality staff with primary or secondary education and that because of the sensitivity of quality department responsibilities and activities and the Gaosb requirements of quality department to improve and develop the chemical sector in Gaosb.

Table 4.5. The Educational Level of Quality Department Staff (Practical Study, 2014)

Educational level	Primary	Secondary +High school	University	Higher education	**Total**
Repetition	0	18	37	1	56
Ratio (%)	0	32	66	2	100

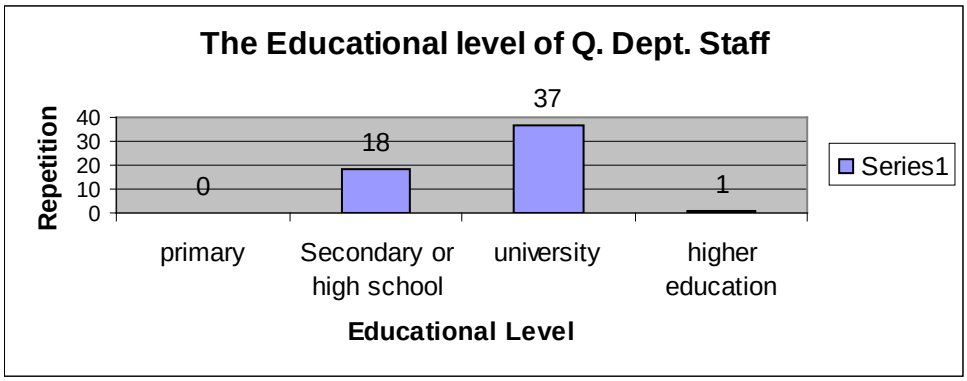

Diagram 4.5. The Educational Level of Quality Department Staff (Practical Study, 2014)

4.4.6. The Commitment Level of the Quality Department Staff

From the results of table (4.6.) and diagram (4.6.) it is noticed that most of the factories' quality department staffs are from the 1st degree of commitment with quality system which are 56 factories with ratio 64% and there are 19 factories in the 2nd degree which represented 34% then only 1 factory it's quality staff are committed but in the 3rd degree so that means most of the samples are in the high level of commitment with quality systems; that is approved by that there is not any factory chooses the forth choice (irresponsible) that means, all samples have a responsible and committed quality department staffs.

Table 4.6. The Commitment Level of the Quality Department Staff (Practical Study, 2014)

Commitment level	1st degree	2nd degree	3rd degree	irresponsible	**Total**
Repetition	36	19	1	0	56
Ratio (%)	64	34	2	0	100

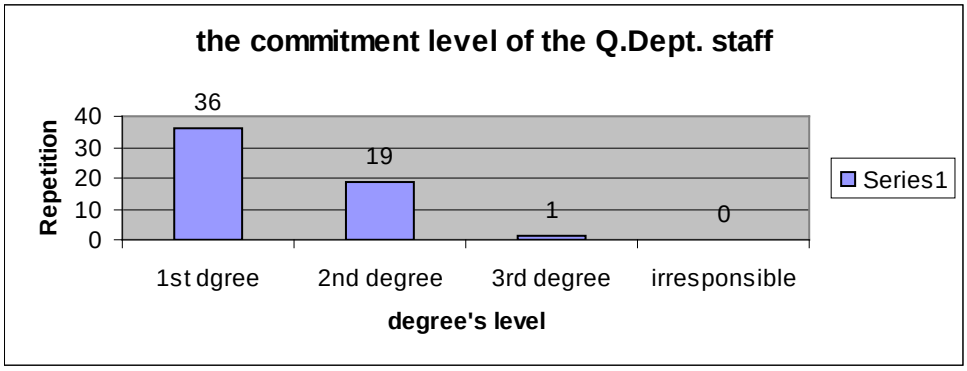

Diagram 4.6. The Commitment Level of the Quality Department Staff (Practical Study, 2014)

4.4.7. The Amount of Budget of Quality Department

All the factories give the budget money for Q. Dept. where the average or those budget is (12973TL), the budget amounts are divided into two groups which are (10000TL and more) and (less than 10000 TL) so the first group there is 40 factories are included which represented ratio 71% and the another group there is 16 factories are included which represents ratio of 29%.

According to the above discussion, which indicates to, the Q. Dept. is given an importance and a suitable budget.

Table 4.7. The Amount of Budget of Quality Department (Practical Study, 2014)

Budget intervals	10000TL and more	Less than 10000 TL	**Total**
Repetition	40	16	56
Ratio (%)	71	29	100

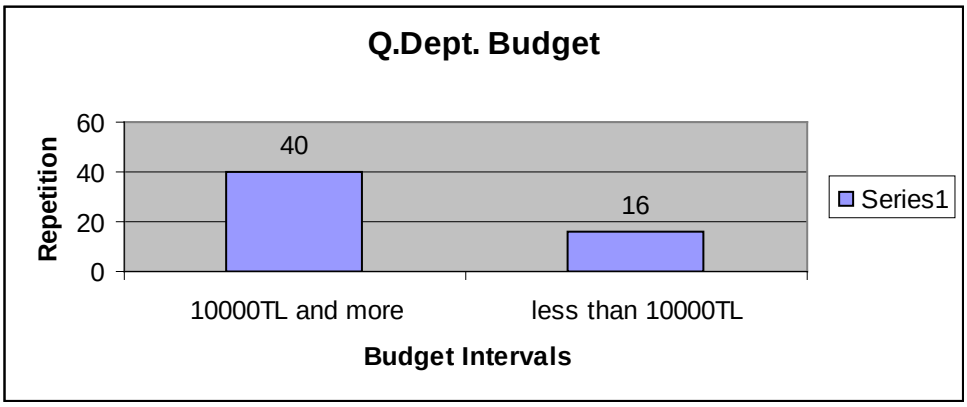

Diagram 4.7. The Amount of Budget of Quality Department (Practical Study, 2014)

4.4.8. The Easiness Level of Implementation Quality System

According to the results which appear in the table (4.8.) and diagram (4.8.), that the most of factories have an easy quality system with 42 numbers of factories with a ratio of 75% that means the most factories follow the good quality system which makes the employees able easily to use and implement the quality system.

moreover there are 9 factories have a difficult quality system and that returns to the sensitivity of the chemical industries type and the followed production processes so; they represent 16% of the ratio the very easy quality systems are followed by 5 factories that because of the easiness of the followed production process and the quality department tests; so it represents 9% of the ratio.

There is not any factory recorded as other followed system.

Table 4.8. The Easiness Level of Implementation Quality System (Practical Study, 2014)

easiness level	Very easy	easy	Difficult	other	**Total**
Repetition	5	42	9	0	56
Ratio (%)	9	75	16	0	100

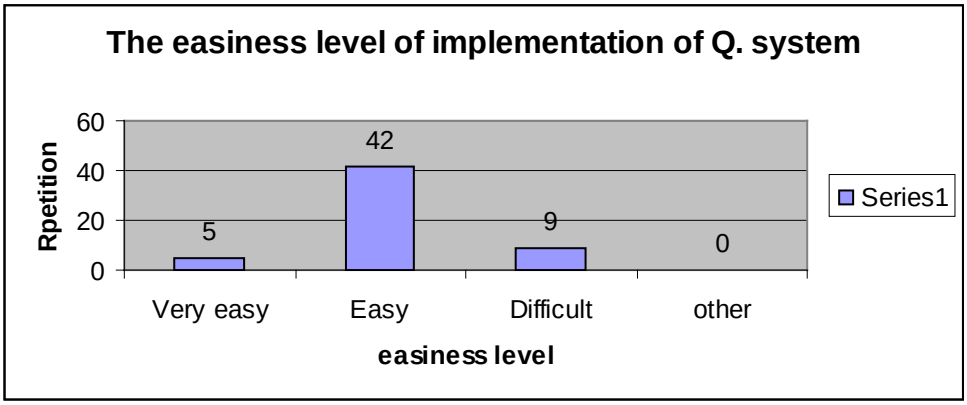

Diagram 4.8. The Easiness Level of Implementation Quality System (Practical study, 2014)

4.4.9. The Total Number of Employees in Quality Department

In this part is about, the total number of Q. Dept. employees, they are in 43 factories between 1 to 5 employees which represents 77 % of ratio so that reflects the easiness of quality system in these factories or the bigness of factories or the number of production processes.

Then there are 12 factories have 6 to 10 employees work at Q. Dept. which represents 21% of total number of studied samples of factories.

Also there is not any factory has 11 to 15 employees work at Q. Dept., finally only 1 factory has 16 & more employees work at Q. Dept. which represents 2% of ratio and that indicates to the hugeness of this factory and how much it's developed manufacturer and how much the Q. Dept. is supported and important to get this number of employees who work at it.

Table 4.9. The Total Number of Employees in Quality Department (Practical Study, 2014)

Employees total #	1-5	6-10	11-15	16 & more	**Total**
Repetition	43	12	0	1	56
Ratio (%)	77	21	0	2	100

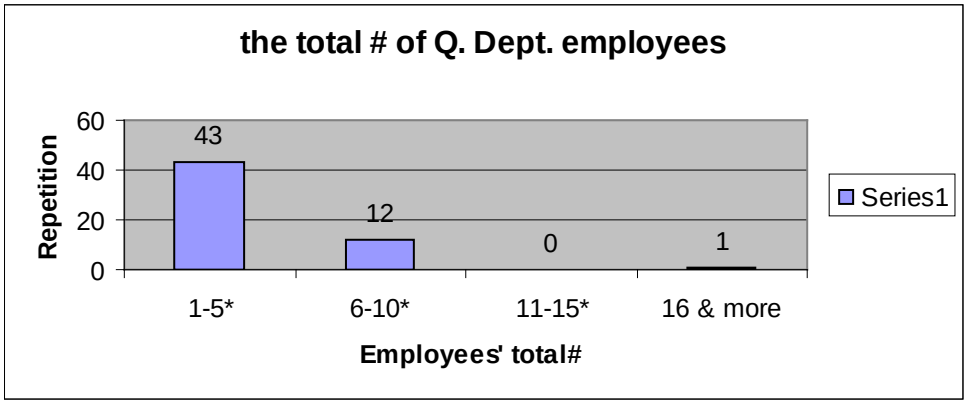

Diagram 4.9. The Total Number of Employees in Quality Department (Practical Study, 2014)

4.4.10. The Inspection Rounds by Quality Department

In this part it is found, that 9 factories make the inspection rounds once per shift which represents 16% of ratio and there 17 factories do it twice per shift with 30% of ratio then 24 factories do it 3 times per shift with ratio 43%, finally it is found, that only 6 factories do it when it is needed.

So the previous results indicate that the inspection rounds appear in the most factories more than once per shift.

Table 4.10. The Inspection Rounds by Quality Department (Practical Study, 2014)

inspection rounds	Once/shift	Twice/shift	3times/ shift	For need	**Total**
Repetition	9	17	24	6	56
Ratio (%)	16	30	43	11	100

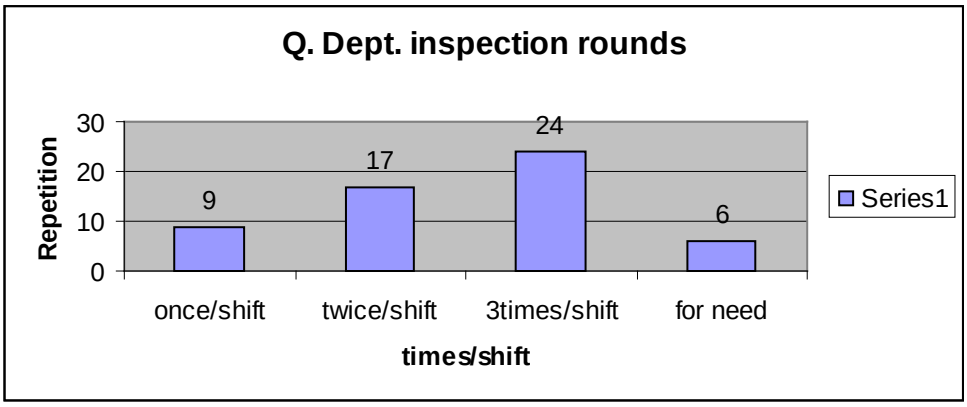

Diagram 4.10. The Inspection Rounds by Quality Department (Practical Study, 2014)

4.4.11. The Factories' Chemical Industry Type

it can be noticed from the results which are found in the table (4.11.) and diagram (4.11.) that the chemical industry types are various and according to those results that the paints industries is the highest number with 16 factories then there are 15 factories manufacture plastic then in the 3rd level hygiene manufacturing is found with 11 factories, then chemicals manufacturers are 9 factories, those are the highest numbers that because of the high need of those industries whether for export or local consuming and also the easiness and low cost of it's production.

Finally it can be seen, that the lowest factories types are metal, PVC and petrol industries, that confirms the previous note that the high number of manufacturers is for the easy and low cost industries and the heavy and costly industries have the lowest repetition of the results.

Table 4.11. The Factories' Chemical Industry Type (Practical Study, 2014)

Chemical industry type	Paint	Hygiene	Chemicals	Metal	Plastic	PVC	Petrol industries	**Total**
Repetition	16	11	9	2	15	2	1	56
Ratio (%)	28	20	16	4	26	4	2	100

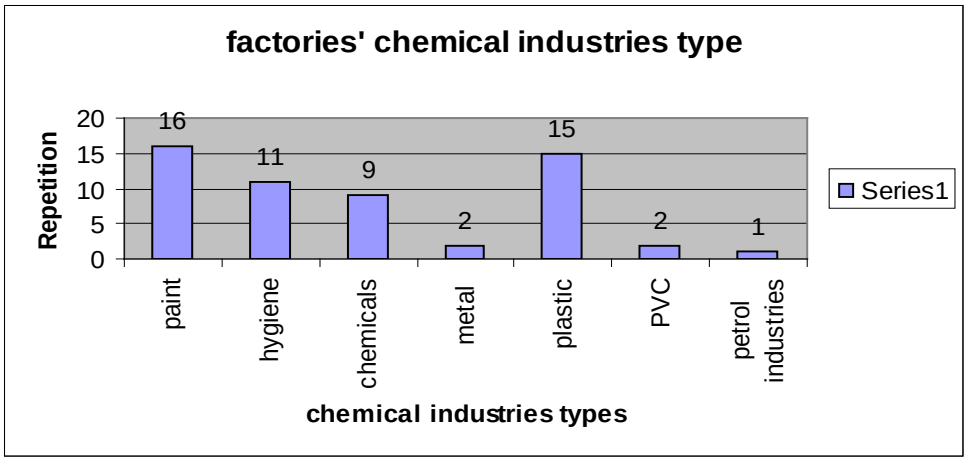

Diagram 4.11. The Factories' Chemical Industry Type (Practical Study, 2014)

4.4.12. The Firms' Working Hours

In this part it is found, that 35 factories work 5 to 8 hour per day with ratio of 63% that indicates the most of industries type are easily to be done during 8 hours at the working day then there are 18 factories work 9 to 12 hours per day, that means more than one shift are followed in those factories, which represented 32% of ratio, finally there are only 3 factories work more than 13 hours per day with 5% ratio.

Table 4.12. The Firms' Working Hours (Practical Study, 2014)

Working hours	5to8 hr/day	9to12hr/day	More than 13hr/day	**Total**
Repetition	35	18	3	56
Ratio (%)	63	32	5	100

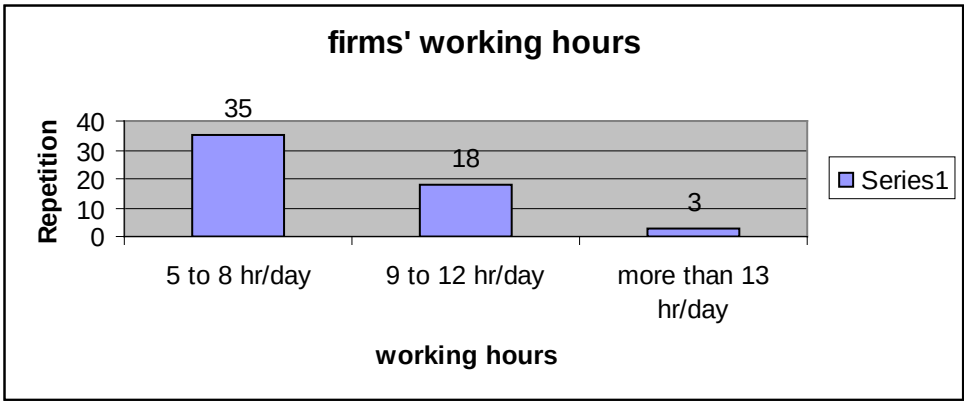

Diagram 4.12. The Firms' Working Hours (Practical Study, 2014)

4.4.13. The Amount of Higher Management Support to Quality Department

This part one of the important parts in this study that reflects an important reason of the prosperity of quality system implementation in Gaosb, which push the production to grow up, so it can be found, in the results of this part that 31 factories are always supported by higher management which represents 55% of the ration, then 21 factories sometimes are supported which represents ratio 38%, in the opposite side the negative answers we got only 4 factories are not supported by higher management that only represents 7% and there is not any factory never has not been supported by higher management.

So according to the previous results, the higher management supporting can be one of the reasons of quality department and factories improvement.

Table 4.13. The Amount of Higher Management Support to Quality Department (Practical Study, 2014)

higher management support	Always	Sometimes	Not	Never	**Total**
Repetition	31	21	4	0	56
Ratio (%)	55	38	7	0	100

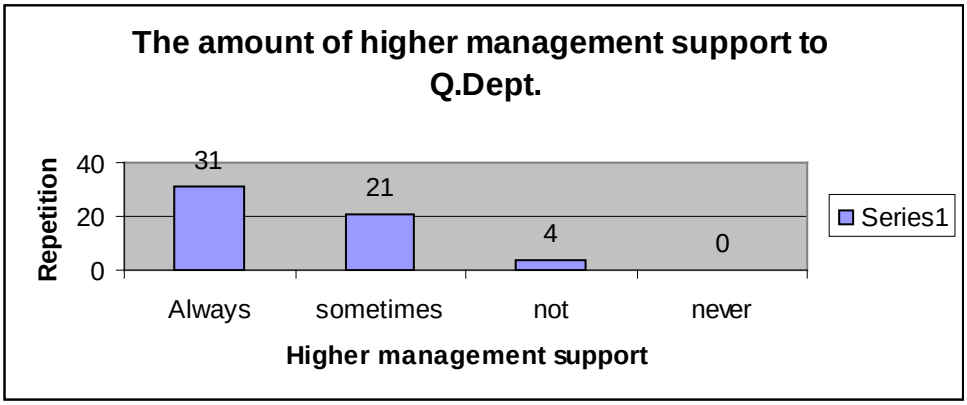

Diagram 4.13. The Amount of Higher Management Support to Quality Department (Practical Study, 2014)

4.4.14. The Product Defects Ratio in the Starting up of Production

This part there are varying results cause of the industrial type differences some of them production defects ratio in starting up of production between 0-50% of the defect ratio which are recorded by 32 factories and that represents 57% of sample ratio.

The other group of answers which the defect's ratio are more than 50% to 100% in starting up time they are recorded by 24 factories which represents 43% of the sample ratio; so the quality control department has to reduce this ratio or manage it.

Table 4.14. The Product Defects Ratio in the Starting up of Production (Practical Study, 2014)

defects ratio	0-50%	More than 50%-100%	**Total**
Repetition	32	24	56
Ratio (%)	57	43	100

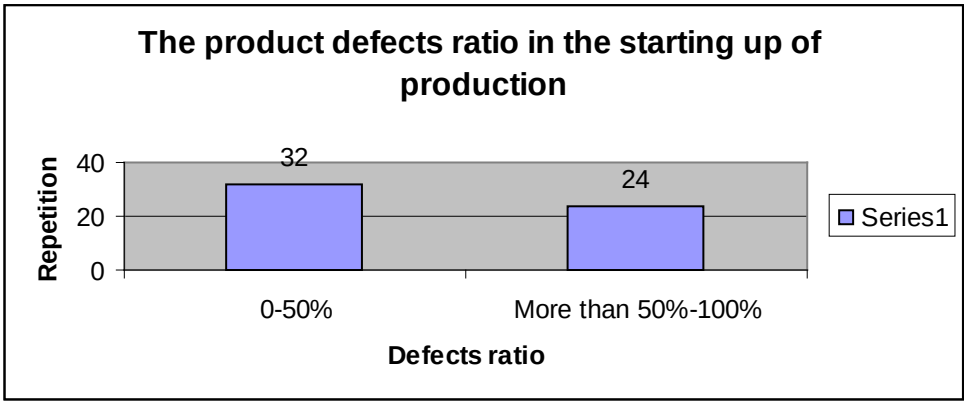

Diagram 4.14. The Product Defects Ratio in the Starting up of Production (Practical Study, 2014)

4.4.15. The Product Defects Ratio in the Middle of Production

In this part it is an expected result that all the factories get a defects ratio between 0 to 50% ratio in the middle of the production and that means or occurs by the stability of the production processes in the mid-production time.

So the defect ratio as expected must be the lowest.

Table 4.15. The Product Defects Ratio in the Middle of Production (Practical Study, 2014)

defects ratio	0-50-%	More than 50%-100%	**Total**
Repetition	56	0	56
Ratio (%)	100	0	100

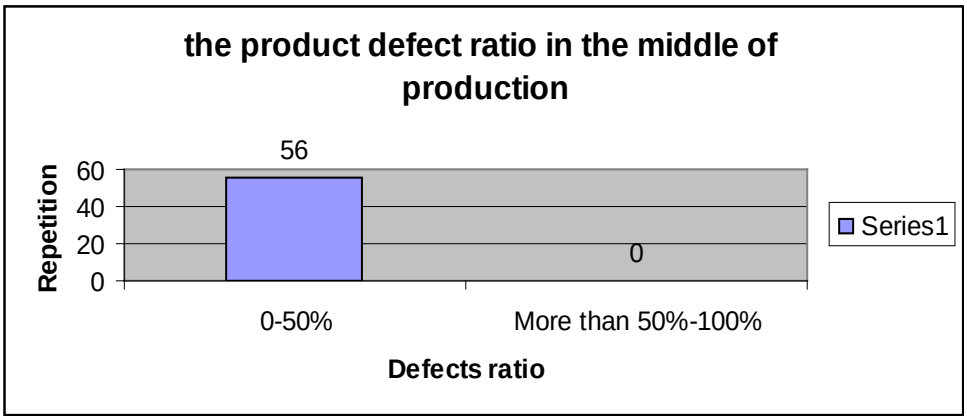

Diagram 4.15. The Product Defects Ratio in the Middle of Production (Practical Study, 2014)

4.4.16. The Product Defects Ratio in the Shutting Down of Production

In this part from the table (4.16.) and diagram (4.16.) it is found, that 48 factories have a defects ratio 0-50% in production shutting down time which gives 86% ratio and 8 factories have a defects ratio more than 50% and that represents 14% ratio of the study sample that means there is instability situation occurs in the shutting down time to get this ratio of defects, where the starting up time in those factories more stable than shutting down that indicates if the problem does not come from the processes the problem is people errors.

Table 4.16. The Product Defects Ratio in the Shutting Down of Production (Practical Study, 2014)

defects ratio	0-50%	More than 50%-100%	**Total**
Repetition	48	8	56
Ratio (%)	86	14	100

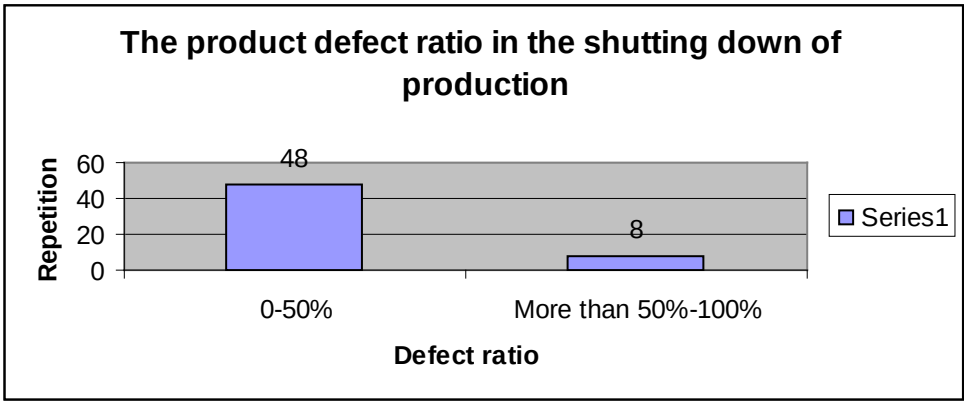

Diagram 4.16. The Product Defects Ratio in the Shutting Down of Production (Practical Study, 2014)

4.4.17. The Implementation of Shifts System

This part shows that 24 factories have 2 shifts per day which presents 43% of ratio then there are 24 factories have 3 shifts per day which represents 43% of ratio finally there were only 8 factories have one shift per day which represents 14% of ratio, so that indicates to the need of increasing of the working hours per a day that because of the requirement of the chemical industries sector

Table 4.17. The Implementation of Shifts System (Practical Study, 2014)

Shift system	2 shifts	3 shift	1 shift	**Total**
Repetition	24	24	8	56
Ratio (%)	43	43	14	100

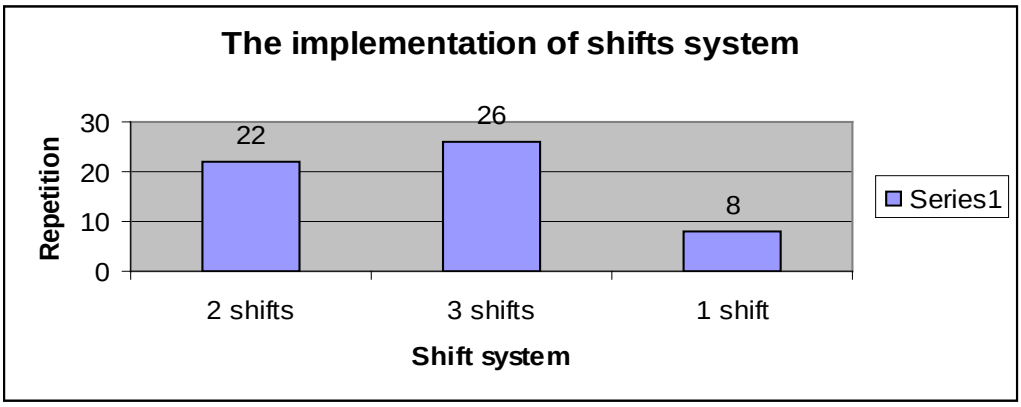

Diagram 4.17. The Implementation of Shifts System (Practical Study, 2014)

4.4.18. The Lowest Defects Ratio in the Shifts

This part indicates to shift which has the lowest ratio of defects, so the morning shift has the lowest defects ratio at 49 factories which represents 87% of study's sample so that means the morning shift is the best time for the working and has the most suitable conditions for production processes and human activities, then 1 factory answers of afternoon shift that the lowest defects appears at it, only 2 factories say, the night shift have the lowest defects ratio, finally there are 4 factories do not give answer for this part cause of absence of defects.

Table 4.18. The Lowest Defects Ratio in the Shifts (Practical Study, 2014)

Shift	Morning	Afternoon	Night	No Answer	**Total**
Repetition	49	1	2	4	56
Ratio (%)	87	2	4	7	100

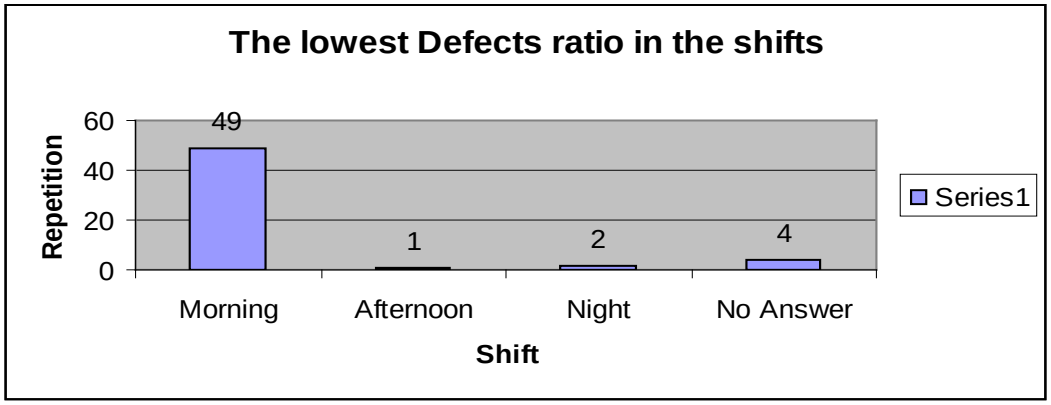

Diagram 4.18. The Lowest Defects Ratio in the Shifts (Practical Study, 2014)

4.4.19. The Highest Defects Ratio in the Shifts

This part is expected to have the opposite results of the previous part and this expectation is got, which are 5 factories the highest defect ratio shift is the morning shift which represents 9% ratio, where 17 factories answer that afternoon shift is the highest which represents 30%, then as the expectation the highest defects ratio occurs in the night shift at 29 factories which represents 52% of the study's sample, finally there are 5 factories do not answer this part some are cause there are not defects and another cause of cannot determine.

Table 4.19. The Highest Defects Ratio in the Shifts (Practical Study, 2014)

Shift	Morning	Afternoon	Night	No answer	**Total**
Repetition	5	17	29	5	56
Ratio (%)	9	30	52	9	100

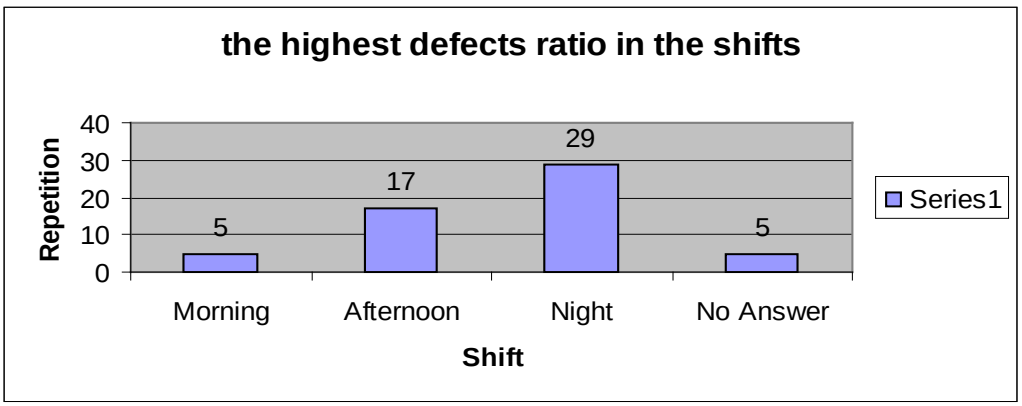

Diagram 4.19. The Highest Defects Ratio in the Shifts (Practical Study, 2014)

4.4.20. The Contribution of the Used Quality System in Saving Environment

This part shows if the used quality system at the factories adds any point in saving environment, the results are varying where 5 factories absolutely their Q. system saving the environment which represents 9%, then there were 14 factories their addition to the saving environment is some, then 18 factories answers that their systems does not add any point in saving environment which represents ratio of 32%, finally there 19 factories do not notice if their system contribute of save the environment which is the highest ratio of the all answers of this part, and that unexpected result that because the quality system must notice and pay attention to this point.

Table 4.20. The Contribution of the Used Quality System in Saving Environment (Practical Study, 2014)

System saving status	Absolutely	Some	Not	Not noticed	**Total**
Repetition	5	14	18	19	56
Ratio (%)	9	25	32	34	100

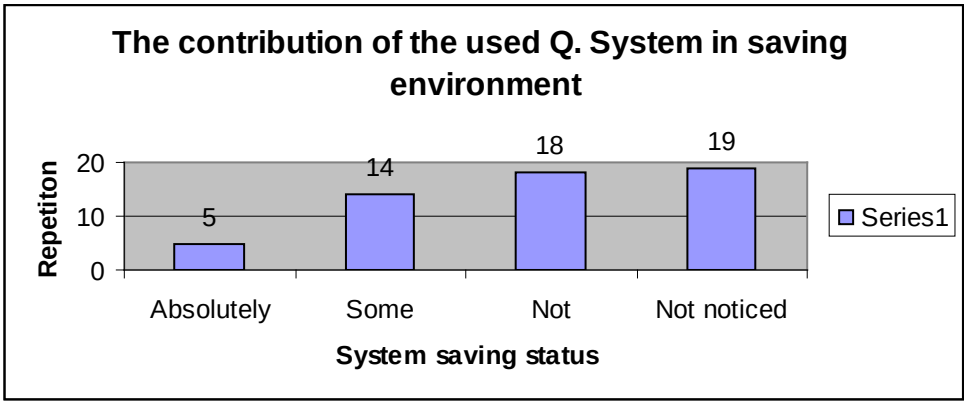

Diagram 4.20. The Contribution of the Used Quality System in Saving Environment (Practical Study, 2014)

4.4.21. The Chemical Wastes and Implementation Policy

This part has the unexpected results, where only 8 factories has got implementation policy for chemical wastes which represent 14% of the sample's ratio, and then there are 48 factories do not have implementation policy for chemical wastes, which represent 86% of the ratio, the note here of this part where the chemical wastes go, and it is noticed that the huge factories also do not have this implementation policy in the opposite of that some small factories have this implementation policy which make is not expected results.

Table 4.21. The Chemical Wastes and Implementation Policy (Practical Study, 2014)

Availability	Yes	No	**Total**
Repetition	8	48	56
Ratio (%)	14	86	100

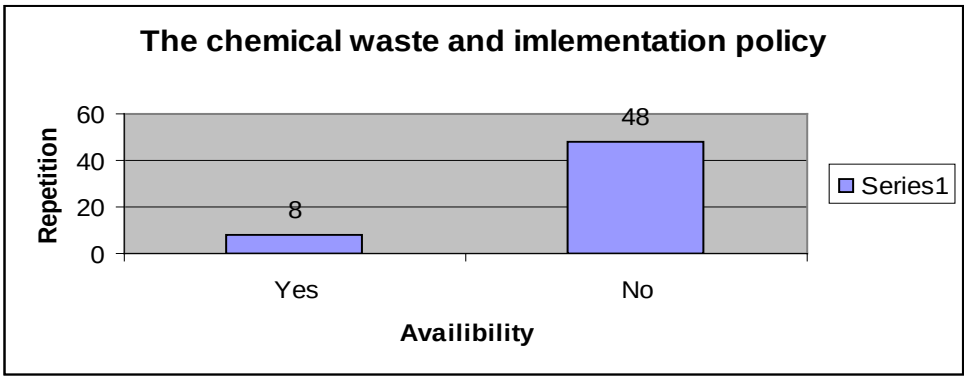

Diagram 4.21 The Chemical Wastes and Implementation Policy (Practical Study, 2014)

4.4.22. The Maintenance Unit

This part results are 43 factories have maintenance unit at the factory which represents 77% of ratio and there are 13 factories do not have their own maintenance unit which represents 23% of the ratio, that indicates to the range of the development status of the factories that they have their own maintenance units inside their factories.

Table 4.22. The Maintenance Unit (Practical Study, 2014)

Availability	Yes	No	**Total**
Repetition	43	13	56
Ratio (%)	77	23	100

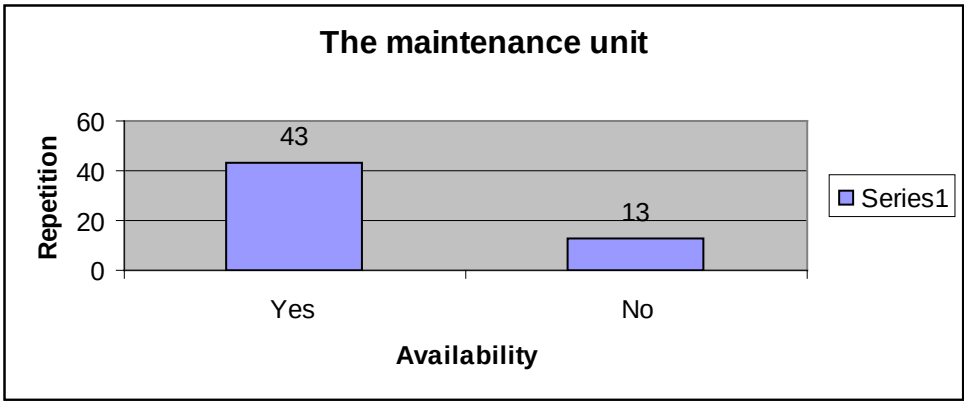

Diagram 4.22. The Maintenance Unit (Practical Study, 2014)

4.4.23. The Salary Delay and Product's Quality

The results of this part reflects the effect of salary delay on product quality that means the motivation to work and to produce in good quality was increased in case of salary delay, so 2 factories their product's quality is absolutely affected by salary delay then there are 31 factories are affected which represents 55% of ratio, then there are 14 factories are not affected which represents 25% ratio finally there are 9 factories do not notice any effect of salary delay on their product's quality.

Table 4.23. The Salary Delay and Product's Quality (Practical Study, 2014)

Effect	Absolutely Occurs	Occurs	Doesn't Occur	Unnoticed	**Total**
Repetition	2	31	14	9	56
Ratio (%)	4	55	25	16	100

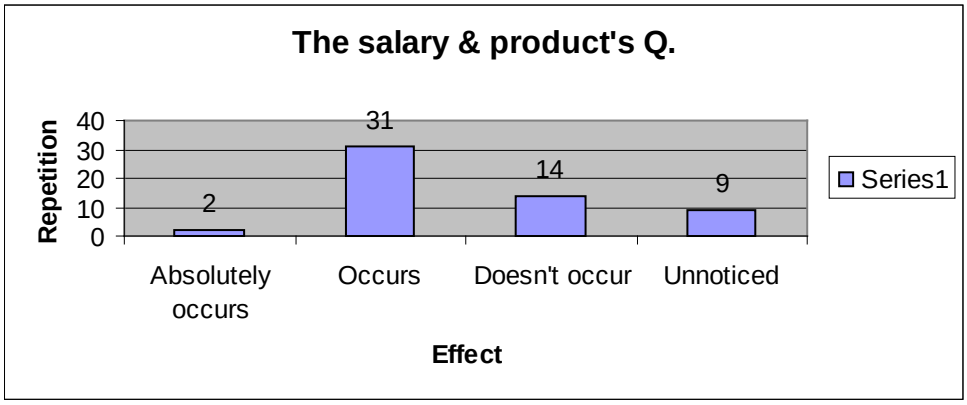

Diagram 4.23. The Salary Delay and Product's Quality (Practical Study, 2014)

4.4.24. The Bigness of Orders and Product's Quality

This part studies the hugeness of orders do they effect on the product's quality or do not so can be determined from the table (4.24.) and diagram (4.24.), that there are 2 factories' huge orders absolutely effect on the quality of their products, where there are 26 factories their product's quality are affected of the hugeness of the orders which represents 46% of the ratio, moreover, there are 22 factories their product's quality don't be affected by this hugeness which represents 39% of the ratio, finally there are 6 factories do not notice this hugeness if it effects or does not on the product's quality that returns to the natural of their industries and because of the lake of defects.

Table 4.24. The Bigness of Orders and Product's Quality (Practical Study, 2014)

Effect	Absolutely Occurs	Occurs	Doesn't Occur	Unnoticed	**Total**
Repetition	2	26	22	6	56
Ratio (%)	4	46	39	11	100

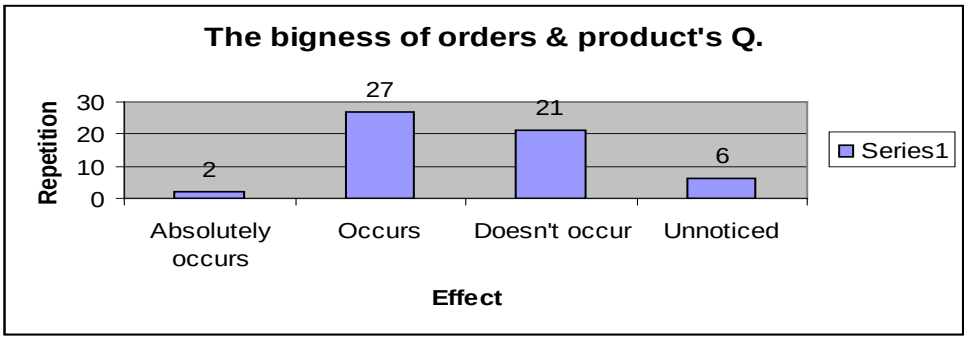

Diagram 4.24. The Bigness of Orders and Product's Quality (Practical Study, 2014)

4.4.25. The Staff Turnover Rate and Product's Quality

This part is important to be studied because the staff turnover rate in case of old system or the systems which do not follow the knowledge transfer from the professional employees to the others so it will effect on those factories, so from table (4.25.) and diagram (4.25.), the found results are, 2 factories are absolutely affected by this turnover which represents 4% of the ratio, then there 15 factories this turnover effects on their product's quality which represents 27% ratio, where 21 factories have an opposite answers that the turnover of staff does not effect on the product's quality and that represents 37% ratio, finally there are 18 factories do not notice if this turnover effects or doesn't effect where this result represents 32% of the study's sample ratio.

Table 4.25. The Staff Turnover Rate and Product's Quality (Practical Study, 2014)

Effect	Absolutely Occurs	Occurs	Doesn't Occur	Unnoticed	**Total**
Repetition	2	15	21	18	56
Ratio (%)	4	27	37	32	100

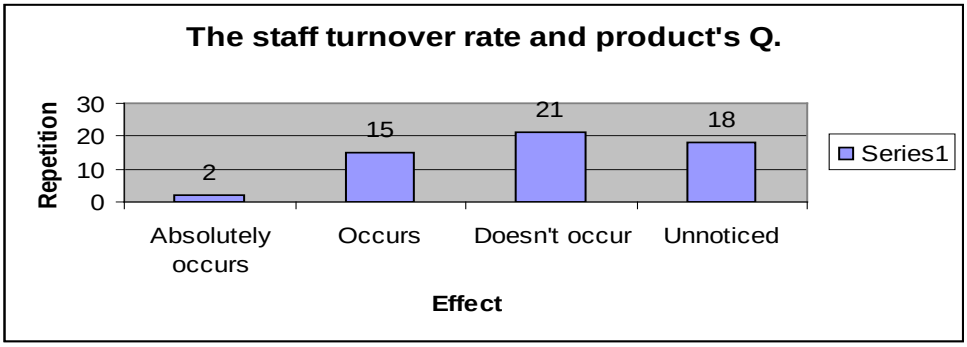

Diagram 4.25. The Staff Turnover Rate and Product's Quality (Practical Study, 2014)

4.4.26. Employees Training Program

This part takes a look to the training programs for factories' employees so the results according to table (4.26.) and diagram (4.26.) are only 8 factories always do training programs for their employees this result represents 14% of the ratio, furthermore 35 factories do the training only for need and that represents ratio of 63% finally there also are 13 factories do not do any training programs and that is unexpected result because those factories have a quality system specially ISO and TSE; which have in their instruction the employees training rules and employees development methods.

Table 4.26. Employees Training Program (Practical Study, 2014)

Training program availability	Always	For need	Non	**Total**
Repetition	8	35	13	56
Ratio (%)	14	63	23	100

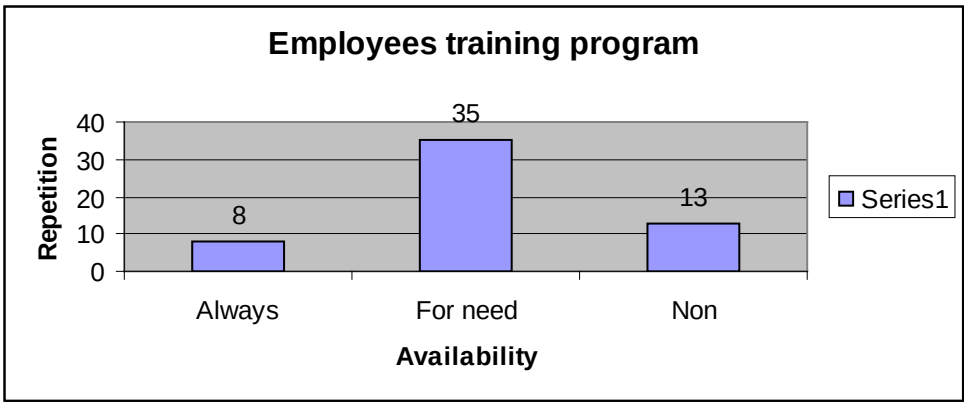

Diagram 4.26. Employees Training Program (Practical Study, 2014)

4.5. DATA ANALYSIS AND FINDING THE CORRELATIONS

In this section finds some correlation between some variables to assure the impact of quality standards on the chemical sector in Gaosb in many directions and

the below table will show these correlations, then they will be discussed and what they indicate to.

Table 4.27. Correlations of Study (Practical Study, 2014).

Correlation Between: **Correlation is significant at the 0.01 level (2-tailed) *Correlation is significant at the 0.05 level (2-tailed) (P): Pearson correlation (S): Spearman correlation		Correlation Sign	Sig. (2-tailed)	Pearson Correlation
The used Quality System	1) The Amount of Budget of Quality Department (P)	+	0.000	0.547**
	2) The Commitment Level of the Quality Department Staff (S)	-	0.009	0.395**
	3) The Salary Delay and Product's Quality (S)	-	0.001	0.432**
	4) Employees Training Program (S)	-	0.000	0.457**
The Educational Level of Quality Department Staff	5) Employees Training Program (S)	-	0.004	0.377**
	6) The Chemical Wastes and Implementation Policy (S)	+	0.012	0.333*
	7) The Amount of Higher Management Support to Quality Department (S)	+	0.000	0.514**
	8) The Commitment Level of the Quality Department Staff (S)	-	0.000	0.682**
The Amount of Higher Management Support to Quality Department	9) The Commitment Level of the Quality Department Staff (S)	-	0.000	0.565**
	10) The Amount of Budget of Quality Department (S)	+	0.000	0.482**
The Amount of Budget of Quality Department	11) The Total Number of Employees in Quality Department (P)	+	0.000	0.735**
	12) The Firms' Working Hours (P)	+	0.046	0.268*
The Salary Delay and Product's Quality	13) The Bigness of Orders and Product's Quality(S)	+	0.000	0.454**
The Implementation of Shifts System	14) The Commitment Level of the Quality Department Staff (S)	-	0.016	0.322*
The Commitment Level of the Quality Department Staff	15) The Firms' Working Hours (S)	+	0.001	0.442**
	16) The Amount of Budget of Quality Department (S)	-	0.000	0.467**

From the above table (4.27.) it can be noticed, that some of the correlations of our studied variables, let's take them one by one as following:

1) It is found, by using SPSS Program the part of Pearson correlation that there is a correlation between the used quality system and the amount of budget of Q. Dept. and the correlation is 0.547 with significant 0.000 at the 0.01 level (2-tailed) so that means the correlation is strong because it approaches to 1, that indicates the availability of quality system makes the necessity of allotting budget for Q. Dept.

2) The got a result shows the presence of correlation between the used quality system and the commitment level of the Q. Dept. staff by using Spearman correlation method and the results are correlation 0.395 with 0.009 significant (2-tailed) that indicates the correlation is approximately strong.

The availability of quality system helps to make the working environment and the staff of Q. Dept. committed with rules and instructions in the 1st degree but not always, the out of the ordinary in this case if the Q. Dept. staff are not committed that comes from some abnormal situations whether it is salary delay, bigness of orders or there is a new employee under training period.

3) It is found that there is a correlation between the used quality system and the salary delay and product's quality which is clear with significant 0.001 at the 0.01 level (2-tailed), here the correlation almost strong and indicates to the relation between these variables start to be strong and that also can explain the importance of availability of quality system which controls the impact of the salary delay or its effects on the product quality.

4) The results in this part that there is a strong correlation by using Spearman correlation method which emerges 0.457 with 0.000 significant at the 0.01 level (2-tailed) that means this correlation strong and approaches to 1 so that indicates to the effectiveness of the availability of quality system on the necessity of employees training program, but here the correlation in inverse relationship but this is a negative indicator that shows the training program going to be less in spite of the availability of quality system.

5) In this section it is found, that the spearman correlation is 0.377 and significant 0.004 at the 0.01 level (2-tailed) so there is a relationship between the educational level of Q. Dept. staff and employees training program and this correlation is negative which indicates to inverse relationship and that is logical

where the high educated staff does not need a training program so the training program decreases or done if it is required.

6) In this part, there is a positive or proportional relationship between the educational level of Q. Dept. and the chemical wastes and implementation policy and the spearman correlation is 0.333 with significant 0.012 at the 0.05 level (2-tailed) and that make the relationship is not strong but gives an indicator to correlation between these two variables.

7) The correlation of the educational level of Q. Dept. staff and the amount of high management support to Q. Dept. according to Spearman correlation method is 0.514 with significant 0.000 at the 0.01 level (2-tailed) which has a positive sign that means this correlation is strong and proportional relationship which indicates to; when the educational level of Q. Dept. staff increases the supporting of high management increases and that logically occurs every where, when the educational level of the staff increases the level of the confidence of their working methods, results and their decisions increases, that bears them a lot of responsibility.

8) In this part it is found, that there is a relationship between the educational level of Q. Dept. staff and the commitment level of Q. Dept. staff and that reflect the effect of the educational level on the commitment level so the Spearman correlation was 0.682 with significant 0.000 so the correlation is strong because of its approaching to 1.

9) This part is related and correlated to both of the previous two parts which are about the educational level of Q. Dept. staff and the commitment level of Q. Dept. staff so the logical situation occurs when there is a relation between the level of educational and the amount of supporting, and the educational level and the commitment level, then the both of the commitment level and the amount of supporting high management must have a relationship between each other, must be correlated, so it can be approved, by using Spearman correlation method and the results are correlation is 0.565 with a 0.000 significant at the 0.01 level (2-tailed) so this correlation is strong and expected to occur, so it can be said, that these three variables are affected by each other.

10) This part we can notice that between the amount of higher management support to Q. Dept. and the amount of budget of Q. Dept. a relationship which is approved by using Spearman correlation method, the correlation is 0.482 with significant 0.000 at the 0.01 level (2-tailed) so that indicates to a strong correlation

with positive side which means when the higher management supports Q. Dept. that leads to increase the amount of budget for Q. Dept. so this what empirically happens in our study.

11) From this section it is noticed that there is a strong positive correlation between the amounts of budget of Q. Dept. and the total number of employees in Q. Dept. which is approved by using Pearson correlation method and it is 0.735 with significant of 0.000 at the 0.01 level (2-tailed) according to the pervious result it is normal to increase the amount of the budget for Q. Dept. when the number of staff increases.

12) This part discovers a correlation between the amount of budget of Q. Dept. and the firm's working hours by using Pearson correlation method and the got result is correlation 0.268 with 0.046 significant at the 0.05 level (2-tailed) and that leads to, that almost a weak correlation but it is logically happens at any factory, what it spend money for any department's activities it looks for a work and achievements, that comes by increasing working hours, but able to occur.

13) in this part it is found, that there is a relationship between the salary delay and the bigness of orders by using Spearman correlation method which is 0.454 with 0.000 significant at the 0.01 level (2-tailed) this correlation positive that does not indicate if salary delay increase the bigness of order increases, in this case it shows that both of these cases moving in the same effect on the quality of product so it means if the salary delay happens and the orders are big the quality product will be affected according to the status if it increasing or decreasing; due to that there is a correlation because of the same effect of them on the same variable.

14) in this part it is found, that there is a negative relationship between the implementation of shifts system and the commitment level of Q. Dept. staff by Spearman correlation method which is 0.322 with significant 0.016 at the 0.05 level (2-tailed) which means a weak correlation that indicates if the factories implement the highest number of Q. Dept. staff will decrease so it indicates the shift system has a negative effect on the commitment level of Q. Dept. staff but it is not with a high indicator that what it is meant of weak correlation.

15) In this part it can be noticed, that the correlation between the commitment levels of the Q. Dept. staff and the firms' working hours is 0.442 by using Spearman correlation method with significant at the 0.001 level (2-tailed) so this normal to occur that because of the period of the time of work effects on the degree of the

commitment for example when the work more than 10 hours at the day the desire of the work decreases so the commitment to work correctly will decrease, and in the opposite case it can found, some employees start their creativity of work in a high number of working hours without any reducing of their commitment degree.

16) In this part it is found, there is a correlation between the commitment level of Q. Dept. staff and the amount of the budget of the Q. Dept. staff by using Spearman correlation method and the result is 0.467 correlation with 0.000 significant at the 0.01 level (2-tailed). In this case the correlation normal to be occurred because always the money effects on the behavior of the humans.

Table 4.28. The Relationship between Q. System & Working hrs (Practical Study, 2014)

Q. System with working hrs	Repetition	Percentage (%)
ISO (5-8 hrs)	12	21
ISO (9-12 hrs)	13	23
TSE (5-8 hrs)	18	32
TSE (9-12 hrs)	4	7
TSE (13 &more)	2	4
ISO+TSE (5-8hrs)	4	7
ISO+TSE (9-12hrs)	1	2
ISO +TSE +other (5-8hrs)	1	2
ISO +TSE +other +CE (5-8hrs)	1	2
Total	56	100

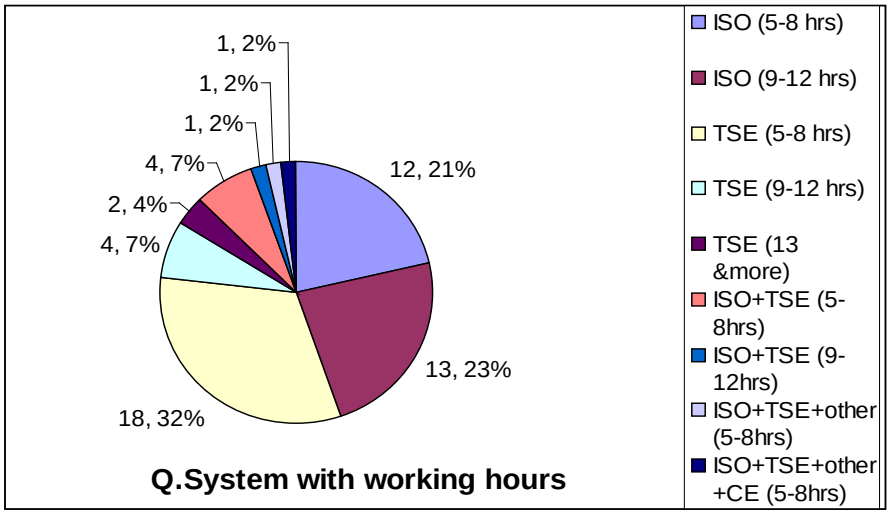

Diagram 4.27. The Relationship between Q. System & Working hrs (Practical Study, 2014)

From the table (4.28.) and diagram (4.27.); it can be noticed, that the Q. system effects on the working hrs but it is not a clear effect but from the seen data it can be noticed that there is not any factory has got an ISO system and works 13 & more hrs this result according to study's sample.

FIFTH CHAPTER

CONCLUSION & RECOMMENDATION

5.1. CONCLUSION

In the end of this study it can be found some conclusion according to the researches and readings finally these conclusions are as the following:

1) From the tables and diagram which are the analysis of the collected questionnaire it can be found, that there is indirect relationship between the effect of quality system and standards on the development of chemical sectors.

2) From the articles and the collected data it is found that the location of Gaziantep city makes added value for its development and contributes in the improvement at the growth status of this industrial zones specially the highway project which joins Gaziantep city with the port of Mediterranean sea.

3) One of the hypotheses comes on the opposite of the previous expectations which it is expected that the quality systems and standards effect on the development of the utilized methods and techniques in chemical factories, which are used to save the environment but the actual status, comes, that most of the chemical factories which are asked that they do not follow any method to reuse or disposal of chemical wastes despite, the hugeness of those factories except the non-wastes factories, in the conversely there are small factories follow some simple methods for reusing and recycling the chemical wastes.

4) There is a development at Gaosb and there are many special characteristics not only in chemical sector but also at the whole of Gaosb characteristics, the most important point makes Gaosb different comparing with another Turkish industrial zones, that it is a gate of the south east of Turkey which is the most important area of export, so the raising of the investment at Gaosb specially in chemical and sub-chemical sectors.

5) There is an indirect relationship between quality standards and chemical sector efficiency which appears at the results of that all of the sample of this study are

awarded at least with one quality certificate and that makes all of them are looking for developing their factories with high skilled or educated employee, leads to:

- Reduce the defect ratio in the expected shift for example.
- Concern of internal and external audit.
- Effect on the degree or level of responsibility at those factories especially at quality department.
- Encourage the necessity of a maintenance unit inside the factories.
- Encourage the training program.
- Increase the high management's trust quality department and always supports it.
- Make the quality system easier for the employees.
- Increase the inspection rounds by Q. Dept. which is effective to reduce the defect ratio in the production at the chemical factories.

6) Finding of the research and reading both of statistics reports or articles of GSO that the exports of Gaziantep develop and increase and that because of using high technology so that mean the high quality systems are used in this field.

7) The absence of training program or doing this program when it is only required that indicates or leads to 1) The quality system is sufficient, effective and easy to be implemented so that makes these programs are not required or are not always required. 2) Or the quality system is not effective, weak and does not concern of the employees' need for the training program.

8) the findings of study illustrates , when the educational level of the Q. Dept. staff increased the granted support from the higher management increases for the Q. Dept. staff, the policy for chemical wastes is implemented and it is an indicator to the degree of the Q. Dept. staff commitment with rules and instructions.

9) From the study's results there is not any factory which has got ISO system certificate works 13 & more hrs per day we have to mention that is according to the study's samples.

10) From the study's results we could find the correlation between Q. system and the amount of budget and that meant Q. system effects and is affected on and by the amount of budget of Q. Dept.

11) It can be found, the most of the factories' product quality is affected by salary delay and the defect and quality going to be worse.

12) The bigness of orders not always effects on the quality of product in the same level and way at all chemical factories.

13) The staff turnover rate does not have a clear effect on the quality of factories' product because factories variously answered to this point. So the results due to that are various.

14) The highest defect ratio happens at the night shift, but the most defect ratio occurs during any shift happens at the starting up conditions or starting up stage for the production processes.

15) The commitment level of the Q. Dept. staff is affected by various variables at factories as:

- The amount of higher management support to Q. Dept.
- The used Q. system.
- The Educational level of Q. Dept. staff.
- The implementation of the shift system.
- The firm's working hours.
- The amount of budget of Q. Dept.

5.2. RECOMMENDATION

Finally, in this part according to the results and conclusions, some recommendations are extracted to whom concerns of this study and especially to the chemical sector at the OIZs, the recommendations as the following are:

1) it can be noticed, that the most chemical factories do not implement any policy for chemical wastes treatment even though of the factories hugeness, so it can be recommended to activate and implement any suitable policy which can be used in their factories because of this policy importance it has to be implemented and here it is not mentioned to the factories which are non-wastes factories -they are excepted cases- where there are many projects are done inside the Gaosb as it is mentioned before for water treatment, due to that it is possible to implement this policy to save the environment from the toxic effect of chemical wastes.

2) The training program has to be sustainable and continuous, not only if it is needed, because the continuous training program supports and enhances the feeling of the loyalty in the Q. Dept. staff to their factories, due to that they will start to create new methods to improve the working processes and to develop Q. Dept., thus that will lead to raise the productivity.

3) it can be recommended, appointing a high educated and skilled staff at Q. Dept. if the factory will not be able to activate the training program at the factory that will save the cost of these programs and the factory will provide benefits from the staff's experiences.

4) Finally, it can be recommended to all of chemical factories at Gaosb to concern and pay attention to the point of Q. Dept. staff, because it is a significant department and its staff too, because they look after the product quality; to get the customer satisfaction, also one of the most important points, factories have to gain Q. Dept. staff commitment to reach to the high quality product with less amount of defects furthermore, they have to reach a sustainable improvement and development in chemical factories at Gaosb.

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APPENDICES

APPENDIX A

ANKET FORMU

Sayın Yetkili;
Bu anket ile elde edilen veriler, Kilis 7 Aralık Üniversitesi Sosyal Bilimler Enstitüsü İşletme Anabilim Dalında hazırlanacak olan "Yüksek Lisans" tezinde kullanılacaktır. Ankete vermiş olduğunuz cevaplar, firma isim belirtilmeksizin değerlendirilerek olup, araştırma sonuçları istenildiğinde sizlerle paylaşılacaktır. İlgilerinize teşekkür eder, başarılar dilerim.

Dua'a Ismail Yacoub ALSAIFI
(Öğrenci)
Doç. Dr. Sadettin PAKSOY
(Danışman)
e-posta: dsaifi80@hotmail.com

ANKET SORULARI

1) Firmanızda kullanılan kalite sistemi nedir? a)İSO b)TSE c) 6 Sığma d) CE e)Diğer ……
2) Test için kullanılan örneklem sıklığı nedir? a)Saatte bir b)Yemek öncesi c)Vardiya sonu d)Diğer...
3)İç denetimler ne sıklıkla yapılır? a)Her ay b)Üç ayda bir c)Altı ayda bir d)Yılda bir e)Diğer …….
4) Dış denetimler ne sıklıkla yapılır?a)Her ay b)Üç ayda bir c)Altı ayda bir d)Yılda bir e)Diğer…
5) Kalite bölümünde çalışanların eğitim durumu nedir? a)İlköğretim b)Ortaöğretim -Lise c)Üniversite d)Lisansüstü
6) Kalite bölümünde çalışanların sorumluluk derecesi nedir? a)1.derece b)2.derece c)3.derece d)Sorumlu değil
7) Firma kalite bölümü için ne kadar bütçe ayırmaktadır? Cevap: .....TL.
8) Kalite sistemini uygulamada kolaylık derecesi nedir? a)Çok kolay b)Kolay c)Zor d)Diğer ……
9)Firmanızda kalite bölümünde kaç kişi çalışmaktadır? a)1-5 arası b)6-10 arası c)11-15 arası d)16 ve yukarı
10) Kalite bölümünde denetim turları sayısı (ne kadar)?
a)Vardiyada bir tur b)Vardiyada 2 tur c)Vardiyada 3 tur d)Gerekli görüldüğünde
11) Firmanız hangi kimyasal endüstride faaliyet göstermektedir? Cevap: .....
12) Firmanızda günlük çalışma süresi kaç saattir?
a)Günde 5-8 saat arası b)Günde 9-12 saat arası c)Günde 13 saatten fazla
13) Üst yönetimin kalite bölümüne destek verme durumu?
a)Her zaman destek veriyor b)Bazen veriyor c)Vermiyor d)Hiç vermiyor
14) Vardiya başında ilk bir saat içinde defolu ürün oranı nedir? Cevap:
……..

15) Vardiya ortasında defolu ürün oranı nedir? Cevap: ……..
16) Vardiya sonunda defolu ürün oranı nedir? Cevap: ……..
17) Firmanızda vardiya sistemi uygulanıyor mu? a)Evet 2 vardiya b)Evet 3 vardiya c)Tek vardiya
18) En düşük defo oranı hangi vardiyadadır? a)1. vardiya-sabah b)2. Vardiya-akşam c)3. Vardiya-gece
19) En yüksek defo oranı hangi vardiyadadır? a)1. vardiya-sabah b)2. Vardiya-akşam c)3. Vardiya-gece
20) Kalite kontrol sistemi ile çevrenin korunmasına katkı sağlanıyor mu?
a)Tamamen sağlıyor b)Kısmen sağlıyor c)Sağlamıyor d)Fikrim yok
21) Kimyasal atıklar konusunda firmanızın uyguladığı bir politika var mı? a)Evet b)Hayır
Cevabınız *"Evet"* ise lütfen uyguladığınız politikayı yazınız?
……
…….
22)Firmanızın tamir-bakım ünitesi var mı? a)Evet b)Hayır-tamir bakımı dışarıda yaptırıyoruz
23)Çalışanların ücretlerinin (maaş) gecikmesi durumda ürün kalitesinde düşüş oluyor mu?
a)Kesinlikle oluyor b)Oluyor c)Olmuyor d)Fikrim yok
24)Aşırı (çok) miktarda sipariş alındığında ürün kalitesinde düşüş oluyor mu?
a)Kesinlikle oluyor b)Oluyor c)Olmuyor d)Fikrim yok
25)Personel devir hızının yüksek olmasının ürün kalitesine olumsuz etkisi oluyor mu?
a)Kesinlikle oluyor b)Oluyor c)Olmuyor d)Fikrim yok
26) Firmanızda çalışanların becerilerini artırmaya yönelik herhangi bir eğitim programı var mı?
a)Her zaman var b)Gerek duyulduğunda var c)Yok

Anketi cevapladığınız için teşekkür ederiz

Appendix B

Correlation Tables Form SPSS Program

Correlations

1)		The used Quality System	The Amount of Budget of Quality Department
The used Quality System	Pearson Correlation	1	.547**
	Sig. (2-tailed)		.000
	N	56	56
The Amount of Budget of Quality Department	Pearson Correlation	.547**	1
	Sig. (2-tailed)	.000	
	N	56	56

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations

2)			The used Quality System	The Commitment Level of the Quality Department Staff
Spearman's rho	The used Quality System	Correlation Coefficient	1.000	-.395**
		Sig. (2-tailed)	.	.003
		N	56	56
	The Commitment Level of the Quality Department Staff	Correlation Coefficient	-.395**	1.000
		Sig. (2-tailed)	.003	.
		N	56	56

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations

3)			The used Quality System	The Salary Delay and Product's Quality
Spearman's rho	The used Quality System	Correlation Coefficient	1.000	-.432**
		Sig. (2-tailed)	.	.001
		N	56	56
	The Salary Delay and Product's Quality	Correlation Coefficient	-.432**	1.000
		Sig. (2-tailed)	.001	.
		N	56	56

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations

4)			The used Quality System	Employees Training Program
Spearman's rho	The used Quality System	Correlation Coefficient	1.000	-.457**
		Sig. (2-tailed)	.	.000
		N	56	56
	Employees Training Program	Correlation Coefficient	-.457**	1.000
		Sig. (2-tailed)	.000	.
		N	56	56

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations

5)			The Educational Level of Quality Department Staff	Employees Training Program
Spearman's rho	The Educational Level of Quality Department Staff	Correlation Coefficient	1.000	-.377**
		Sig. (2-tailed)	.	.004
		N	56	56
	Employees Training Program	Correlation Coefficient	-.377**	1.000
		Sig. (2-tailed)	.004	.
		N	56	56

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations

6)			The Educational Level of Quality Department Staff	The Chemical Wastes and Implementation Policy
Spearman's rho	The Educational Level of Quality Department Staff	Correlation Coefficient	1.000	.333*
		Sig. (2-tailed)	.	.012
		N	56	56
	The Chemical Wastes and Implementation Policy	Correlation Coefficient	.333*	1.000
		Sig. (2-tailed)	.012	.
		N	56	56

*. Correlation is significant at the 0.05 level (2-tailed).

Correlations

7)			The Educational Level of Quality Department Staff	The Amount of Higher Management Support to Quality Department
Spearman's rho	The Educational Level of Quality Department Staff	Correlation Coefficient	1.000	.514**
		Sig. (2-tailed)	.	.000
		N	56	56
	The Amount of Higher Management Support to Quality Department	Correlation Coefficient	.514**	1.000
		Sig. (2-tailed)	.000	.
		N	56	56

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations

8)			The Educational Level of Quality Department Staff	The Commitment Level of the Quality Department Staff
Spearman's rho	The Educational Level of Quality Department Staff	Correlation Coefficient	1.000	-.682**
		Sig. (2-tailed)	.	.000
		N	56	56
	The Commitment Level of the Quality Department Staff	Correlation Coefficient	-.682**	1.000
		Sig. (2-tailed)	.000	.
		N	56	56

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations

9)			The Commitment Level of the Quality Department Staff	The Amount of Higher Management Support to Quality Department
Spearman's rho	The Commitment Level of the Quality Department Staff	Correlation Coefficient	1.000	-.565**
		Sig. (2-tailed)	.	.000
		N	56	56
	The Amount of Higher Management Support to Quality Department	Correlation Coefficient	-.565**	1.000
		Sig. (2-tailed)	.000	.
		N	56	56

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations

10)			The Amount of Higher Management Support to Quality Department	The Amount of Budget of Quality Department
Spearman's rho	The Amount of Higher Management Support to Quality Department	Correlation Coefficient	1.000	.482**
		Sig. (2-tailed)	.	.000
		N	56	56
	The Amount of Budget of Quality Department	Correlation Coefficient	.482**	1.000
		Sig. (2-tailed)	.000	.
		N	56	56

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations

11)		The Amount of Budget of Quality Department	The Total Number of Employees in Quality Department
The Amount of Budget of Quality Department	Pearson Correlation	1	.735**
	Sig. (2-tailed)		.000
	N	56	56
The Total Number of Employees in Quality Department	Pearson Correlation	.735**	1
	Sig. (2-tailed)	.000	
	N	56	56

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations

12)		The Amount of Budget of Quality Department	The Firms' Working Hours
The Amount of Budget of Quality Department	Pearson Correlation	1	.268*
	Sig. (2-tailed)		.046
	N	56	56
The Firms' Working Hours	Pearson Correlation	.268*	1
	Sig. (2-tailed)	.046	
	N	56	56

*. Correlation is significant at the 0.05 level (2-tailed).

Correlations

13)			The Bigness of Orders and Product's Quality	The Salary Delay and Product's Quality
Spearman's rho	The Bigness of Orders and Product's Quality	Correlation Coefficient	1.000	.454**
		Sig. (2-tailed)	.	.000
		N	56	56
	The Salary Delay and Product's Quality	Correlation Coefficient	.454**	1.000
		Sig. (2-tailed)	.000	.
		N	56	56

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations

14)			The Implementation of Shifts System	The Commitment Level of the Quality Department Staff
Spearman's rho	The Implementation of Shifts System	Correlation Coefficient	1.000	-.322*
		Sig. (2-tailed)	.	.016
		N	56	56
	The Commitment Level of the Quality Department Staff	Correlation Coefficient	-.322*	1.000
		Sig. (2-tailed)	.016	.
		N	56	56

*. Correlation is significant at the 0.05 level (2-tailed).

Correlations

15)			The Commitment Level of the Quality Department Staff	The Firms' Working Hours
Spearman's rho	The Commitment Level of the Quality Department Staff	Correlation Coefficient	1.000	.442**
		Sig. (2-tailed)	.	.001
		N	56	56
	The Firms' Working Hours	Correlation Coefficient	.442**	1.000
		Sig. (2-tailed)	.001	.
		N	56	56

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations

16)			The Commitment Level of the Quality Department Staff	The Amount of Budget of Quality Department
Spearman's rho	The Commitment Level of the Quality Department Staff	Correlation Coefficient	1.000	-.467**
		Sig. (2-tailed)	.	.000
		N	56	56
	The Amount of Budget of Quality Department	Correlation Coefficient	-.467**	1.000
		Sig. (2-tailed)	.000	.
		N	56	56

**. Correlation is significant at the 0.01 level (2-tailed).

ÖZGEÇMİŞ

Dua'a Ismail Yacoub ALSAIFI; 1980 yılında Ürdün'ün Başkenti Amman'da doğmuştur. ALSAIFI, 1980-1991 yılları arasında Kuveyt'te yaşarmıştır. 1999 yılında orta öğrenimini tamamlayan ALSAIFI, aynı yıl Ürdün'de Mu'tah Üniversitesi Mühendislik Fakültesi Kimya Mühendisliği Bölümü'nü kazanmıştır. 2004 yılında lisans derecesinden mezun olmuştur. 2005'te Ürdün'ün başkenti Amman'da Endüstri ve Ticaret Bakanlığında stajyer olarak göreve başlamıştır. 2006- 2012 yılları arasında EFADA şirketinde (SUTCON cerrahi ip üretimi) kalite kontrol yönetici olarak görev yapmıştır. 2012'de Kilis 7 Aralık Üniversitesi Sosyal Bilimler Enstitüsü İşletme Anabilim Dalında yüksek lisans öğrenimine başlamıştır.

VITAE

Dua'a Ismail Yacoub ALSAIFI was born in 1980 in Amman, Jordan. She lived in Kuwait 1980-1991. She finished secondary school in Amman in 1999, and in the same year she won Chemical Engineering Department, Engineering Faculty of Mu'tah University in Jordan, then in 2004 she graduated. She was trained at Jordanian Ministry of Industry and Trade 2005 – 2006. She worked as quality control manager at Jordan in EFADA Medical Company (SUTCON surgical sutures) from 2006-2012. In 2012 she started her master's degree in the Institute of Social Sciences in Department of Business, Kilis 7 Aralık University.