ANDIJON MASHINASOZLIK INSTITUTI

“MASHINASOZLIK” fakulteti

“METROLOGIYA, STANDARTLASHTIRISH VA MAXSULOT SIFATI MENEJMENTI” kafedrasi

DIPLOM LOYIHASI BO`YICHA

T U S H I N T I R I S H X A T I

Diplom loyihasining mavzusi: “Optimization of quality management system in automotive industry”

Bitiruvchi: 5310900 - “Mertologiya, Standartlashtirish va Maxsulot Sifati Menejmenti” yo`nalishi 4-kurs 101-13-guruh talabasi: Yodgorbek Ismoiljonov Komiljon o’g’li

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DIPLOM LOYIHASINI BAJARISH BO`YICHA

T O P S H I R I Q

Yodgorbek Ismoiljonov Komiljon o’g’li

1. Diplom loyihasining mavzusi: “Optimization of quality management system in automotive industry”

Institut bo`yicha 2017 yil “12” yanvardagi 4-k sonli buyruq bilan tasdiqlangan.

2. Diplom loyihasini bajarish uchun ma`lumotlar:
- O’z R Prezidenti qarorlari. O’z R qonunlari, VM qarorlari;
- Ilmiy-texnik adabiyotlar
- Korxonada sifat menejmenti tizimini baholash va optimallashtirish uchun taklif berish
- Hayot faoliyati havfsizligi qismi bo’yicha me’yorlar;
- Texnik iqtisodiy ko’rsatgichlar.

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3. Tushintirish xatida keltiriladigan ma`lumotlar:

1) Kirish. Kirish va mavzuning dolzarbligi bo‘yicha: Soha bo‘yicha Respublikamizda erishilayotgan yutuqlar, davlat dasturlari va ularni bajarilayotganligi va avtomobilsozlik sanoatining rivojlanish bosqichlari to‘g‘risida ma’lumotlar. Korxona haqida ma’lumotlar.

2) Asosiy qism. Korxonani sifat menejmenti tizimini baholash uchun savolnoma o’tkazish. Natijalarni taxlil qilish orqali hodimlarni bilim va malakalarini baholash.

4) Hayot faoliyati xavfsizligi qismi. Mavzuga oid vositalar xavfsizligini ta’minlovchi asosiy shartlar, mashina va mexanizmlarning xavfli zonalari, muhofazalovchi va saqlovchi to‘siq vositalari va boshq.

5) Iqtisodiy qism. Berilgan takliflar asosida kornodanagi nuqsoni maxsulotlar sonini kamaytirish.

6) Xulosa va takliflar. Bajarilgan ishlar bo‘yicha xulosa va takliflar.

7) Foydalanilgan adabiyotlar ro`yhati. Mavzuni bajarish davomida foydalanilgan adabiyotlar va internetdagi veb saytlarning ro‘yhati.

8) Ilova. Mavzu bo‘yicha maxsus jadval.

4. Diplom loyihasining chizmalari ro`yhati:

a) Asosiy qism chizmalari (jadval, grafik va boshqalar):

1-chizma Comparing quality management system
2-chizma. Quality development timeline
3-chizma. Disruptive quality management system from 1900 to 2017
4-chizma. Six sigma
5-chizma. Lean manufacturing
6-chizma. Seven principles of ISO 9001:2015
7-chizma. Distribution of respondents by department.

5. Diplom loyihasi qismlari bo`yicha maslahatchilar:

№	Diplom loyihasining qismlari	Boshla-nish muddati	Tugalla-nish muddati	Imzo	Maslahatchi-ning familiyasi
1	Kirish	11.01.2017	31.01.2017		Jo'rayev Z
2	Asosiy qismi	01.02.2017	28.02.2017		Jo'rayev Z
	1- bob				
	2- bob				
	3- bob				
4	Hayot faoliyati xavfsizligi qismi	01.04.2017	30.04.2017		Sodiqov Q
5	Iqtisodiy qismi	01.05.2017	20.05.2017		Teshaboyeva Z
6	Xulosa va takliflar	22.05.2017	01.06.2017		Jo'rayev Z
7	Foydalanilgan adabiyotlar ro`yhati	08.06.2017	10.06.2017		Jo'rayev Z

6. Topshhiriq berilgan sana: 12.01.2017 yil

7. Tugallangan diplom loyihasini topshirish sanasi: 13.06.2017 yil

Diplom loyihasi rahbari: Jo'rayev Z _____

Topshiriq bajarish uchun qabul qilindi: Ismoiljonov Y _____

Kafedra mudiri: Esonova Sh _____

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Head of CH		Esonova Sh				AndMBI "MB" Fac. gr. 101-13 MSMQP
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“Our independent state is rapidly moving towards the progress. And one of the first victories - the birth of an entirely new industry for our economy – the automotive industry”.

Islom Karimov

Introduction

In today's developing progressing world The Republic of Uzbekistan has being developed as an independent country based on intercommunications of free economic market.

In 1992 "The State Committee for Standardization and Metrology" was established in Uzbekistan like the other developed countries. In this regard, Uzbekistan’s state standardization, metrology and national certification systems have been composed. The main purpose from this is that to control the conformity of products that are being produced at all plants to the international requirements.

Transition to market relations and improving the product quality provoke the creating the healthy competition and the providing the development of economics. The law of the Republic of Uzbekistan on December 28.1993 "About Metrology", " About Standardization" and "About Certification of Products and Services" were legislated in order to regulate these works and do monitor them. As a result, entrepreneurs are achieving high results at every branches of industry in our country. We can take " Automotive" industry as a clear example.

Asaka Automotive Plant is a light evidence of the potential of our Motherland and our nation. Today, on the 25th year of state independence, we deeply realize significance of achieved success. Erection of large enterprise, introduction of complicated technologies answering all international standards, their mastering by local specialists – are not beyond any states power.

Foundation of Automotive Plant construction in Uzbekistan was laid during the visit of our President Islam Karimov in June, 1992 to Korean Republic while meeting with “Daewoo Motors” Corporation activity. After a while document on

joint venture in automotive sphere establishment was signed. On March, 1993 Uzbek-South Korean JV “Uz Daewoo Auto” was established and three years later on the 19th of July, 1996 opening ceremony of Asaka Automotive Plant was held.

Asaka Automobile Plant staff, consisting of professional team, confidently made its first significant step and in 1996 three car lines were launched - Damas, Nexia, Tico in 7 modifications. Thus, consumer was provided with worthy choice due to high technical level.

Meanwhile, specialists of automotive branch continued their work under new achievements. Five years after opening, in 2001, in honor of 10th anniversary of Independence, Plant started to produce the model Matiz. In August, 2002 production of Nexia DOHC model was launched. In December, 2004 model raw was completed with Matiz in BEST modification. Simultaneously work on improvement of Damas vehicle characteristics was continued, as a result in February, 2006 renewed model Damas II was mastered.

On March, 2008 restyling model of Nexia was presented. That year was inaugurated with one more event: on the 21 of February, 2008 new Joint-Venture “GM Uzbekistan” was established on the base of Asaka Automotive Plant. Work went in full swing. Model raw of Uzbek cars was enlarged by new, modern and qualitative vehicles. Production of Chevrolet was launched: sedan of representative class “Epica” and SUV “Captiva”. November in 2014 Asaka Automotive Plant produces millionth vehicle. It was Lacetti model – synthesis of stylish, simple interior and dynamic sport exterior.

Especially for Lacetti production stamping of body panels, constructed welding division and reconstructed assembly line were arranged.

Inspired by success, specialists on national automotive industry did not keep us waiting and in August, 2010 “GM Uzbekistan” mastered production of global model - Chevrolet Spark. From the first day car became a favorite model of Uzbek car drivers.

"Uz Daewoo avto" Co is launching many joint-venture companies that manufacture modular and spare parts for automobiles. These kind of plants are

preforming in Andijan, Namangan, Fergana, and other provinces. For instance "Uz Dong Xong Co", " Uz Dong Yong Co", "Uz Koram Co", " Uz Dong Ju Paint Co ", "Uz Tong Xong Co" "Uz Semyung Co", "Uz Dong Wong Co", " Uz Kodji", "Avto Oyna", " Uz Avto Austem" and other many plants were launched. These plants are producing linings of automobile saloon, frontal and rear bumper, devices, panels, variety paintings, passengers sites, mufflers, automobile disks, beams and other parts of car.

Establishing the " Uz Daewoo avto" Co and plants that are related do it induces to imbibe our country's necessities that pertain to the automobile and to create thousands of modern jobs. That's why our president I.A.Karimov said: " Automobile industry is becoming pillar of Uzbekistan Economy".

Nowadays " Matiz", " Damas", "Nexia", "Spark", "Lacetti", "Cobalt", "Malibu", "Captiva" and "Orlanda" have been producing in the "GM-Uzbekistan" automobile plant. They are going to produce other new models of cars in near future.

1.1 The overview of GM-Uzbekistan.

Company name

Joint Stock Company "General Motors Uzbekistan"

Founders:

Joint-stock company "Uzavtosanoat" - 75%.

General Motors Company - 25%.

The institution is March 2008.

Factory:

The total area is 72 hectares. Production area - 192 thousand square meters. M.

It is located in the city of Asaka, Andijan region (Fergana Valley).

Branches: Tashkent, Pitnak, Khorezm region.

Productive capacity:

JSC "GM Uzbekistan" in Asaka 230 thousand cars.

The branch of JSC "GM Uzbekistan" Pitnak - 40 thousand cars;

The branch of JSC "GM Uzbekistan" in Tashkent - 10 thousand cars;

Products:

At present, 10 models of cars under Chevrolet and Ravon brands are produced at 3 production sites of “GM Uzbekistan” JSC, in particular, Matiz, Spark (R2), Nexia (R3), Cobalt (R4), Lacetti (Gentra) are produced in the main production in Asaka, the Captiva model, Malibu in the branch in Tashkent, Orlando, Damas, Labo in the branch in Pitnak.

Suppliers of GM Uzbekistan:

More than 100, including subcontractors. The main ones are "Uz Semyung Co", "Uz Koram Co", "Auto component", "Uz Dong Yong Co", "Uz Hanwu", "Uz Dong Won Co", "Uz Dong Zhu Paint", "Uz Tong Hong Ko", "Uz Chasis and Avtooyna.

Staff:

The number of employees of “GM Uzbekistan” as of November 1, 2016. Is about 12000 people.

1.2 The history of GM Uzbekistan.

June 1992 - President Islam Karimov visited to Korea and Daewoo Motor.

March 1993 - Registration of JV "UzDaewooAuto".

June 1994 - The beginning of the construction of the plant in Asaka.

March 1996 - The beginning of the production of Damas

June 1996 - The beginning of production of cars Tico and Nexia.

December 1999 - Certification of the quality system for compliance with the international standard ISO: 9001: 1998.

May 2001 - The release of a 250,000-car.

August 2001 - The beginning of production of the car Matiz.

August 2002 - The beginning of production of the Nexia car with a DOHC engine.

March 2003 - The Matiz car was nominated by the "Car of the Year" on the market of the Russian Federation.

April 2003 - Certification of the quality system for compliance with the international standard ISO: 9001: 2000.

August 2003 - The beginning of a large-block assembly of the car Lacetti.

June 2004 - The international prize "International Quality Summit - New York" for quality, leadership, advanced technologies and innovations.

December 2004 - The beginning of production of the Matiz Best car with a 1.0 liter engine and automatic transmission.

October 2005 - The issue of a 500,000-car.

February 2006 - The production of Damas B150 car instead of B100 began.

May 2007 - An agreement on strategic cooperation between the Government of the Republic of Uzbekistan and GM Daewoo Auto & Technology

July 2007 - The issue of a 750,000-car

October 2007 - The beginning of a large-block assembly of cars Epica and Captiva

December 2007 - The beginning of production of Nexia and Matiz cars with EURO III engines.

March 2008 - Opening of a joint venture "GM Uzbekistan"

June 2008 - The beginning of production of the car Nexia N150

November 2008 - The beginning of a series production of the Lacetti.

November 2008 - Production of a 1,000,000 vehicle

August 2010 - The beginning of the production of the car Spark

April 2011 - Spark became the "Car of the Year in Russia 2011" in the nomination "Urban Cars"

April 2011 - The production of 1 500 000th car.

September 2011 - The beginning of a large-block assembly of the updated Chevrolet Captiva.

March 2012 - The beginning of the large-block assembly of the car Chevrolet Malibu

September 2012 - The beginning of the serial production of the car Chevrolet Cobalt

In 2013 - The production of Gentra J250 car instead of Lacetti J200 began

In 2014 – A third production factory was opened in Pintak, Khorezm Region, manufacturing Damas, Labo and Orlando minivans

In 2015 - The beginning of the serial production of the car Chevrolet Nexia T 250

In 2017 - The beginning of the large-block assembly of the car Chevrolet Malibu 2 instead of the car Chevrolet Malibu.

Nowadays, They are preparing to manufacture two new model of cars.

II.Literature review

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Mea	List	Document №	Sign	Date				
Done by		Ismoiljonov Y						
Supervisior.		Jo'rayev Z.						
Head of CH		Esonova Sh				Leaf	Leaves	
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2.1 Definition of quality.

Before we study the subject of Quality in any depth, we must be clear on what we mean by the term "Quality". When talking to others about Quality we must be sure that we have the same understanding of the term. Walter Shewhart defined quality as the goodness of product. Later this definition has been broadened to suit better both products and services. A query was conducted for numerous of manager in the United States to state their definition of quality. Consider the following definitions:

- A degree of excellence - the Concise Oxford Dictionary
- Fitness for purpose – Defoe and Juran
- the totality of features and characteristics that bear on the ability of a product or service to satisfy a given need - British Standard 4778
- the total composite product and service characteristics of marketing, engineering, manufacture, and maintenance through which the product and service will meet the expectations of the customer – Feigenbaum
- Conformance to requirements - Crosby
- Quality is a dynamic state associated with products, services, people, processes, and environments that meets or exceeds expectations and helps produce superior value - Goetsch and Davis.

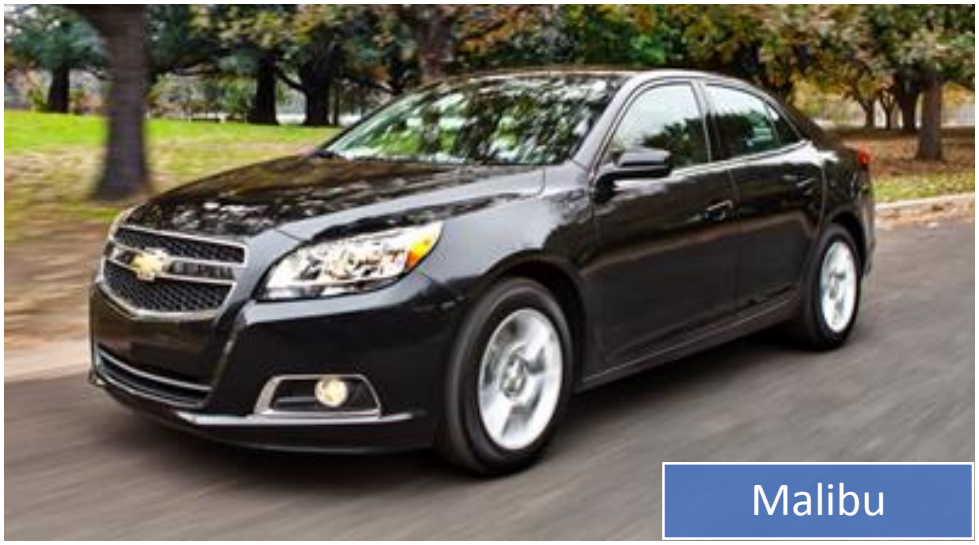
American Society for Quality defines quality in its glossary as follows: "A subjective term for which each person or sector has its own definition. In technical usage, quality can have two meanings: (1) The characteristics of a product or service that bear on its ability to satisfy stated or implied need; (2) A product or service free of deficiencies". Several quality gurus have also their own definitions of quality. Quality is usually divided to product quality and service quality. The products have physical dimensions that reflect the overall quality perceived by the customer. Service quality on the other hand is based on the experience that manifests while the service is being produced. A customer sitting in the barber's chair evaluates the received service constantly as the barbed is cutting his or her hair.

The following nine definitions were the most popular:

The dictionary definition of quality is interesting, but does not really help in studying the area as it is too vague. This perhaps fits with the general perception of quality which often confuses quality with specification. According to this definition we might be tempted to believe that a high specification car (say, for example, a

Malibu) is, inherently of higher quality than a lower specification vehicle (such as a Spark). Juran's simple definition of quality, on the other hand, suggests that if both vehicles satisfy the purpose for which they were purchased, they can both be quality products, and a differentiation in quality cannot be assessed merely in terms of features that one product enjoys over the other.

Which is better quality?



Feigenbaum's definition of quality is interesting because it brings into consideration departments other than manufacturing which contribute to the quality of product and service provided by the company to meet the expectations of the customer. It is perhaps worth contemplating whether meeting the expectations of the customer is a higher level of achievement than providing a product or service that is fit for purpose. Customers' expectations would reasonably include a product or service meeting any declared 'purpose'; however, as we shall see later, there may be things that the customer does not explicitly state, but that nevertheless form a legitimate part of their expectations. We might think here of the styling of the product or level of reliability.

Crosby's definition can be contrasted to the often-held belief that a product/service that meets specification can be regarded as a quality item. Conformance to specification implies that the specification, if achieved, will meet the requirements of the customer. It is clear that if market research is flawed or out of date, products/services derived from such information are unlikely to meet customers' requirements no matter how closely they have been produced to specification

Our understanding of the word quality can and arguably should be associated with achieving or exceeding expectations, meeting requirements that the customer had not actually stipulated, but once offered become the expectation of everyone.

Providing products/services that are only fit for purpose may mean that a company is placed in a position of declining market share if its competitors are exceeding the expectations of the market place.

The Goetsch and Davis definition is a reasonable attempt to draw together the themes of a number of definitions of quality and create a unifying definition. The most noteworthy addition to the previous discussion is the idea of dynamism. By this they mean that acceptable levels of quality are not fixed, but change with customers' experiences and view of the world. In summary

Quality is defined by the customer, and as such will change over time, often in unpredictable ways.

- Quality is associated with creating customer value.
- A quality good or service meets or exceeds the whole range of customer expectations, some of which may be unspoken.
- As a complex concept, quality can only be addressed by the whole organization working together

2.2. History of quality management

Quality management system (QMS) is a formal system that includes documenting the structure, responsibilities and processes required to achieve effective quality management. In addition, quality management is defined by American Society for Quality as follows: "*The application of a quality management system in managing a process to achieve maximum customer satisfaction at the lowest overall cost to the organization while continuing to improve the process*".

Although there are no requirements for establishing a quality management system, a study conducted by Hendricks and Singhal's evidently shows the advantages of systematic quality management. The findings include the following when comparing companies with quality management system with companies without quality management system:

	With quality management system	Without quality management system
Increase in sales	69%	32%
Gain in operating revenue	91%	43%
Growth in number of employees	23%	7%
Increase in return on sales	8%	Not at all

Table 2.1 Comparing quality management system.

All the statistics show clearly that the companies with quality management system are more profitable and growing in faster pace than companies without quality management system. The study also shows that quality management system has a strong positive connection to long-term financial performance.

The history of quality development is illustrated in Figure 1. The first signs of quality in a managed form were founded in the construction of the Great Pyramid of Giza. Scientist argue that the tools and measurement used in building the pyramids were so closely and professionally done that there had to be a systematic system for assuring the quality. Historians have also found cave painting from the Egyptian era which shows pictures of inspectors. Second clear sign of quality management was found in the Law of Hammurabi. According to Law of Hammurabi if a building falls in to pieces and the owner gets killed because of this the builder also shall be killed and if one of the owner's children is killed, one of the builder's children shall be killed. The idea behind this brutal law was to create a legislation regarding labor and product liability. In addition, Law of Hammurabi contained codes concerning wages, economics transactions and agreements/contracts.

Few hundred years after the Law of Hammurabi, Chou's Constitution was founded in China. Chou's Constitution contained information and laws about public administration and how the head of state controlled the government.

The most important and relevant finding from the Chou's Constitution was that it was the first systematics organizational structure that is still in use. In other words, it could be named as the first quality system in fundamental level. Before the Middle Ages (500-1500) Ancient Greek era and The Roman Empire ruled the

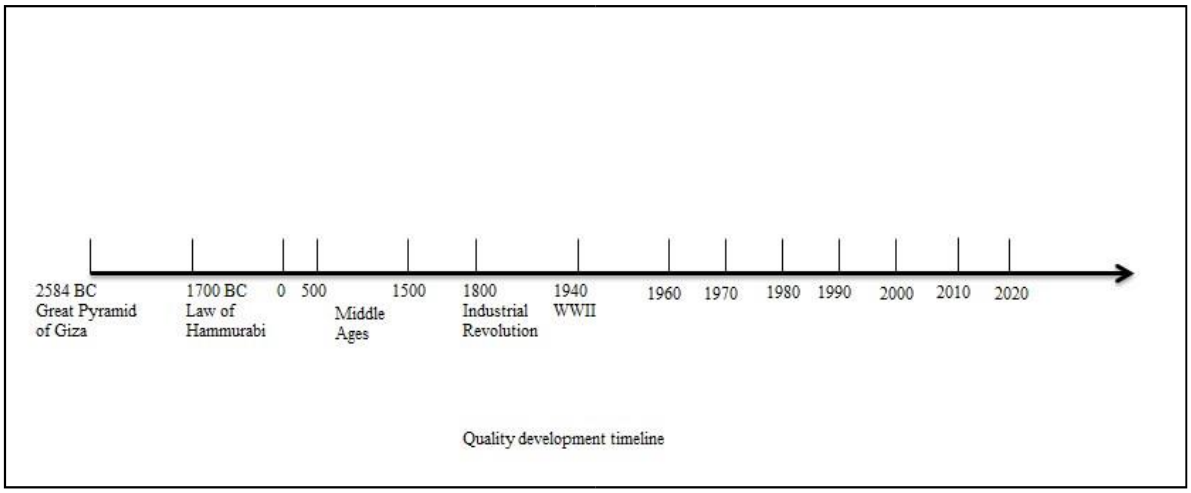


Figure 2.1 – Quality development timeline

Europe. Both were significant contributors to the modern society. Ancient Greek dedicated a lot of time to art, philosophy, authorities and justice system. The Roman Empire was the first in establishing a structured construction system.

Both Ancient Greek and The Roman Empire clearly used some kind of system to manage the quality.

Years 500-1500 can be called The Age of Craftsmanship. During that period the skilled craftsmen produced a wide variety of metal, steel and leather products. A group full of craftsmen usually formed a special union called guilds. In Medieval Europe, guilds were the manufacturers and inspectors on quality. The knowledge and experience was shared in master-apprentice base meaning that the highest skilled craftsman taught the apprentice to produce and assure quality.

The next important milestone in the history of quality was the Industrial Revolution. In the 1798 American Thomas Jefferson brought the concept of interchangeable part in manufacturing muskets to America. The concept was originally founded by a French gunsmith Honore Le Blanc. The concept worked very well in France where the master-apprentice mentality was still in control but when the concept was setup in America, it did not work. The most important lesson from the musket manufacturing failure was the concept of variation. Although the muskets had interchangeable parts, they needed to be almost identical in order to fit.

In the early 1900s the United States differentiated themselves more from Europe and Frederick W. Taylor develop a new production method and management

philosophy. Taylor's philosophy, also called Taylorism, concentrated on increasing the productivity without hiring new employees. The idea behind Taylorism was to divide the planning function and the production. Specialized engineers would be responsible for the planning while the craftsmen were in control of the production. Craftsmen were also responsible for the quality control. Failed and faulty products were simply scrapped. As the time went on the companies assigned a specific group to assure the quality. The group was autonomic and separated from the production. The creator of the modern production line system, Henry Ford, was also an influence in creating the quality system. Ford introduced the balanced assembly line which consisted of workstations with different tasks.

The early 20th century marked the birth of process thinking. The first big influence in the development of quality was Western Electric employer named Walter Shewhart. In his work, Shewhart focused on process control based on statistics. The statistics were a crucial invention in order to prevent the variation. Shewhart's goal was to control the variation by analyzing the process, recognizing the cause and eliminating it from the process. He was the first to establish a simple quality improvement wheel. The stages in his wheel were specification, production and inspection. Later Shewhart moved to Bell Laboratories. While working for Bell Laboratories at Hawthorne factory he and he's co-workers realized that cold and hard management style that was base of Taylorism might not be the most efficient management style. Studies and researches at Hawthorne factor led to the establishment of HR-movement.

The United States military forces started to use Shawhart's invention, statistical process control, during the Second World War. In order to stay effective military, the supplies, guns and ammunitions need to be reliable and similar in quality. US Army started to require its suppliers to use SPC (statistical process control) to assure the quality. During the war US Army created the requirement which all the supplies had to meet. The MIL-STD (military standard) was the first standard that was widely used. After the Second World War, the United States was the leading country in

rebuilding Japan. Japan had suffered devastating losses and destruction during the Second World War. In 1945, the United States named General Douglas A. MacArthur as a leader of political, social and economic reform in Japan. General MacArthur appointed two American consultants Joseph Juran and Walter
Deming to aid the rebuilding Japan. Juran and Deming would later emerge as arguably the two most influential persons in the development of quality.

The year 1946 was a milestone year for quality based organizations. Three major organizations were founded in 1946: *American Society for Quality (originally named American Society for Quality Control, changed in 1997), International Organization for Standardization and the Japanese Union for Scientist and Engineering. American Society for Quality (ASQ) was founded in the end of the Second World War when US experts wanted to pursue ways to continue improving quality*. International Organization for Standardization (ISO) was founded in London when representatives from 25 countries gathered at the Institute of Civil Engineers in London, UK and decided to create a new organization 'to facilitate the international coordination and unification of industrial standards'. Union of Japanese Scientists and Engineers (JUSE) was founded to promote systematic research needed for the advancement of science and technology, whereupon to contribute to the development of cultural and industry.

1950s and 1960 were the golden age of consuming and buying goods in the United States. American consumers wanted to buy American products and factories were focused on quantity over quality. While the United States were consuming, Japan was concentrating on quality. Joseph Juran was intrigued by quality control and his efforts in Japan were a key factor in quality development. The most notable release of Dr. Juran was the book Quality Control Handbook. During the same time another quality consultant, Walter Deming was making his marks on Japanese manufacturing. Deming was interested in Shewhart's statistical techniques and he later published two major quality inventions. Deming's 14 points for management is still a current topic in today's business. The other invention was the Deming Wheel. Deming Wheel consists of four steps and the idea behind the wheel is

continues quality improvement. 1960s was a decade of an era of many quality initiatives. Japanese Doctor Kaoro Ishikawa lectured the lower level employees about the usage of simple statistical methods. Dr. Ishikawa designed several quality tools that are used even today. They include cause-and-effect diagram (also called Ishikawa diagram), the Seven Quality tools and Quality Circles. The idea behind all the initiatives was the suppleness to use by the low level employees.

In the late 1970s, quality management guru Philip Crosby published his world known book, Quality is Free. Crosby earned the Guru title because of his work in business and innovations. He was a great influence in changing the way organizations chase better reliability, profitability and efficiency. 1980s was another remarkable milestone in the development of quality. The United States realized the threat Japan imposed because of the higher quality in products and in manufacturing. In 1987 US government named October as National Quality Month and created the Malcolm Baldrige National Quality Award. In the same year International Organization for Standardization established ISO 9000 standard that was focused solely on quality and quality management.

1990s saw two notable quality initiatives. In 1994 International Organization for Standardization updated its ISO 9000 quality standard to ISO 9000:1994 (ISO .2013a). In 1995 American company General Electric and its CEO Jack Welch developed their quality initiative called Six Sigma. The aim of Six Sigma is to reach a failure rate greater than 3.4 defects per million opportunities. That level of quality is called Six Sigma, hence the name. (GE, 2013) Another remarkable quality initiative invented in 1990s was called Lean Manufacturing. Fuelled by the automaker Toyota's manufacturing principles, Lean Manufacturing focuses on reducing the waste in the processes and thus making the processes as lean and efficient as possible. The 2000s saw two updates to the ISO 9000 standard by the International Organization for Standardization (in 2000 and 2008).

The main task for quality management systems is to create a systematic and controlled way to improve and assure the quality. Environment where organizations operate naturally have an effect on company's departments. That is why the main

concept of quality management systems is to reflect the surrounding environment and society. The evolution of the modern society has been the biggest factor in the development of quality management systems in the 20th century. The general level of quality has raised a lot in the last 100 years as show in Figure 2.

A good example of higher quality requirements is travelling. In the beginning of the 20th century it was acceptable to get from London to New York in 3 days and 12 hours. Comparing that to the 7 hours it takes today, one can see a major improvement in the speed. Technology has enabled numerous of things to get faster, better and stronger. The quality management systems have been evolved hand in hand with the technological innovations. The technology that was acceptable and current in 1920s is not viable option in the 21st century. The same goes with quality management systems. The first quality control initiatives are not enough in today's fast pace society.

The evolution of the technology called quality management system has been fairly similar to the disruptive technology model Professor Clayton Christensen presented in his innovative book 'The Innovator's Dilemma'. As Christensen writes "given the aim, technology means the processes by which an organization transforms labor, capital, materials, and information into products and services of greater value". According to the definition above the concept of technology can be extended beyond engineering and production to include marketing, financial and managerial processes. That is why quality management system can be seen as a technology. Developing technology, in other words innovation, means an improvement in any of factors above.

From the beginning of the 20th century, one can identify seven different quality management principles. In the early 20th century, Quality Control was the leading technology in quality management systems. The companies who used a systematic way to control and assure the quality achieved profit and growing sales. The British steel mill industry was the first to integrate a systematic Quality Control system in Europe in the 1900s. The quality management saw its first real disruptive innovation when Shewhart and his colleagues invented the Statistical Process Control. It was

not enough to use Quality Control systems and the early users of Statistical Process Control achieved new levels of improvements. After the Second World War American consultant Joseph Juran and Walter Deming developed their models and systems for managing quality. The methods Juran and Deming developed proved to be a very disruptive quality management system and the promised country of production, the United States, was the one who suffered from the new disruptive technology.

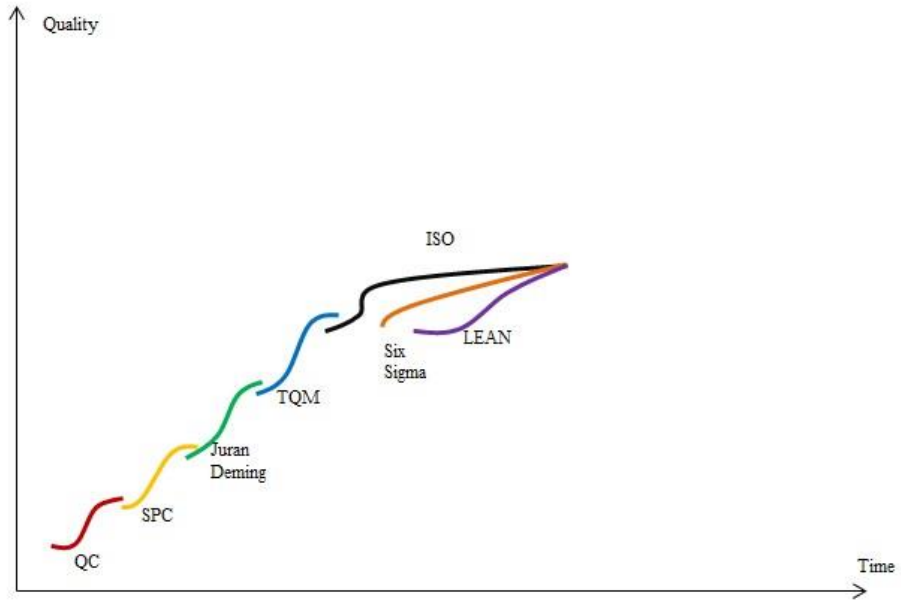


Figure 2.2 – Disruptive quality management system from 1900 to 2017

After Juran and Deming had developed their frameworks to manage quality, the companies began to spread the quality management throughout the organization and departments. In the 1980s Total Quality Management (TQM) was the dominating quality management system. The quality thinking moved from the manufacturing and product-base towards organization-wide performance excellence. The Total Quality Management-movement remained as a dominant system until the mid-1990s. In the 2010s the term used is not TQM anymore. Quality has been integrated to every function of the company and there are no reasons to keep the quality in separate department. Total Quality Management managed to combine all the best

practices of the former quality management systems (Quality Control, Statistical Process Control and Juran's and Deming's teachings).

2.2.1 ISO 9000

One reason for the disappearance of the Total Quality Management is the next disruptive technology. In 1987 the International Organization for Standardization published its first Quality Management standards, ISO 9000. The purpose of the ISO 9000 Quality Management standard was to provide guidance and tools for companies and organizations who want to ensure that their products and services consistently meet customer's requirements and that quality is improved consistently.

2.2.2 Six Sigma

In 1995 the American company General Electric and its CEO Jack Welch develop their version of quality management system called Six Sigma. Six Sigma is based on statistical measurement and data analysis.

The three main target areas in Six Sigma are:

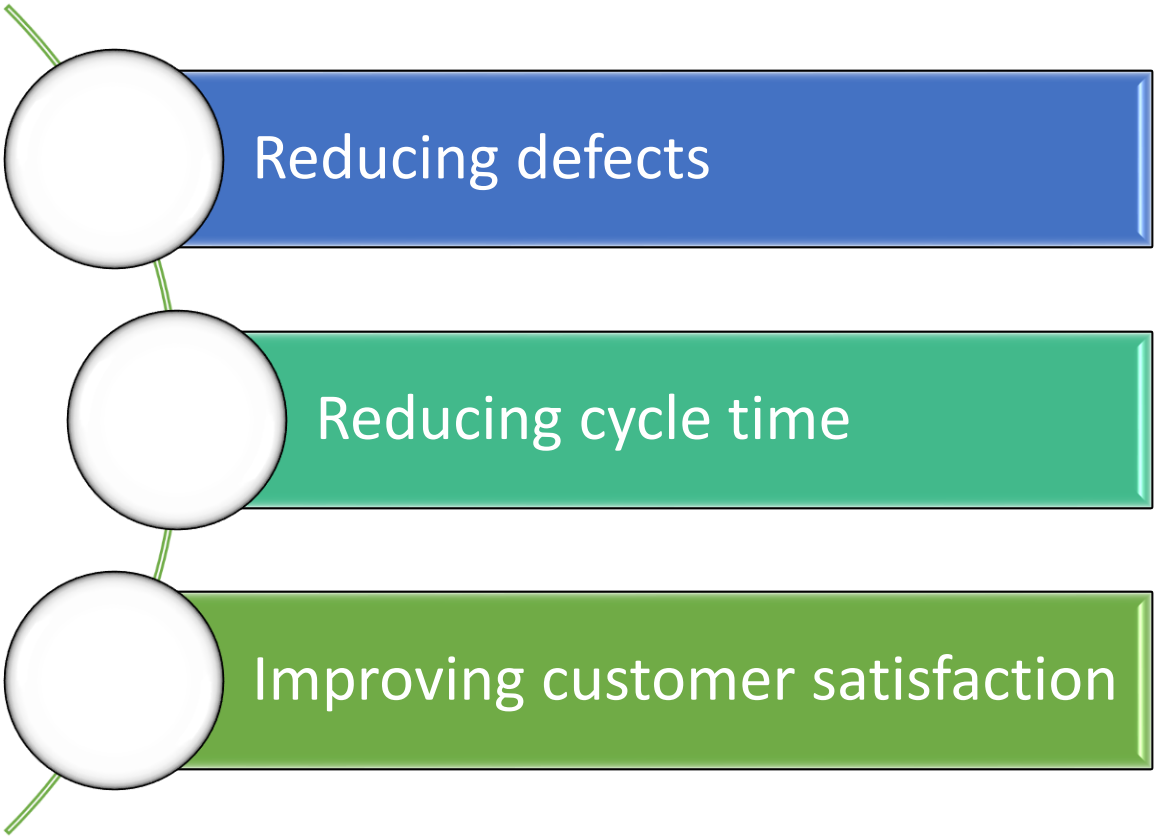


Figure 2.3 Six sigma

One might call Six Sigma just a combination of TQM and Statistical Process Control. Six Sigma starts first and foremost from the customer. The idea is to use statistical measures to analyze the process or product. There have been many process improvement models over the years but the most popular has been the Deming Wheel. Plan-Do-Check-Act wheel has been proven to be one of the most effective process development tools. Six Sigma relies on the slightly similar idea, Define-Measure-Analyze-Improve-Control (DMAIC).

2.2.3 Lean manufacturing system.

The very first person using Lean manufacturing method was American Henry Ford who invented the first modern production line. The idea behind the production line was to minimize all the waste in the car manufacturing process, as Mr. Ford said: “We will not put into our establishment anything that is useless”. There are

numerous of techniques and tools using the lean manufacturing but the main idea is always the same: to make the processes waste-free. William Levinson and Raymond Rerick have identified seven different types of waste

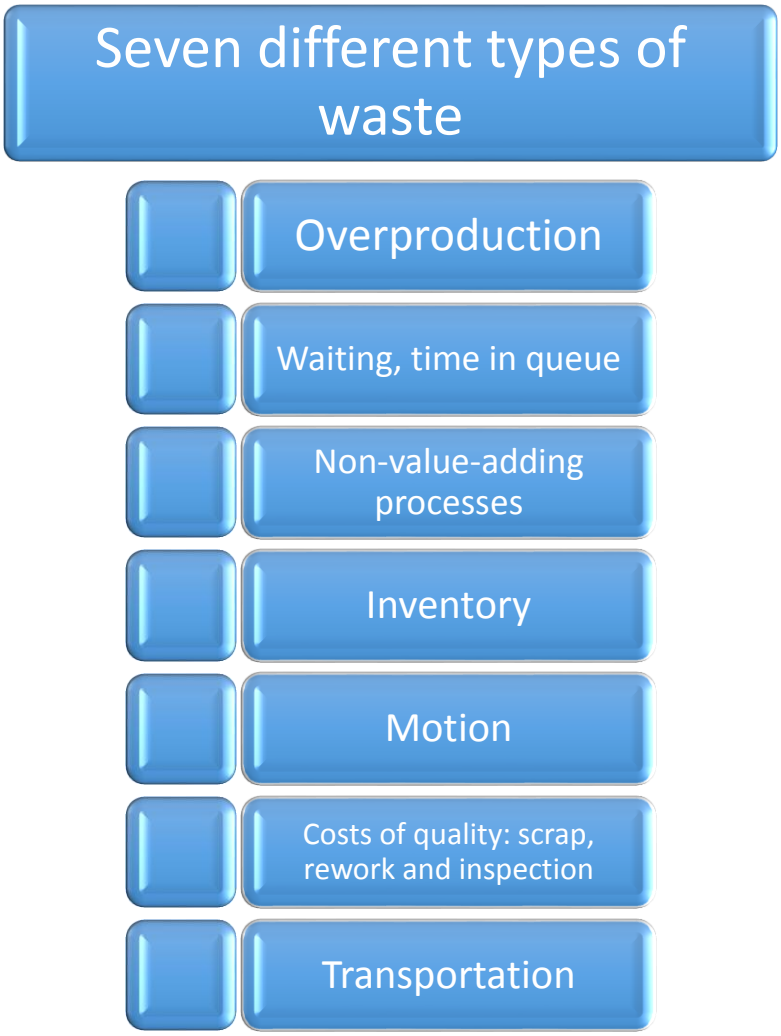


Figure 2.4 Lean manufacturing principles.

Quality has become more and more popular over the last decade and nearly every organization has to declare its position concerning the quality. The tough economic and competitive markets have made organizations to turn their attention to the quality. Arguably the three most used quality management systems at the moment are ISO 9000, Six Sigma and Lean manufacturing. The three quality management systems differ from the methods but also from their diffusions. Six Sigma and Lean manufacturing were founded by Motorola and Toyota respectively. ISO 9000 however was founded by a group of engineering experts.

It can be said that Six Sigma and Lean manufacturing belong to Rational Efficiency-category. According to Rational Efficiency "the more organizations adopt an innovation, the more knowledge about the innovation's true efficiency is disseminated". The two quality management systems are established in the 1980s but it wasn't until 1995 when more companies started to implement the systems. General Electric and its CEO Jack Welch implemented and developed Six Sigma to fit their company and to improve their processes. Lean manufacturing was originated by Japanese automaker Toyota and later its production principles have been implemented in numerous of organizations in various industries.

ISO 9000 quality management standards were developed to create unity and to clarify the process of setting up a formal way to manage quality. After fulfilling the quality requirements, the International Organization for Standardization grants a certification to the organization. By achieving the certificate, the organization can show its customers and competitors that it has a formal quality management system. Although the idea behind the quality standards was to make it easy for everyone to improve quality in a systematic way, it was blossom some unwanted phenomenon. ISO 9000 can therefore be categorized in fad theories. Fad theory means that "the sheer number of adopters creates 'bandwagon pressures'". Customers or suppliers can pressure the organizations towards applying for ISO 9000 certification. In these cases, the base of managing quality is fictitious. The same situation can occur when the market demands for ISO 9000 certification. Unless the desire for certification starts within an organization, one could question whether the quality management is either understood or wanted.

2.3. Seven principles of ISO 9001:2015

The ISO 9001:2015 standard was issued in 2015, hence the ":2015" in the name, by ISO. This fifth edition of the standard (the first is from 1987) cancels and replaces the previous edition from 2008. Until September 2018 both editions are valid, after that only ISO 9001:2015 will be valid.

In developing the standard, the management system principles that most successful manufacturing and service companies in the world now adhere to were taken into consideration. The standard therefore introduces good practice and, as such, it may serve well organizations that wish to adopt the best management practices possible.

The standard focuses mainly on the effectiveness of a quality management system in meeting customer requirements. It is applicable to all organizations regardless of their size, type, product or service provided they wish to control and improve their business performance and enhance customer satisfaction.

The standard specifies the requirements for a quality management system, their application in practice enables organizations to demonstrate its ability to consistently provide products and services that meet customer requirements and improving customer satisfaction which provides the base for successful business. Organizations which use the standard requirements in their daily work, can after successfully performed certification audit, receive the certificate for quality management systems in accordance with the requirements of ISO 9001:2015.
Focus of ISO 9001 2015
The proposed ISO 9001:2015 standard is based on the following seven principles of Quality management.

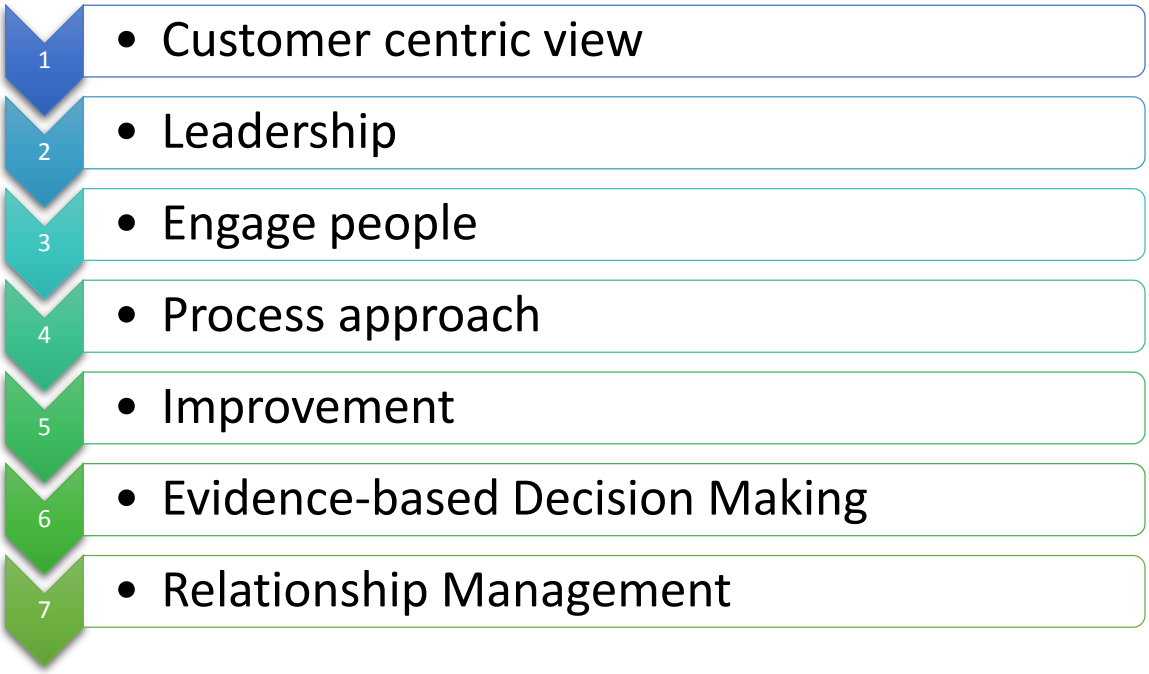


Figure 2.5 Seven princeples of ISO 9001:2015

Principle 1. Customer centric view.

This is highlighted by explicitly including a clause statement: "Organizations depend on their customers and therefore should understand current and future customer needs, should meet customer requirements and strive to exceed customer expectations."

It, thus, guides through a process to understand the needs of the customer and convert them in to a set of design and manufacturing requirements.

Organization will have to strive for:

- Prioritize spoken and unspoken customer wants and needs.
- Translate these needs into technical characteristics and specifications.
- Build and deliver a quality product or service by focusing everybody toward customer satisfaction.

Thus, a line of sight from Voice of customer (VOC) to Voice of process is created. Unfortunately, many organizations collect the VOC and cannot relate it back to the underlying processes. This constitutes a major disconnect and presents a serious situation for the organization to overcome. We must address the basic question as

to whether or not these processes are capable of meeting customer and business requirements.

Principle 2. Leadership.

This principle is reflected by including a clause statement: “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.”

For this purpose, leadership needs to

- Identify and engage all relevant stakeholders by considering
- Listing of all stake holders who impact the value stream carefully
- Ensure to include all the stake holders cutting across functions in end-to-end process management
- Buy-in all stake holder constituents impacted by the process change
- Handoffs between the departments and functions
- Facilitating value stream transformation
- Installing the service level agreements to track and monitor the performance of the constituents

And build quality culture by

- Define the vision and strategies for achieving it
- Communicate the vision and demonstrate personal commitment
- Creating & maintaining an awareness of quality
- Providing evidence of management leadership on quality.
- Providing opportunities for self-development and empowerment.
- Providing opportunities for participation in management process.
- Instituting recognition & rewards mechanism

Principle 3. Engage people.

ISO 9001 2015 states that "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." Be aware these common errors in executing engaging people:

- Not sufficiently emphasizing the urgency and need for change allowing people to be complacent
- Those guiding process do not have sufficient power
- Lacking a clear and compelling vision or not communicating it strongly and/or frequently enough
- Failing to manage the forces that resist change
- Not ensuring some early successes that encourage others
- Celebrating victory prematurely
- Not changing other organizational systems and cultural elements that are required for long-term continuation of change

It is the value placed on achievement. Employees who value a goal will find a way to get it done in spite of its difficulty or adversity. Those in authority can increase employee commitment by explaining why the goal is important and the benefits of achieving the goal. Exerting reasonable pressure for performance. People are more productive when they believe their expectations will be achieved.

Principle 4. Process approach.

"A desired result is achieved more efficiently when activities and related resources are managed as a process." It is applicable to both:

- Products/Services to eliminate defects
- Processes to produce defect free products/Services

Every process is structured with Inputs, activity, and Outputs. We evaluate the inputs to ensure the best quality and timing, we ensure the process has value added and we measure the output to ensure metrics and objectives are completed. How

can we achieve the best results of people, machines and materials? Standardized process will assist us in achieving these goals.

Processes are dynamic-they cause things to happen. It helps us in identifying the interfaces of key activities within and between the functions of the organization. There is no one best way to do work. Workers should be involved in designing the work. The purpose of standardized processes is that we constantly improve.

To create the process approach organization, need to:

- Hold workshop of leader responsible for maintaining standard processes
- Continually look for ways to improve the existing standards
- Conduct small group Improvement activities regularly to gather new ideas and alert one another to problems as they arise.
- Audit the processes regularly where standards have been implemented for corrective actions

Principle 5. Improvement.

The term “Continual Improvement” has been changed to “Improvement” under ISO 9001 2015 which is stated as “improvement of the organization’s overall performance should be a permanent objective of the organization.”

The power of compound improvement adds up to bigger improvements. If we constantly improve a lot of things by 1%, then we will eventually get to the large or quantum leap improvements.

This can be achieved by way of process of becoming better, faster, more productive & contributing towards common goal.

“Once you think you have arrived you have already started your descent.” One must never think they have arrived."

Principle 6. Evidence-based Decision Making.

The term “Factual approach to decision making” has been change to “Evidence-based decision making”.

Evidence is information that shows or proves that something exists or is true. Evidence can be collected by performing observations, measurements, tests, or by using any other suitable method. Any decision making should away be based on evidences. The organization should be ensuring that data/information is sufficiently accurate and reliable. The organization should make data accessible to those who need them. The organization should analyses data using appropriate tools. The organization should make decision and take actions based on analysis of data, balanced with experience and intuition.

Principle 7. Relationship Management.

Interested parties influence the performance of an organization. Sustained success is more likely to be achieved when an organization manages relationships with its interested parties to optimize their impact on its performance. Relationship management with its supplier and partner network is often of particular importance.

Examples of interested parties include customers, suppliers, owners, partners, employees, unions, bankers, or members of the general public. Interested parties are also referred to as stakeholders. Relation management with interested parties meaning sharing knowledge, vision, values, understanding and suppliers are not treated as adversaries. The organization establishes a relationship that balance short-term gains with long term considerations. There is pooling of expertise and resources with partners.

Suppliers must be able to see into their customer’s operations and Customers must be able to see into their supplier’s operations by involving them in your activities.

2.4. ISO TS 16949 – Automotive Standard

ISO TS 16949 is a quality management assurance system that is primarily focused on the automobile industry. The certification presents a global standard to measure the effective capacity of the Automobile sector from production to supply and vice versa. The charter provides a clear-cut guideline on best practices in the development design, manufacturing and production of automobiles as well as other related products. The standard is the product of a well-researched assessment of the Automobile industry and includes sector players in the development of the action plan.

Presents a global effort by stakeholders in the automobile industry and related sectors to promote the best and well developed management policies in the production of Automobiles in an effort to secure a safety and quality measure. Renowned Automobiles manufactures in the world such as BMW are all under the initiative. ISO TS 16949 reassures integrity and quality system control in all levels of production including supply of modern Automobiles. The initiative has also been part of the International Automotive Task Force (IATF) policy frameworks.

The requirements for the ISO 16949 certification will all touch on the necessary sectors of the production.

They include among others the following important areas:

- Documentation on the development of effective production systems in automobile manufacturing and procedures of supply and distribution.
- Quality assurance measures and responsibility of Automobile manufacturers for supply.
- Informative and well experienced staff and employees in the organization.

The few requirements of the ISO TS 16949 certification have all translated to very fruitful benefits. International binding benchmarks have presented the initiative for companies in the automobile sectors towards quality management practice.

They include the following benefits:

- Certification provides international recognition and approval in the manufacturing and supply of automobiles.
- Creates a standardized sector rational to measure the effective capacity of industry players to produce high quality products that are secure for supply.
- Promotes consistency in effective management in the Automobile sector in order to ensure quality production is maintained at all angles to the letter.
- ISO TS 16949 is informative in modern production practices that are cost effective and risk mitigated.
- Presents a simple and singular management strategy that covers a multi-dimensional organization to guarantee safe quality production and supply.

2.5. Five Reasons to Implement a Quality Management System

Like any business decision, there has to be some good reasons for implementing a Quality Management System (QMS). Some people think that total quality management through quality management systems are a never-ending expense that businesses have to engage in to ensure products or services are not defective or meet basic requirements.

A proper QMS, however, delivers real value and benefits to the organization. Let review the top reasons for implementing a Quality Management System.

1. A Quality Management System Improves Organizational Effectiveness

Every organization has certain goals they need to reach in every segment of the organization, including customer service, fulfillment, sales, and purchasing. How well is your business doing in meeting these goals? Frequently, organizations will claim to have established priorities to fulfill; yet without actively measuring performance so they do not have a clue as to how effective they are in these critical areas.

An essential role of a QMS is establishing important goals for critical operational sectors, then measuring and reviewing the organization's effectiveness at reaching

those goals. When an organization communicates the goals and performance relative to these goals (as well as action plans to close gaps), organization's become more effective.

2. A Quality Management System Improves Customer Satisfaction

No matter what kind of industry a business is in, the bottom line should be about satisfying customers. Most businesses will not survive for long if they have unhappy customers. How well is your business doing at delivering what customers want and expect?

A properly designed and implemented QMS makes customer satisfaction a priority. It requires that customer feedback be encouraged from multiple sources, and that this information be managed and used to improve customer satisfaction.

3. Quality Management Systems Improve Compliance

Many organizations report that compliance to standards and regulations is one of their biggest challenges. They are constantly caught off-guard by auditors or they simply have difficulty conforming to the requirements.

Compliance to standards and regulations can be built into the QMS, including into the documentation system, the internal auditing program, and the measurement and reporting system. Many companies have found that compliance is much less of a challenge when it is integrated into a functioning QMS.

4. A Quality Management System Improves Organizational Culture

Employees at many organizations report that one of the most frustrating aspects of their job is that they are unsure of the organizational objectives and priorities, and their role in fulfilling them. This is particularly true when the priorities are constantly shifting. This creates a negative culture of uncertainty, fear, and resentment.

A QMS requires that an organization's goals and priorities are clearly established, communicated, and aligned with operational activities. This gives employees confidence that they are doing the right thing, and that the right thing will be the

same today, tomorrow, next week, and next month. This promotes a much more positive work atmosphere.

5. Quality Management Systems Improves Documentation

Poor documentation is also a common issue in organizations. Critical processes and objectives are not clearly defined, and critical organizational knowledge lies in the head of a few staff members. This puts organizational success at risk.

A QMS helps to define document systems and document needs so activities and processes are clearly recorded and available.

This is just a short list of the benefits realized through implementing a Quality Management System; additional advantages like continual improvement can also be attributed to a QMS. Business and organizational leaders have realized that total quality management isn't an ongoing expense, but a valuable asset that delivers real results.

III. Methodology.

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Done by		*Ismoiljonov Y.*					
Supervisior.		*Jo'rayev Z.*				*Leaf*	*Leaves*
Head of CH		*Esonova Sh*					
Advice.						*AndMBI "MB" Fac.*	
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III. Methodology.

Methodology is about anything that has to do with procedures or techniques of investigation, that is, the set of techniques used in one piece of research. It is all about the methods used in the study of the research. Methodology is essential in gathering relevant information thereby giving effective and reliable representation. It is possible to categorize different research method approaches into two main categories depending on how they are organized, quantitative research methods and qualitative research methods. Merriam stated that, information brought by words is qualitative while information brought by figures is quantitative. According to Patel and Davidson, quantitative research methods are methods for analyzing numeric information in the form of statistical methods. While qualitative research methods, on the other hand, are methods used for analyzing other information, such as interpretations of text. Thou the two methods can be used to analyze data and information gotten from the research, they both have their differences. The main difference between the two research methods is that quantitative research methods transform the information into numbers and amounts, whereas qualitative research methods use the researcher's interpretation of information which cannot or should not be translated into numbers or amounts. The difference between quantitative and qualitative research lies in the procedure involved in investigation. The quantitative technique is an approach which seeks to inquire into an identified problem, based on testing the theory measure with numbers and analyzing the data using statistical techniques. The main objective of the quantitative technique is to find out if a theory can be generalized.

A qualitative research on the other hand is aimed at understanding a social or human problem from multiple perspectives and it is mostly conducted in a natural setting.

Due to the different characteristics of the different research methods, different methods are suited for different research purposes, kind of data involved and other circumstances. Both research methods often can be combined, supporting one another in research.

3.1 Method of data collection.

Data collection is simply the ways information is gathered. Secondary Data and primary data collection are two ways of collecting information. Secondary data is information collected by others for purposes, which can be different than those of the researcher. It is a synthesis of published and unpublished documents related to the research and it is of highly importance, as it comprises the logical framework of the research.

The collection of secondary data has both advantages and disadvantages, one of the foremost advantages of using secondary data is that it helps the researcher formulate and understand better the research problem, broadening at the same time the base for scientific conclusions to be drawn. Nevertheless, it should be taken under consideration that other researchers, organization or government departments for studies with different objectives and purposes collected the data; therefore, it might not be suitable for the current research.

For the purpose of this study, the collected secondary data included: textbooks, academic articles and journals related to the implementation of QMS. Also, a number of online resources were used to get information for the literature review, like www.asq.org, www.analytictech.com, www.qualityscotland.co.uk among others. This type of data collection was mainly used for the literature review since it was unable to meet the research objectives. Primary data is the information gathered directly from the researcher, when secondary data is not available or is unable to contribute meeting research objectives. The collection of primary data involves the use of research instruments, such as questionnaires and interview schedules that have been constructed exclusively for the purposes of a specific study. For the purposes of this research, primary data were collected by questionnaire and interviews. The essence for this was to weigh the different views of groups in each airline studied in the research.

The main concern of a researcher is to ensure that the results of the research are accurate and applicable. Therefore, once the instrument used for the conduction of

the research is ready, then the reliability and validity of the measures are established.

3.2 Questionnaires.

A questionnaire is a research instrument consisting of series of questions and other prompts for the purpose of gathering information from respondents. Most often it is designed for statistical analysis of the responses. Accordingly, 'a questionnaire is a pre-formulated written set of questions to which respondents' records their answers, usually within rather closely defined alternatives'. A questionnaire was structured for this research (Appendix 1) and was administered staffs of the GM Uzbekistan; which includes Quality management system, Quality department, masters and workers. These questionnaires were handed directly to the respondents by the researchers which gave the researchers the privilege to introduce the topic and encouragement in answering the questionnaire. The questionnaire consists of five major parts:

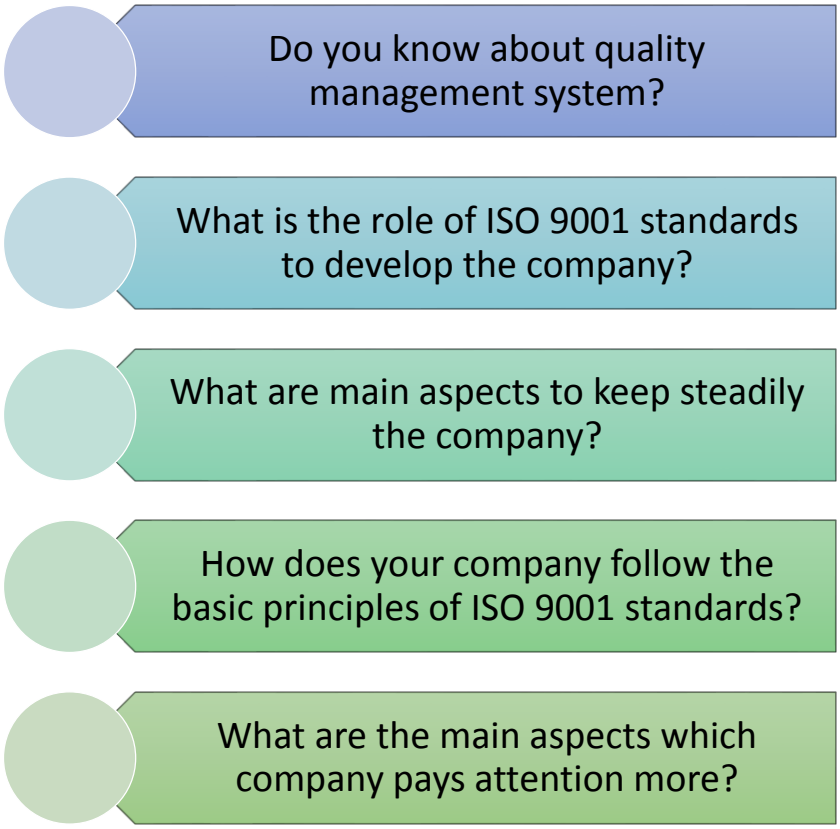

Figure 3.1 Questionnaries

The questionnaire consists of closed-ended questions. Closed-ended questions have a finite set of answers from which the respondent chooses. One of the choices may be "Other." It is a good idea to allow respondents to write in an optional response if they choose "Other." The benefit of closed-ended questions is that they are easy to standardize, and data gathered from closed-ended questions lend themselves to statistical analysis. The down side to closed-ended questions is that they are more difficult to write than open-ended questions. This is because the evaluator must design choices to include all the possible answers a respondent could give for each question. The closed ended questions helped the researchers to analyze the information gotten without difficulties using a 5 point Likert scale (The Likert Scale is an ordered, one-dimensional scale from which respondents choose one option that best aligns with their view).

IV. Analaysis information

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Mea	List	Document №	Sign	Date	***IV. Analaysis Information***	List / Weight / Zoom.
Done by		Ismoiljonov Y				
Supervisior.		Jo'rayev Z.				
Head of CH		Esonova Sh				Leaf / Leaves
Advice.						AndMBI "MB" Fac. gr. 101-13 MSMQP
Confirm.						

4. ANALAYSIS INFORMATION.

The survey started on the 23rd of May, with the questionnaire distributed among four departments. It took the researcher three days in the distribution and collection of the questionnaires. 30 questionnaires were distributed and all of them were returned but 5 of them were rejected as a result of so many omissions in filling. The descriptive statistics of the research population is given below.

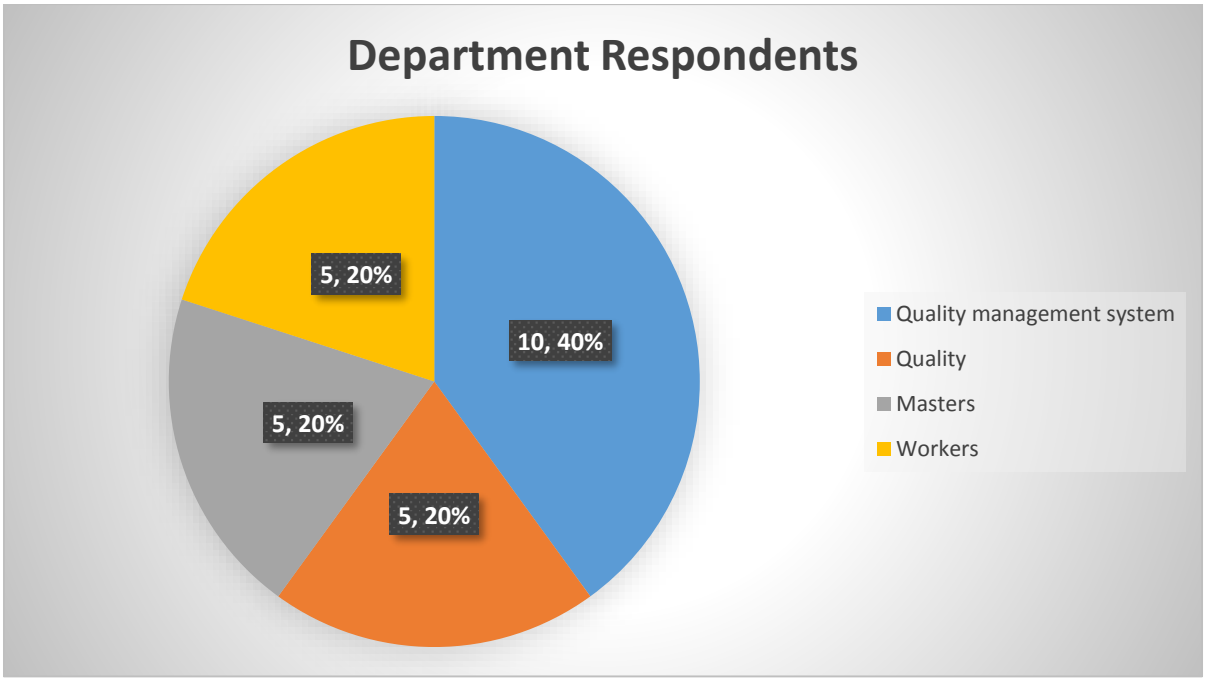
4.1 Distribution of respondents by department.

Questionnaires were distributed among workers in four departments. Figure 4.1 below is used to illustrate the voluntaries of each department. Totally, 25 workers attended our survey and 40% of voluntaries were from the quality management system department (10), voluntaries from other departments are the same, 5 members from each department.

Table 4.1 Distribution of respondents by department.

Departments	Workers	%
Quality management system	10	40
Quality	5	20
Masters	5	20
Workers	5	20
Total	25	100

Figure 4.1 Distribution of respondents by department.



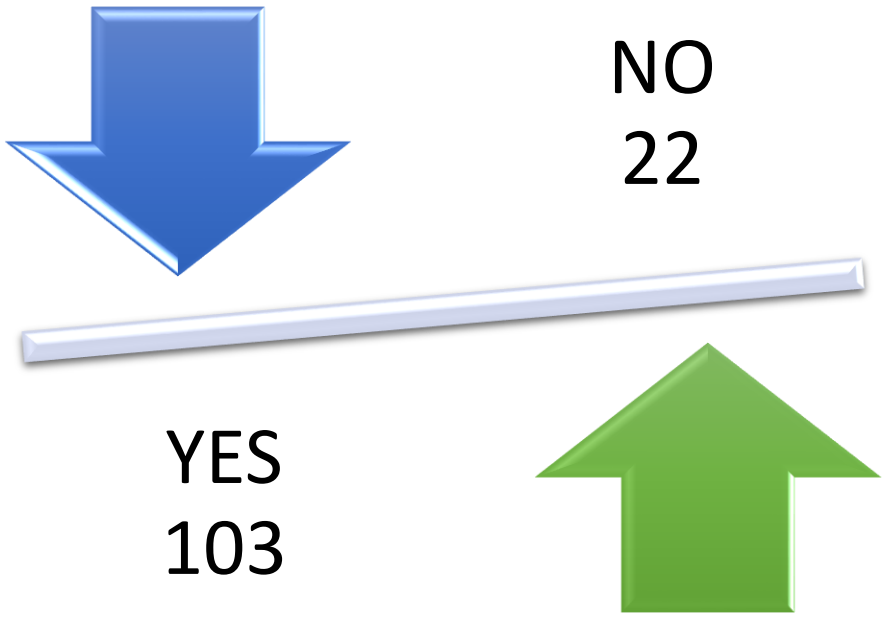
4.2 Distribution of respondents based on knowledge of section 1.

In section 1 questions were about Quality management system in the company and it consisted of five questions. Respondents were ought to answer "Yes" or "No". Voluntaries from Quality management system and quality departments answered "Yes" (100%), but other two departments answered 22 "No" answers. Figure 4.2 below shows the result of section 1.

Table 4.2 Distribution of respondents based on knowledge of section 1

Departments	Yes	no	Total
Quality management system	50	0	50
Quality	25	0	25
Masters	18	7	25
Workers	10	15	25
Total	103	22	125

Figure 4.2 Distribution of respondents based on knowledge of section 1.



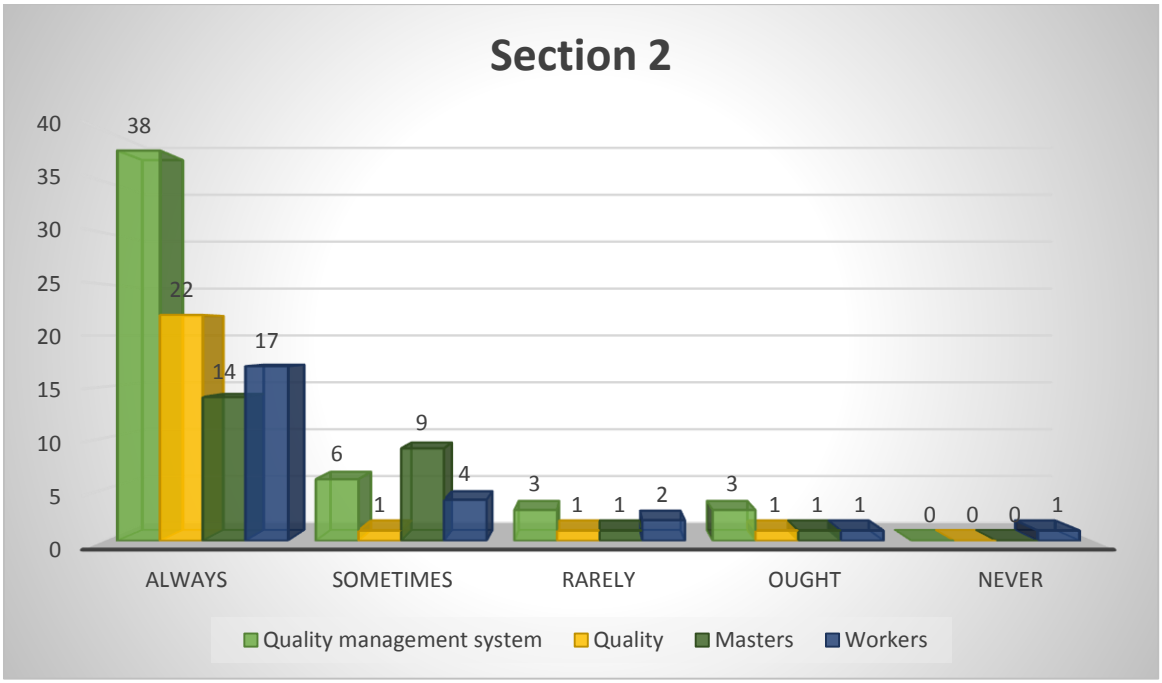
Distribution of respondents based on knowledge of section 2.

In section 2, main question was “What is the role of ISO 9001 standards to develop the company?” and it consisted of five opinions. In this section, results were different and below results were stated in table and showed in diagram.

Table 4.2 Distribution of respondents based on knowledge of section 2.

Departments	Always	Sometimes	Rarely	Ought	Never	Total
Quality management system	38	6	3	3	0	50
Quality	22	1	1	1	0	25
Masters	14	9	1	1	0	25
Workers	17	4	2	1	1	25
Total	91	20	7	6	1	125

Figure 4.2 Distribution of respondents based on knowledge of section 2.



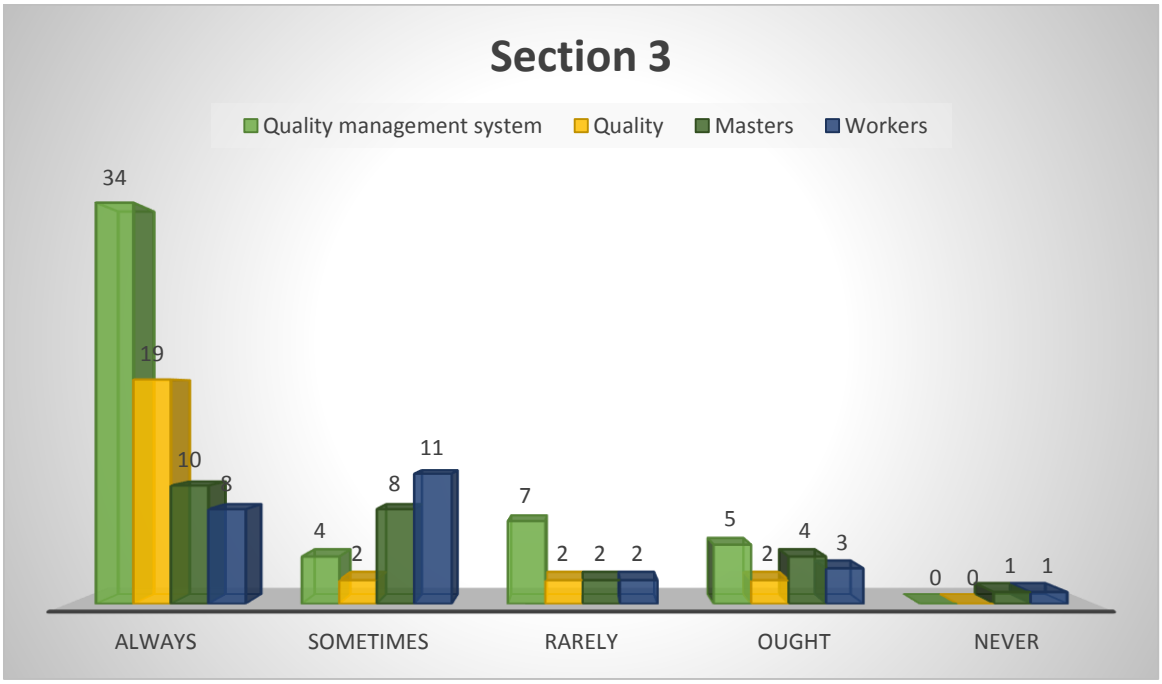
Distribution of respondents based on knowledge of section 3.

In section, main question was “What are main aspects to keep steadily the company?” and it consisted of five opinions. In this section, results were different and below results were stated in table and showed in diagram.

Table 4.3 Distribution of respondents based on knowledge of section 3.

Departments	Always	Sometimes	Rarely	Ought	Never	Total
Quality management system	34	4	7	5	0	50
Quality	19	2	2	2	0	25
Masters	10	8	2	4	1	25
Workers	8	11	2	3	1	25
Total	71	25	13	14	2	125

Table 4.3 Distribution of respondents based on knowledge of section 3.



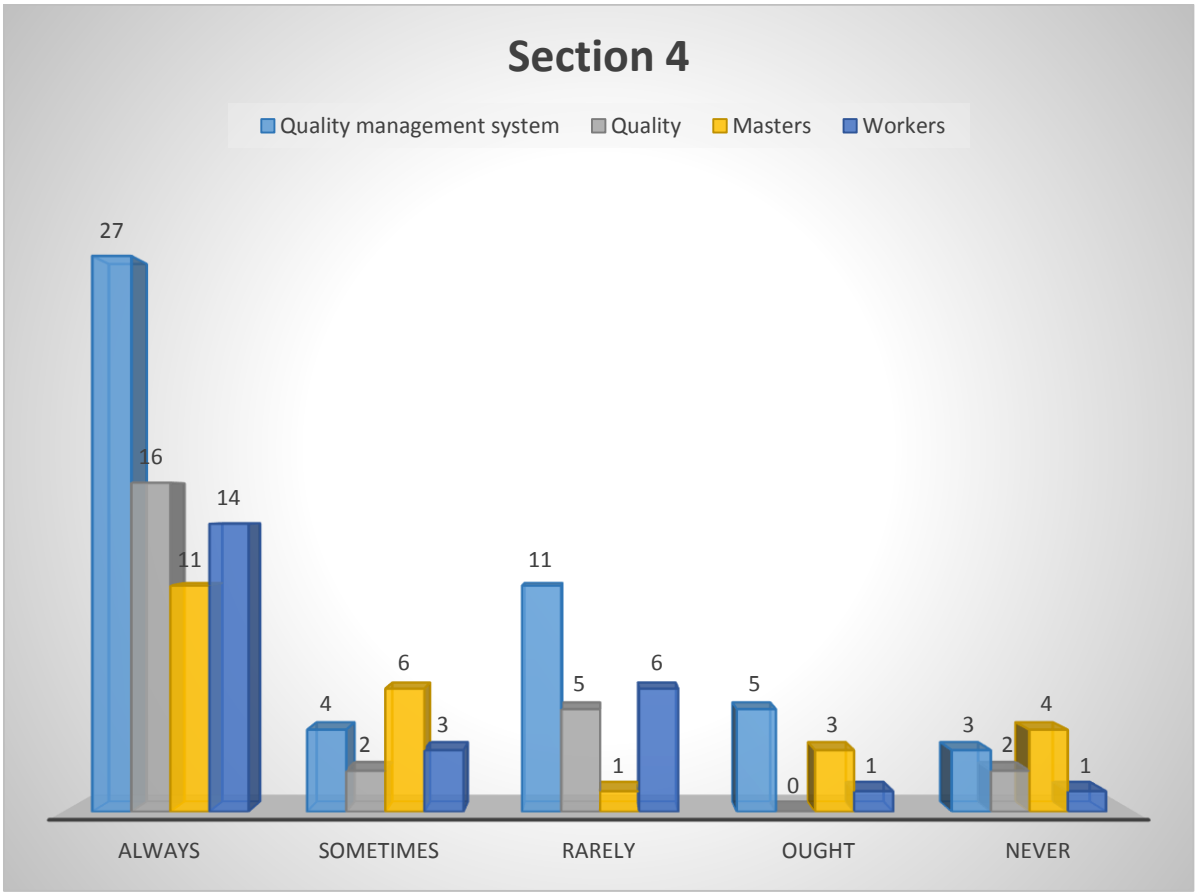
Distribution of respondents based on knowledge of section 4.

In section, main question was "How does your company follow the basic principles of ISO 9001 standards?" and it consisted of five opinions. In this section, results were different and below results were stated in table and showed in diagram.

Table 4.4 Distribution of respondents based on knowledge of section 4.

Departments	Always	Sometimes	Rarely	Ought	Never	Total
Quality management system	27	4	11	5	3	50
Quality	16	2	5	0	2	25
Masters	11	6	1	3	4	25
Workers	14	3	6	1	1	25
Total	68	15	23	9	10	125

Figure4.4 Distribution of respondents based on knowledge of section 4.



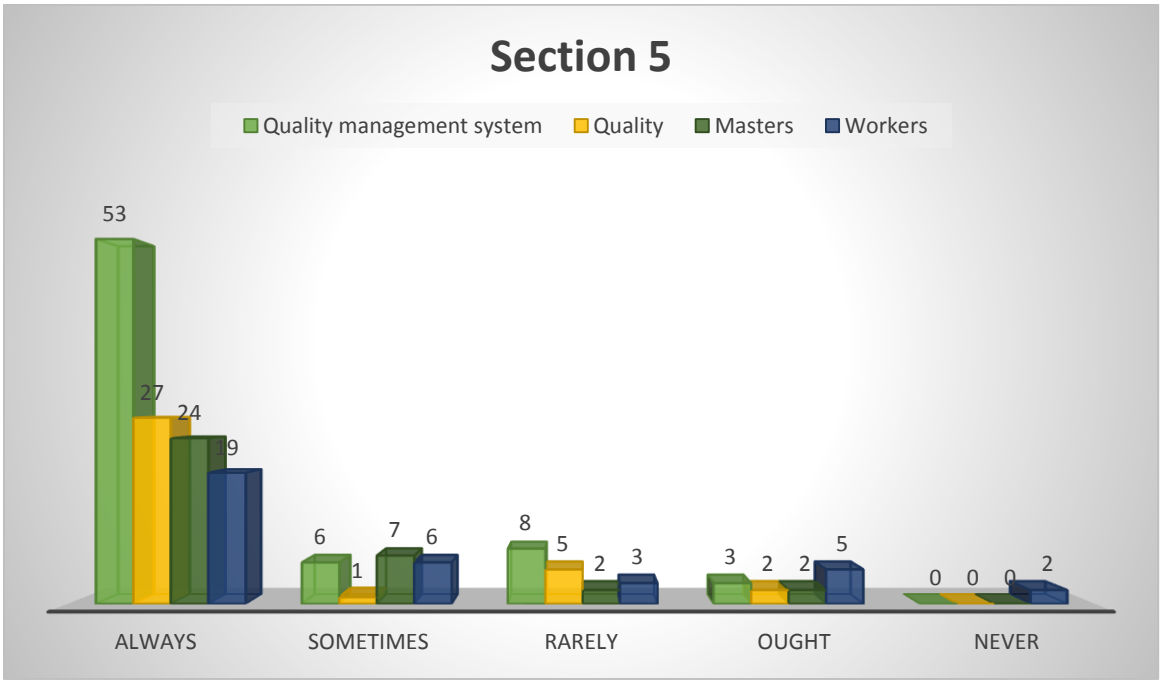
Distribution of respondents based on knowledge of section 5.

In section, main question was “What are the main aspects which company pays attention more? and it consisted of five opinions. In this section, results were different and below results were stated in table and showed in diagram.

Table 4.5 Distribution of respondents based on knowledge of section 5

Departments	Always	Sometimes	Rarely	Ought	Never	Total
Quality management system	53	6	8	3	0	70
Quality	27	1	5	2	0	35
Masters	24	7	2	2	0	35
Workers	19	6	3	5	2	35
Total	123	20	18	12	2	175

Figure 4.5 Distribution of respondents based on knowledge of section 5.



4.3 SUMMARY OF ANALSIS.

The main objective of this research is to evaluate the quality management system in GM Uzbekistan and give recommendations to optimize QMS. In order to evaluate the state of quality management system, questionnaire was carried out in five sections. The samples were drawn from four different departments in GM Uzbekistan consisting of 25 respondents.

Life safety

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Mea	List	Document №	Sign	Date	***Life safety***	List / Weight / Zoom.
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Advice.						
						AndMBI "MB" Fac. gr. 101-13 MSMQP
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LIFE SAFETY

Automobile parts manufacturer Labour enclosure.

To improve the working conditions for the production and the creation of healthy and safe working conditions first on improving the protection of labour requires planned development activities. This plan should be drawn up in coordination with the activities of the Committee of Trade Unions, and should be provided with the necessary resources. All work carried out work to improve the protection of a one-year, five-year and planned for the future based on a comprehensive plan.

Work is planned to be concluded on a one-year plan to improve the protection measures with the administration of the organization of the trade union committee on the protection of labour between the community finds its reflection in the contract. At the beginning of the project team contract workers be allowed only in the general meeting and three disapproved by the trade-union committee and administration of the organization.

Concluded work on improving the protection of activities includes the following sections:

A) The prevention of accidents in the manufacturing:

- All new construction of facilities covers issues of labour protection and safety production work with the project;
- Accidents more unique events for analysis;
- New equipment and to ensure safe working conditions and the means of production.

Figure 6.1 "GM Uzbekistan" prevention devices.

B) The prevention of disease in the manufacturing:

- To ensure the normal places of work and recreation rooms microclimate;
- Employers and employees to work and from work by bus or automobile equipped for this purpose;
- The organization of medical examination of the types of work.

C) Working conditions:

- The production of culture, the introduction of new technologies and new production technologies;
- The organization of competitions aimed at improving the status of the safety equipment.

G) labour protection and safety training , as well as other promotion works:

- All the workers and the safety engineer and technical personnel training, guidance and knowledge testing ;
- Safety equipment and emergency life safety cabinets .

Figure 6.2.

Labour protection and safety training.

Operating in the production of cars, each attached to the worker and the worker must be able to secure a profound knowledge of the case. For them labour protection and safety, professional training is required.

Production of light vehicle production shop for all workers, regardless of the level of security and the nature of the work of all security training, after they inspected knowledge. Factory workers labour protection and safety training and instructions are carried out through them.

Instructions in accordance with the instructions, the primary instructions in the workplace, the next router, the router extraordinary, divided into periodic guidelines. Employees held all the instructions and courses taught, and then the employees will be given a certificate.

Special workshop production of clothing, personal protective equipment and its prevention. The Republic of Uzbekistan, "The code of labour laws" and "Labour protection" laws on working conditions hazardous activities, as well as the specific conditions of temperature measured performance of employees working in the works of pollutants or special clothes, special footwear and other personal protective equipment for free.

The company or the administration of special clothing, special footwear and other personal protective equipment, washing, cleaning and repair, and for ongoing monitoring of the use of these tools as well as you need to go.

Light vehicle production shop such conditions have been fully established and controlled by the persons responsible. In addition, the pollution associated with the values specified in cases worker free soap and other means harmless.

Terms of the use of special clothing and personal protective equipment is installed, as follows: robes, shoes 12 months, the gloves 1 or 2 months, Cascade, 2 years, 36 months warm clothes.

Take into account accident research and production.

The territory of the Republic of Uzbekistan of all enterprises and organizations, as well as some of the work of the labour contract labour in

connection with the activities they have experienced health staff and other contamination control and accounting - 286 of the Cabinet of Ministers on June 6, 1997 - carried out according to the approved resolution.

This system: the judgment of the court during the running production of serving the citizens, employers, contractors and assignments by persons performing work on civil legal agreements, natural and man-made nature to citizens participating in the elimination of emergency situations, the plant implementation of practical training for students and pupils. Natural death, self-murder, intentional damage to the health of the victim, as well as investigating the circumstances of the injury to the victim during the commission of a crime and are not taken into account.

The employer no later than 3 days after the end of the check to the victim or the person who defended the interests of his state, or other acceptable language issued in an accident on the N-1 form must act.

Between the employer and the state technical inspector bewilderment chief state inspector. Accidents investigated:

- At the same time for more than two employees had accidents, fatal accidents, the consequences of severe accidents;

- The end of the node with the group of death and serious accidents must be reported immediately in accordance with the scheme of the employer: state technical inspector, the higher authorities.

If you have an accident, a member of the Council of the Federation of Trade Unions organization occurs, the trade communities chief technical inspector is part of the commission.

Accidents for more than five people were killed by the Commission based on the decision of the Cabinet of Ministers of the Republic of Uzbekistan.

A special control commission within 15 days after an accident verify the status of the company's labour protection. If necessary, and other enterprises in the industry, is organized by a special inspection certificate form.

Special control measures proposed by the Commission to conduct a special inspection on the implementation of any other state technical inspector,

"O'zsanoatkontexnazorat" objects under the control of the State Committee for the local authorities to provide information in writing.

Main requests of technic security in welding.

Driving the welding with covered electrode in helping electric bow by hand, a lot of dust is separated, as a result the amount of gathering dust in breathing organs of welder is more than the normal. The dust consists of iron oxides and there are also the mixture of Mn, Cr, Ni, V, Mo, and the combination of elements in it.

There are gases, azote oxides, carbon oxides and sometimes fluorine oxides in Welding. The amount of manganese oxide and combination of fluorine isn't much if we compare with the amount of iron oxides, but they play main role in choosing electrodes and their sheeting because of their toxic effects. The dust contained in welding is so tiny Dimension includes 98-99% of amount of elements that are smaller than 1 m km, as a result it gives them a chance to enter the lung issue; the breathing organs hold 60-70% the dust contained in electric welding. The temperature of welding bow is quite high near to 6000 C, that is why, It is considered as a source of ray energy that is in a diapason from (infra-red) to (ultra-violet) radiation. Automatic and half-automatic welding under fluting improve working condition of welder because the bow lights under the fluting layer and protect eyesight from harmful effects further more, it prevents from being by the drops of metal, on the other hand working process become the formulation automatic welding. However, air condition of producing rooms becomes with the dust of gases and fluting. In this condition especially the steams from fluorine combination in fluting is so dangerous. Little amount of dust and waste produce in welding by hand with non meeting electrode and inert gases. In welding condition dust gases, ozone oxides, carbon oxides, oxides are produced. Defense gases compress oxygen from air, if the amount of oxygen in our degree from 15% (for example working in closed or bad air contained rooms). Being poisoned may happen the most dangerous poisons are manganese and carbon oxides to the health of welder. There may be extra danger in welding special steels with chromium nickel-electrodes. It depends

on producing chromium and nickel oxides, zinc oxides are produced in welding galvanized steels.

Much amount of gases and dust (ozone, nitrogen oxides, oxides of material elements being welded) are separated from welding with thawing and non-thawing electrode by helping argon bow. The most dangerous gases ozone O_3, the ting amount of this gas may cause the poisoning it can appear by the effects of electric ranks (ultra-violent) radiation and high temperature of bow.

Electric welding aerosol and manganese oxides are not separated from welding with non-electrode in argon condition. From the gases that are used in preparing constructions and installing, Helium gathers at the top of the closed room because of being the lightest gas, Argon and carbon oxides gather in the low part of the room because of being the most heavy gases, nitrogen spreads along the rooms.

Gathering carbon oxides, azote oxides, acetylene and inflammable gases in the rooms is related to welding metals with gas. All in flammable gases may mix with oxygen and air, even there may be any kind of mixture that can be burst by a tiny spark. For example: acetylene is so dangerous to burst by mixing air. (there is 21% ……82% acetylene in air structure). And when acetylene is more than 2.3% in oxygen mixture it is dangerous.

When compressed oxygen is affected by oily substance and firm fuels standing in tiny disperse condition, their being oxides happens suddenly, in burn itself. This condition causes a lot of damages such as burning people, fire and even explosion. In welding with bow, radiation (visible, ultra-violent, infra-red rays) is so dangerous to cause many job diseases; ultra-violent is the most dangerous radiation, it course eye diseases namely electro ophthalmic.

In welding, too loud voices, trembling and ultra voices are also more dangerous. The welders usually have to work in uncomfortable and to living condition of body, moreover, workshop compresses the action of welder. Especially working condition in a closed space is too hard.

Job diseases and being poisoned of welders are Pneuma, poisoning with manganese and strongly poisoning with welding gases. In order to prevent these

diseases, health and fitness measures must be hold: the most hygienic ways of welding and using welding materials having less poison, ventilating, working less in closed places, follow hygienic working routine and using personal instruments of protection.

Breaking the rules technic security in welding may cause:

1. To be damaged of electricity and electric bow by ultra-violent and heat rays.
2. To be damaged of exploding of balloons seduction gear, rainpol.
3. To be damaged of eyes from cleaning Sturm burners wooden from trash and metal drops.
4. To poison with poisonous dust and gases as well as defense and inflammable gases.
5. To burning from melted metal and taking catch fire of thaws.
6. To getting coal from doing installation work of welder in winter.

There is no any safe way of welding. For example: there is a danger of being radiated by X-ray rays in welding with electron-ray and ultra voice in welding with ultra voice and may be damaged in compressing electrode during contact welding, and strong magnet arena may impact in magnetic welding. Main danger in welding with burst is related to using explosives.

The economic part

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Advice.						*AndMBI "MB" Fac.* *gr. 101-13 MSMQP*		
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THE ECONOMIC PART

The product quality requirements are set taking into account the available processes, personnel, resources, and finance. These requirements critically determine the cost of manufacture and maintenance, and hence the price. Moreover, if the consumer is offered a "new" quality, the price can be substantially higher than the cost of production.

1. With regard to quality financial management is usually considered from the standpoint of reducing the quality costs. For the collection, recording and analysis of information on the cost of the quality necessary to classify in detail the types and choose their measured performance.

2. When talking about quality management, usually have in mind the quality of production, based on the need to reduce defects in the manufacturing process and minimize failures when using consumer products. Therefore, usually to the cost of quality include:

• In the event costs and processes aimed at preventing non-conformities (defects, errors) in their implementation;

• The costs of quality control in all its forms;

• Costs associated with the financial losses from discrepancies as in release (internal loss), and using (operating) products (external loss). The most important significance for the cost - to create quality, to achieve the desired quality of the project. Since it is difficult to name the processes (production and service), from which a greater or lesser degree depend on the quality of products, all costs associated with the creation and implementation of these processes are the costs of quality. Especially important are the development costs - marketing, design, collection of information on requests and customer satisfaction in the process equipment.

3. Costs for the creation of quality (the development of new materials, finding new design and technological solutions, testing and debugging of new products, and so on) Should be carefully considered and analysed, but does not save them. Because they are much lower than the costs that are associated with inefficient,

fraught with failures and accidents exploitation. In the design of useful methods of quality control and value analysis.

You also can not save on costs related to the prevention of nonconformities (defects, errors, marriage) and the control, but these costs are optimal borders.

At the same time, losses from discrepancies should always strive to be reduced to zero.

Cost management quality requires skill, firstly, continuously collect and record information about the quality of the cost, and secondly, to analyse it. It is clear that the most expedient to carry out the collection of information and analysis of the study and optimization of processes and cost accounting on the quality built into the mechanism of financial and / or accounting.

4. The results of the analysis of the quality costs are the basis for the search of new technological and organizational solutions primarily for the prevention of nonconformities (defects, errors) and improving control, especially as the cost of the appearance of inconsistencies in the use or operation of the stage many times the cost of their removal in the production and, especially, to prevent their occurrence.

5. The results of the analysis of the costs of quality are also the basis for the planning of production costs and adoption of on investments in production decisions. New quality - these are new materials, a new design, new technologies, new design principles, etc. All this requires significant investments in the design and production on the background of the existing costs of quality.

The decision on the most profitable investment of funds to improve the quality has a fundamental decision in quality management and quality management, respectively the main principle - the principle of maximum efficiency of investment in quality.

Naturally, to assess the effectiveness of investment should be given and the expected price of new products, and the expected competitiveness, sales volume, payback periods, advertising costs and mandatory confirmation of product safety procedures, and if money is taken in debt, term of the loan and interest.

Particularly relevant principle of maximum efficiency of investments in the quality of Russian manufacturers - buy a license or do their own development, to invest in production equipment to replace imported or replace obsolete equipment. Failure decision to throw it from the market because the money to try again, as a rule, no. This once again confirms the need for very careful and balanced assessment when making decisions about ways to improve the quality and scope of investments, with a serious analysis of the options, a comprehensive study of the market, both Russian and foreign.

Classification of quality costs.

Market relations require implementation in practice of international rules of accounting, business analysis and reporting. The international standards for quality system notes the importance of evaluating the effectiveness of the quality system from a financial point of view. An effective quality system may have a very important impact on the profitability of the organization, especially at the expense of improving economic activity, which leads not only to a decrease in marriage and the cost of manufacturing the product, but also to reduce the costs associated with the use and operation of the product.

Costs of quality - a cost that must be incurred to provide customer satisfaction products. There are several classifications of the quality costs.

The quality management theory, there are two basic approaches to the cost of quality:

1. A. Feigenbaum;
2. School F. Crosby.

The most famous of them - an approach Juran Feigenbaum, in accordance with this approach, costs are divided into four categories:

1) on preventive measures cost - to prevent the very possibility of defects, for example, costs to reduce or completely prevent the possibility of defects or losses;

2) cost control - the determination and confirmation of the achieved level of quality;

3) internal losses (internal costs) - costs incurred within the organization;

4) external losses (cost of external defects) - expenses incurred outside organization (for example, after the product has been sold to the consumer). When the planned quality level is reached. The sum of all these costs gives the overall cost of quality.

Another classification of expenses for the quality offered F. Krosbi (Figure 5), which shared the cost of quality into two categories:

1) the cost of compliance - all costs to be incurred to make it right the first time;

2) expenses for the discrepancy - all costs that have to ne¬sti due to the fact that not everything is done right the first time.

It can be assumed that the first two groups of costs, calculated by the method of Juran Feigenbaum - "the costs of preventive measures" and "cost control" correspond to the category "the cost of compliance", calculated according to the method of Crosby. These costs can not be reduced to zero, as it does not assess the quality and not to carry out preventive measures is to put the quality of their course.

"External loss" and "internal loss" correspond to the "cost of non-compliant", since the marriage, found within the firm or consumer - is in any case of loss, for which to pay. These costs can and should do as little as possible, and ideally - to bring to zero.

In domestic treatment costs associated with product quality are:

• costs of maintenance and guarantee an adequate level of product quality;

• costs associated with losses in the event of failure to reach a proper level of quality.

During the development, the development of production and direct production of new products formed the so-called core costs, much of which reflects the cost value of the various factors of production, as well as overhead and general expenses attributable to the production of products through an estimate of the costs and additional costs due to product improvement and restoration of quality products to the proper level in the event of failure to reach.

One of the additional cost items are the cost of quality assessment, including in its membership:

– on controlling labor costs;

– costs of special test equipment;

– overhead costs of technical control or the quality of the service department;

– costs of information in the field of trade;

– costs of organizing and carrying out sample surveys consumers' opinions about the quality of their products.

Market relations require implementation in practice of international rules of accounting, business analysis. In principle, this information can be divided into external (financial) and internal (management).

The international standards on quality management system indicates that the costs associated with quality, are calculated within organization criteria. In doing so, the costs associated with quality, include costs incurred in ensuring and guaranteeing a satisfactory quality, including in its cultivation, as well as expenses resulting from losses due to poor quality; some losses can be difficult to quantify, but they can be very important (for example, company prestige loss).

Conclusion and recommendations

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Mea	List	Document №	Sign	Date	***Conclusion and recommendations***	
Done by		Ismoiljonov Y.				
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CONCLUSION AND RECOMMENDATIONS

The increasing globalization and market competition had made it necessary for manufacturing companies in Uzbekistan to improve their effectiveness. This new and challenging environment has motivated much senior management in manufacturing companies to re-evaluate their competitive strategies and management practices with the aim of improving organizational performance in the area of qualitymanagement practices with the aim of improving organizational performance in the area of quality. Thus, most of companies in our country hava been implementing ISO 9001:2015 or ISO /O'zDST 9001:2015 international quality management system standards. Quality management system helps to manage the organization effectively and efficiently.

In this diploma project optimization of quality management system was discussed as one of the most worldwide issues of today's.

According to the goals of diploma project, the knowledge of workers was evaluated to identify their attitude to the quality management system. We evaluated workers' knowledge by questioneries and we are going to recommend several methods to optimize quality management system.

They are:

1. Teaching workers about Quality management system and ISO 9000 standards more;
2. Using banners (headlines) in working stations which is related to quality management system;
3. To do exams more diffecult;
4. To do survey often among departments and workers.

Literature

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					Literature	List	Weight	Zoom.
Mea	List	Document №	Sign	Date				
Done by		Ismoiljonov Y.				Leaf	Leaves
Supervisior		Jo'rayev Z.					
Head of CH		Esonova Sh				AndMBI "MB" Fac. gr. 101-13 MSMQP	
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APPENDIX

Questionnaire.

Your age: _____

Gender: Male / Female

Department: _____

Section 1. Quality management system.

(Please answer the following questions to choose [YES] or [NO] answers)

1	**Do you have any information about the quality management system?**	**[Yes]**	**[No]**
2	**Do you know what ISO 9001 is?**	**[Yes]**	**[No]**
3	**Can you assess positively the performance of the system in your company?**	**[Yes]**	**[No]**
4	**Have you had any training sessions on this system?**	**[Yes]**	**[No]**
5	**Do you think the company needs a quality management system?**	**[Yes]**	**[No]**

Section 2. What is the role of ISO 9001 standards to develop the company?

(Please answer the following questions choosing by one of 5 answers)

		Always	Sometimes	Rarely	Ought	Never
1	**It helps to manage the company effectively and efficiently**	**5**	**4**	**3**	**2**	**1**
2	**Access to the international market**	**5**	**4**	**3**	**2**	**1**
3	**Improves the overall management system of the company**	**5**	**4**	**3**	**2**	**1**
4	**The influence of the company in the international market increases**	**5**	**4**	**3**	**2**	**1**
5	**Improves business performance**	**5**	**4**	**3**	**2**	**1**

Section 3. What are main aspects to keep steadily the company?

		Always	Sometimes	Rarely	Ought	Never
1	Mutual trust and commitment between staff and heads	5	4	3	2	1
2	Workers feel obligation to develop the company	5	4	3	2	1
3	The solidarity of staff in reaching the goal they set	5	4	3	2	1
4	Official rules and policies	5	4	3	2	1
5	Providing rationalization proposals by staff	5	4	3	2	1

Section 4. How does your company follow the basic principles of ISO 9001 standards?

1	Trust, openness, human qualities	5	4	3	2	1
2	Buying new resources and creating new opportunities	5	4	3	2	1
3	Increase competitiveness in order to maintain its reputation and influence in the international market	5	4	3	2	1
4	Continuous improvement and controlling the achievement of high efficiency	5	4	3	2	1
5	Attracting foreign investors	5	4	3	2	1

Section 5. What are the main aspects which company pays attention more?

		Always	Sometimes	Rarely	Ought	Never
1	The company is adapting to customer requirements and needs.	5	4	3	2	1
2	The heads of company create and implement the organization's specific goals and objectives	5	4	3	2	1
3	Employees utilize their capabilities for company development	5	4	3	2	1
4	The company has a clear strategic goal for continuously improvement	5	4	3	2	1
5	Decisions are made on the basis of relevant data and information analysis	5	4	3	2	1
6	The company constantly develops mutually beneficial relations with its suppliers	5	4	3	2	1
7	Leaders define the quality policy and communicate it to the staff through training.	5	4	3	2	1
8	Acceptance of raw materials ensures quality compliance in production and final inspection locations.	5	4	3	2	1
9	Equipment and measuring tools are routinely adjusted.	5	4	3	2	1
10	Only tested raw materials are processed.	5	4	3	2	1

11	**If it is found that the product or raw material which does not meet the requirements, they will be discontinued from the production process. But only with the heads of company license, this product and raw materials can be used.**	**5**	**4**	**3**	**2**	**1**
12	**Internal and external audits are regularly held on time**	**5**	**4**	**3**	**2**	**1**
13	**Monitoring charts and other analytical methods determine how the business process and continuous improvement are.**	**5**	**4**	**3**	**2**	**1**
14	**Creating and modifying any quality system documentation is subject to strict control**	**5**	**4**	**3**	**2**	**1**
15	**The company fully complies with ISO 9001 quality management system requirements**	**5**	**4**	**3**	**2**	**1**

Thank you very much

For your participation in the questionnaire!