A Comparative Study of Deming's and Juran's Total Works :Changing the Quality Culture Towards Total Quality Management

Dr. Moyassar I. Ahmed \Head of Industrial Management Dept.
University of Mosul

Abstract

The current paper aims to shed light on the major contributions of the famous two pioneers in quality culture at all companies of the world. It also shows the convert of classical ideas in quality management towards the philosophy of TQM .Different sides of thinking have been indicated . The study also covered the major contributions of both authors .

The dilemma was shown in the possibility of introducing a paradigm ingather the Deming's and Juran's philosophies . The paper decided a major target in contact with the proposed paradigm and the factors of success . The paper concluded into the possibility of exploring the strength points of both philosophies to gain the totality of quality management . Thus, the paper is contain of introduction and six sections, they are:

1. **Methodology .**
2. **Deming's Total Works .**
3. **Juran's Total Works .**
4. **Matching the Two philosophies .**
5. **Suggested paradigm .**
6. **Conclusions** .

المستخلص

يهدف البحث إلى إلقاء الضوء على الإسهامات الرئيسة لأثنين من رواد الجودة المشهورين الذين أسهموا في ثقافة الجودة لدى الشركات المختلفة على مستوى العالم .

كما يبيّن التحوّل من الأفكار التقليدية لإدارة الجودة نحو فلسفة إدارة الجودة الشاملة من خلال محاورة اتجاهات مختلفة من التفكير لدى كل من Deming و Juran وصولاً إلى تغطية الإسهامات التي ميزّت كلاهما .

تركزّت المعضلة الفكرية في إمكانية تقديم معمارية تجمع بين فلسفتي Deming و Juran ، مع تأشير الأهداف المتوخاة من هذه المعمارية وعوامل نجاح تطبيقها .

توصل البحث إلى إمكانية استكشاف نقاط القوة في كلا الفلسفتين للحصول على التكامل والشمولية في مجال إدارة الجودة ، على وفق ما تقدّم ينقسم البحث إلى مقدمة وستة أجزاء هي :

١. المنهجية .
٢. الأعمال الكاملة لـDeming .
٣. الأعمال الكاملة لـJuran .
٤. مطابقة الفلسفتين .
٥. المعمارية المقترحة .
٦. الخلاصة .

1. Introduction

The paper try to determine and analyzing the contributions of Deming and Juran which had conceder the famous gurus in quality management during last century, diving on its details, discovering its meanings we indicate some different sides of thinking in spite of the two are work together on the same company in a period of time 20^{th} in western electric, and they didn't met until 40^{th} .

Doctor Edwards Deming (1900-1993) classified one of the most important personality effecting in 20^{th} century, especially in rebuilding the Japane's industry reputation, known as the god father of quality control in Japan or the god father of third wave of industrial revolution, or the god father of total quality, his philosophy named as a statistical oriented philosophy, one of the famous quality prize in Japan and the World named Deming prize.

Joseph M. Juran (1904-2004) (Electrical engineer) had an extensive contribution and participated vigorously to American Industry Society , he indicate and determine quality principles transformed it from narrow technical view to total view (transferring from q to Q) or like he named as Managing for Quality, its philosophy oriented to humanistic aspect in quality known as the god father of total quality control (TQC).

Juran given by the Japane's imperial in 1981 middle of honor, over 40 plus years the man lectured and taught courses in 34 countries to more than 20000 people.

2. Methodology

a. Theoretical Dilemma

- What is the content of Deming's and Juran's philosophy ?

- What are the coincidence and disparate points of the two philosophies ?
- Is there any possibility of introducing a paradigm to ingather the two philosophies ?

b. Objectives

- Collect the major axis of Deming's and Juran's philosophies .
- Determined the applicable frames which are invested in the coincidence factors .
- Introduce a suggested paradigm , and declare its success factor .

c. Paper Value

The importance of the paper emerging from its direction which concentrate on displaying the distinctive axis of both Deming's and Juran's philosophies, especially the premiere . The paper discussed and analyzed them to indicate applicable ideas to serve the top management and accomplish the totality of quality management .

d. Hypothesis and Pattern

There is a possibility of deriving the knowledgeable mixture from Deming's and Juran's philosophies and gaining the totality of quality management, testing this hypothesis theoretically according a several steps shown in exhibit (1) .

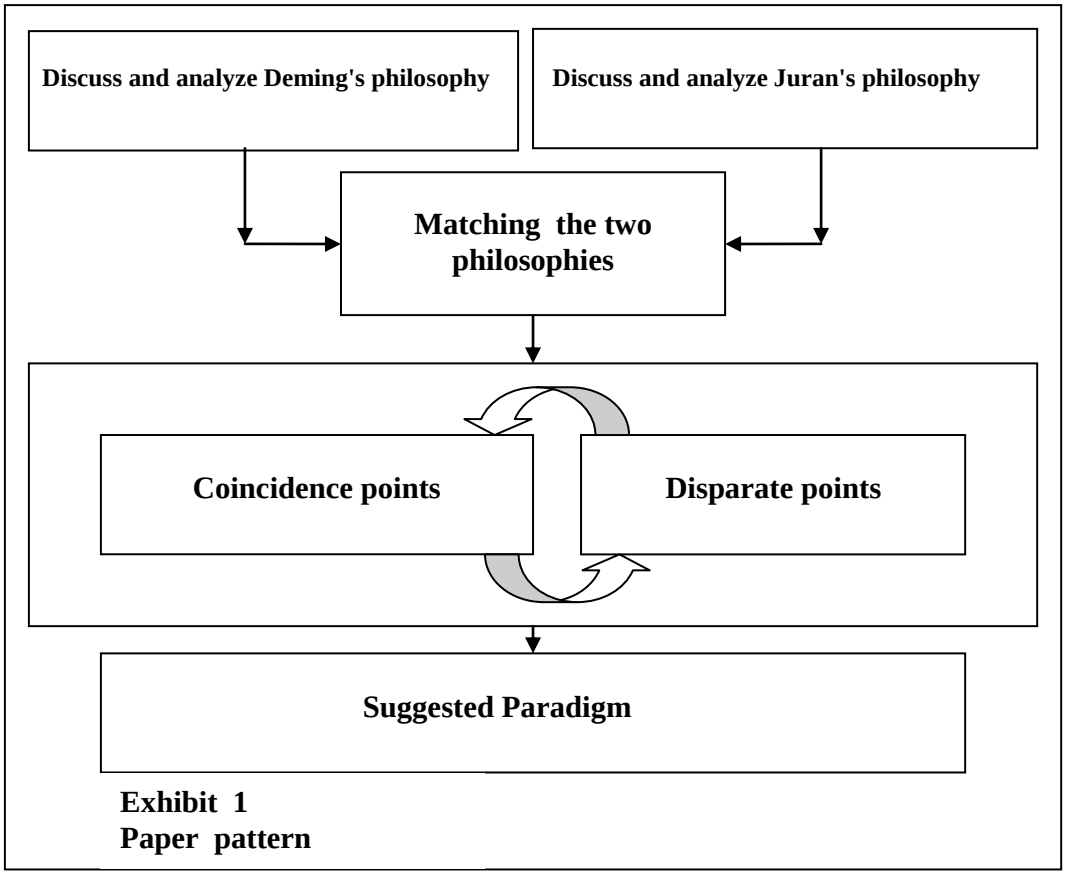

Exhibit 1
Paper pattern

3. Deming's Total Work

W. Edwards Deming (1900 - 1993) is one of the foremost experts of quality control in United States. From humble origins, he became a preeminent voice in the world quality movement, he might become the best-remembered figure of the 20th century associated with quality, even though he thought the chances of that movement were remoted , known as the godfather of total quality in Japan or the godfather of third wave of industry revolution .

Much of the credit for Japan's flight to quality and the making of its world-class reputation goes to quality Guru (*) W. Edwards Deming. Deming urged the companies to concentrate on the constant improvements, improving the efficiency and doing it right the first time. He was a professor of statistics at University of New York, he was invited to Japan in 1950 to run a seminar for business leaders. Since, the 1930s, Deming had been interested in using statistics as a tool to achieve better quality control (Donaldson 2004, 34). His ideas essentially recorded the number of product defects, analyze the reasons of happening , institute changes, then recorded how much quality has been improved, and to keep refining the process until it is rightly done.

Deming explains the optimal relationship between workers and companies managers that must be associated, not hired hands, and blamed management if workers are not motivated to work well.

When Japan reached the top in the 1980s, forcing many U.S. industries to imitate their experience with quality circles and low-inventory manufacturing systems, many of Deming's ideas were rediscovered by the United States.

Some difficulties in diving on the major merits of deming's philosophy , so it described as :

a. Statistical Thinking

Deming's philosophy has been highly influenced by statistics , during 1930s and 1940s which had been his own study field . He contributed to the applications of statistical science in quality field .

During this period Deming's statistical style has witnessed many developments due to influence of many researchers including Walter Shewhart. He acquired the enumerative, descriptive statistical viewpoints concentrated on machinery of sampling, designed the experiment,

(*) A Quality Guru is a human whose ideas and approaches in a science field like quality (within manufacturing, the service industries, and probably life in general) had made a major impact on the way consumers and industrialists alike both think and act. The main contributors in developing the concept of quality management comes from the Two personalities Deming & Juran.

examined the data, and provided guidance how to proceed in some human early expression of the decision-theoretic point of view (http://www.stclementsu.net/ResourceDownLoad.aspx.) .

Furthermore, he issued an article in 1975 "On Probability as a Basis for Action". It was the guide to industrial quality control. The famous "red bead" experiment (1942), was an example of how sampling, process capability, and improvement ideas work together (Fellers 2008, 42).

Walter Shewhart has a critical influence on Deming when they worked together at Bell Telephone Laboratories . Deming began to move in the direction of his second career (the application of statistical methods to the industrial production and management). Shewhart's idea of common and special causes of variation led directly to Deming's theory of management. Deming found that these ideas could be applied not only to the manufacturing processes, but also to the processes by which enterprises are led and managed. This key insight made possible to the enormous influence in economies of the industrialized world after 1950.

b. Deming Prize

Deming was invited to Japan by the Union of Japanese Scientists and Engineers (JUSE) and Shigeiti Mariguti from Tokyo University , Sizatura Mishibori from Toshiba Co. in July 1950.

During his visit, he gave lectures named "Eight-Day Course on Quality Control" at the auditorium of the Japan Medical Association at Kanda-Surugadai, Tokyo. This was followed by Deming's "One-Day Course on Quality Control for Top Management" held in Hakone. Through these seminars, Deming taught the basics of statistical quality control plainly and thoroughly to executives, managers, engineers and researchers of Japanese industry.

In appreciation of Deming's generosity, the late Mr. Kenichi Koyanagi, managing director of JUSE, proposed using it to fund a prize to commemorate Deming's contribution and friendship in a lasting way and to promoted the continuing development of quality control in Japan. In receiving the proposal, the JUSE's board of directors unanimously made a resolution to establish the Deming Prize.

The Deming Prize consists of three categories (Deming Prize for Individuals, Deming Application Prize, Quality Control Award For Operations Business Units), Deming Application Prize which is given to companies has exerted an immeasurable influence directly or indirectly on the development of quality control/management in Japan, its criteria include Policies and Objectives, Infrastructure, Institutional Education and Culture, Information Management, Analysis, Standardization, Control,

Quality Assurance, Results, Future Plans (http://deming.Org/index.cfm?content=511).

Those organizations developed the effective quality management methods, established the structures for implementation and put the methods into practice.

Commonly, those who have challenged for the Prize shared the feeling that they have had a valuable experience and that the management principle of achieving a business success through quality improvement has really worked. Through witnessing the success of these organizations, many other companies have been inspired to begin their own quest for quality management. Learning from those who went before them (Table (1)), the new practitioners are convinced that quality management is an important key to their business success and that the challenge to attain the Prize can provide an excellent opportunity to learn useful quality methodologies. Thus, quality management has spread to many organizations. The methods have evolved over the years, and they contributed to the growth of organizations .

This mechanism that encourages each organization's self-development, continuous improvement comes from the examination process of the Deming Prize .

c. System of Profound Knowledge

Deming upgraded his ideas on quality into a theory of management that helps individuals to learn through the acquisition of process knowledge gained from experience coordinated by theory. He named his theory "a system of profound knowledge" (Stevenson 2005,383-384).

The system of profound knowledge could be regarded as an appropriate theory for leadership in any culture or society. In application of this theory on a particular society or culture, it requires a focus on issues that are unique to that society or culture. For example, in the Western world, managers frequently operate using the following paradigms (a paradigm being a filter through which an individual or group interpret a data about conditions and circumstances, often without realizing it):

1. Rewards and punishments are often considered as the most important motivators for people and organizations.
2. Winners and losers are necessary in most interactions between people and between organizations.
3. Results are achieved by focusing on productivity (as opposed to quality).
4. Rational decision can be taken on the basis of guesswork and opinion, using only visible figures.

5. Construction, execution, and control of plans are solely the functions of management.
6. Organizations can be improved in the long term by fighting fires.
7. Superiors are the most important customers.
8. Competition is a necessary aspect of personal and organizational life.

Going in deep, this approach is not applicable to all cultures and societies , and it is invalid as well at one society in different intervals.

Table (1):Companies Awarded Deming Prize since establishment

No.	Year	Companies
1	1951	Motosaburo MASUYAMA
2	1952	Tetsuichi ASAKA, Kaoru ISHIKAWA, Masao KOGURE, Masao GOTO, Hidehiko HIGASHI, Shin MIURA,Shigeru MIZUNO,Eizo WATANABE
3	1953	Toshio KITAGAWA
4	1954	Eizaburo NISHIBORI
5	1955	Shigeiti MORIGUTI
6	1956	Yasushi ISHIDA
7	1957	Ziro YAMAUTI
8	1958	Takeshi KAYANO
9	1959-60	Kenichi KOYANAGI, Genichi TAGUCHI
10	1961	Takeo KATOU
11	1962	Ikuro KUSABA
12	1963	Noboru YAMAGUCHI
13	1964	Sadakichi SHIMIZU
14	1965	Masumasa IMAIZUMI
15	1966	Masashi ASAO, Kiyomi KADOKAWA, Kazufumi SEKI, Tadasu FUJITA
16	1967	Jiro KONDO
17	1968	Shinobu TOSHIMA
18	1969	Tadakazu OKUNO
19	1970	Tatsuo SUGIMOTO
20	1971	Teiichi ANDO , Yoshio KONDO, Shoichi SHIMIZU
21	1972	Kotaro ITOH
22	1973	Koichi OHBA
23	1974	Koji KOBAYASHI
24	1975	Taro YAMAMOTO, Yoshitsugu OHMAE
25	1976	Katsuyoshi ISHIHARA
26	1977	Osamu FURUKAWA
27	1978	Yoji AKAO
28	1979	Hajime MAKABE
29	1980	Shoichiro TOYODA
30	1981	Hajime KARATSU
31	1982	Hiroshi SHIOMI
32	1983	Minoru TOYODA
33	1984	Tatsuo IKEZAWA
34	1985	Yoshinobu NAYATANI
35	1986	Motosaburo MASUYAMA
36	1987	Ryoichi KAWAI
37	1988	Ryuichi KOBAYASHI
38	1989	Ren-ichi TAKENAKA
39	1990	Hitoshi KUME
40	1991	Shoichiro KOBAYASHI
41	1992	Kenji KUROGANE
42	1993	Masao NEMOTO
43	1994	Yasutoshi WASHIO
44	1995	Takanori YONEYAMA
45	1996	Ayatomo KANNO
46	1997	Kenzo SASAOKA
47	1998	Noriaki KANO
48	1999	Katsuya HOSOTANI
49	2000	Yotaro KOBAYASHI
50	2001	Matabee MAEDA
51	2002	Shiro FUJITA
52	2003	Shoji SHIBA
53	2004	Tadashi YOSHIZAWA
54	2005	Akira TAKAHASHI
55	2006	Hajime SASAKI

http://www.juse.or.jp/e/deming/pdf/winnrers_list_individuals_2009.pdf

d. The Fourteen Points For Management

The system of profound knowledge expanded by Deming helps to generate an interrelated set of 14 points for leadership in the Western world. These 14 points provided guidelines for the shifts in thinking. They are required for the organizational success in the 21st Century. They form a highly interactive system of management.

He developed his "14 Points" as key actions management must take to ensure quality, productivity, and success, they are summarized below: (Deming 1982, 7)

1. Create and publish to all employees a statement of the aims and purposes of the company or other organizations. The management must demonstrate constantly its commitment to this statement.
2. Learn the new philosophy, top management and everybody.
3. Understand the purpose of inspection, for improvement of processes and reduction of costs .
4. End the practice of awarding business on the basis of price tag alone.
5. Improve constantly and forever the system of production and service.
6. Institutional training.
7. Teach and institute leadership.
8. Drive out fear, create trust, create a climate for innovation.
9. Optimize toward the aims and purposes the effort of teams, staff areas.
10. Eliminate exhortations for the work force.
11. a. Eliminate numerical quotas for production. Instead, learn and institutional methods of improvement .

11 b. Eliminate MBO. Instead, learn the capabilities of processes, and how to improve them.

12. Remove barriers that rob people of pride of workmanship.
13. Encourage education and self-improvement for everyone.
14. Take action to accomplish the transformation.

e. The Books

Deming's introduced two textbooks in quality and statistical approach of quality, which are :

1. ***Out of the Crisis*** : This textbooks was published in 1986, according to Deming. American companies required nothing less than a transformation of management style and of governmental relations with industry. In these books, theory of management based on Deming's famous 14 points for management. Management fail to plan for future, he claims, brings about loss of market, which brings about loss of jobs. Management must judged not only by the quarterly dividend, but by

innovative plans to stay in business, In direct language, he explains the principles of management transformation and how to apply them.

2. ***The new economics of industry, government, education***: In this book Deming details the system of transformation that underlies the 14 points for management, an explanation of the system of profound knowledge can be found in these books, the system of profound knowledge, consists of four parts which are (Appreciation of system, Knowledge of variation, Theory of knowledge, Psychology. Describing prevailing management style as a prison) .

Deming showed how a style based on the cooperation rather than competition can help people to develop joy work and learning at the same time that it brings about long-term success in the market. Indicative of Deming's philosophy is his advice to abolish the performance reviews on the job and grades in school.

f. Definition of TQM (Total Quality Management) (*)

The term TQC had been used in Japan, it was translated as TQM in western nations. To follow an internationally-accepted practice, Japan changed the name from TQC to TQM.

Deming's theory of quality management has proposed the foundation for Total Quality Management (TQM). This new perspective, like all other approaches to management has one overriding element-change-resulting in a considerable impact, not only in the organization, but also in the individual members .

TQM is a set of systematic activities carried out by the entire organization to effectively and efficiently achieve company objectives so as to provide products and services with a level of quality that satisfies customers, at the appropriate time and price. This means :

1. **Systematic Activities** : Organized activities to achieve the company's mission (objectives) that are lead by strong management leadership and guided by established clear mid- and long-term vision and strategies as well as appropriate quality strategies and policies.
2. **Carried Out by the Entire Organization to Effectively and Efficiently achieve** : To involve everyone at all levels and all parts of the company, so as to achieve the business objectives speedily and efficiently with the least management resources.

(*) **For more details :**

- **Pat H. (2007), The Philosophy of TQM, University of Michigan Press.**
- **Logothetis , N., (1992), Managing for Total Quality: from Deming to Taquchi and SPC, prentice-Hall .**
- **http//www.thecqi.org/knowledge-Hub/Resources/Factsheets/total-quality management**

3. **Company Objectives** : Secure appropriate profit for the long term through satisfying customers consistently and continuously. Also, they encompass improving the benefit to all stakeholders including employees, society, suppliers, and stockholders.
4. **Provide** : Activities from producing products and services to handing them off to customers.
5. **Products and services** : It includes manufactured products (finished products and parts and materials), system products, software, energy, information and all other benefits that are provided to customers.
6. **Quality** : It refers to the usefulness (both functional and psychological), reliability and safety. Also, in defining quality, influence on the third parties, society, the environment and future generations must be considered.
7. **Customers** : It includes not only buyers but also users, consumers and beneficiaries.

g. Quality Improvement

The final goal of quality improvement, Deming argue, is to meet the external customer's requirement. However, an organization as a system can be viewed as a linkage of processes run by a series of internal suppliers. The output of this network is the product or service to an external customer.

The internal customer may be the next person "up the line". In the traditional organization, the sense of customer followed the chain of command in reverse. Each employee works for his boss, resulting in work that satisfies the boss in achieving his targets, goals, specifications and quotas, but does not necessarily satisfy the customer or end-user. Each employee will try to satisfy her/ his internal customer without respect to departments or organizational hierarchies. Processes and output will be optimized and waste and rework are reduced, breaking down barriers between departments and employees. (Deming 1986, 26)

Top management has to provide leadership and acknowledgement, stop focusing on the judgment of results from processes, and start focusing on the improvement of the processes that created the results. So Deming focuses on the importance of quality leadership in cultivating a quality culture in an organization. Leadership Must discover the barriers such as : (Pietenpol 2008,19).

- An emphasis on quantity , not quality.
- Turning out the product quickly rather than properly.
- A deaf ear to their suggestions.
- Too much time and efforts spent on rework.
- Poor tools and Problems with incoming materials.

h. The Deming (PDCA) Cycle

In emphasizing the importance of continuous improvement, Deming suggested a procedure to assist in the establishment and long-term existence of a quality organization, a cycle which he called the Deming Cycle, which consists of four stages as follows: (Exhibit (2))

1. PLAN: The process of improvement should be carefully planned for the steps of actions to be taken.
2. DO: Putting the plan into effect.
3. CHECK: Collection of data to quantify the outcome of the action taken in Do Stage, analysis of results, feedback and review.
4. ACT: Institutionalization of process improvement requires more that just selecting a strategy.

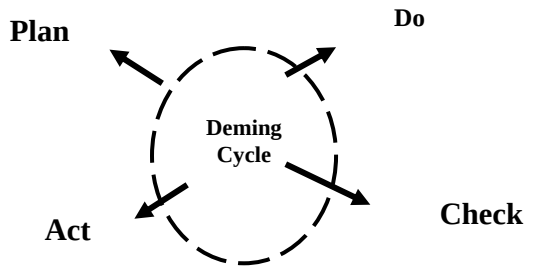

Exhibit 2
The Deming (PDCA) Cycle

A cycle for solving problems in the continuous improvement work is presented by Deming. He speaks of PDCA Cycle short for "PLAN-DO-CHECK-ACT" but he often refers to this cycle as the "Shewhart-Cycle" after Walter Shewhart (Gitlow 1995, 26).

j. Re-Action Chain

Deming explained the effect of quality improvement on company's performance through Re-action Cycle which contains five stages, starting with quality improvement advantages especially cost decreasing ,which means an efficient using of material & machines . The total production costs will be drown-up , as a result the market share increase, so as competitive advantages and growth, penetration to a new markets and business will be realized (Exhibit (3)) .

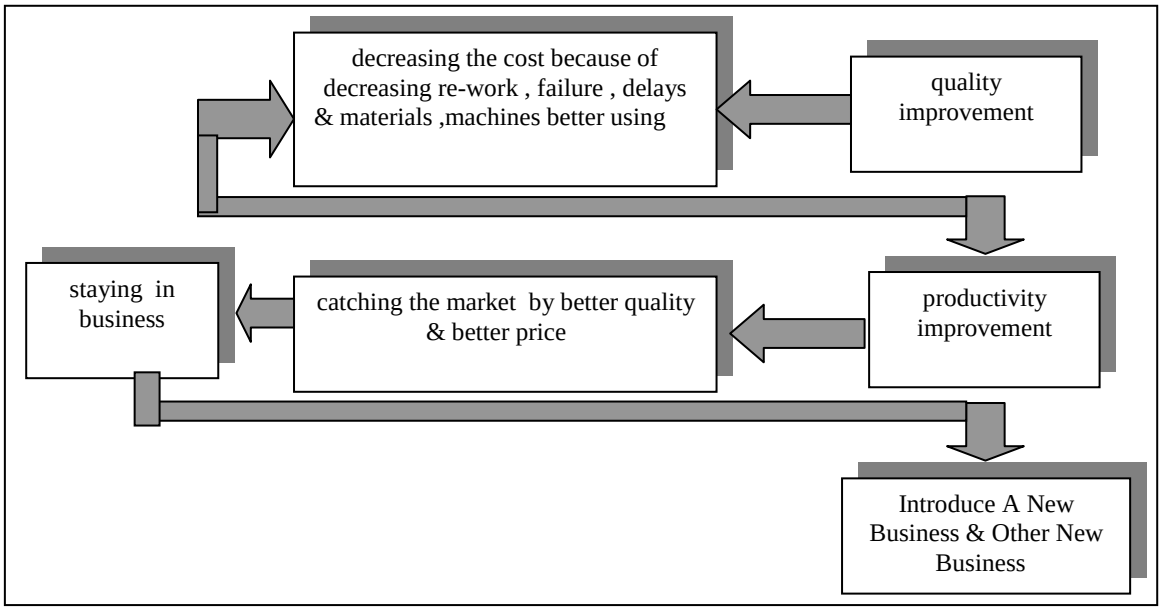

Exhibit 3
Re- Action Cycle

Source : Dale ,B.G., (2004), ***Managing Quality,*** **7st, ed., Prentice Hall International Inc., p.28.**

4. Juran's Total Work

Joseph M. Juran (1904-2004) had an extensive contribution to American Industry Society Quality . In fact he indicated the quality principles, transformed them from narrow technical view to broad vision (transferring from q to Q) . His philosophy is oriented to humanistic aspect in total quality .

Juran has participated vigorously to the growth of industry, society and (perhaps most importantly to quality) . His major contribution to the world has been in the field of quality management. Juran known as the godfather of total quality control (TQC) . Broadening quality from its statistical origins (roots) . Also he has been a leading figure in the Total Quality Management movement for more than 60 years.

As a result of the power and clarity of Joseph Juran's thinking and the scope of his influence, business leaders, legions of managers and his fellow theorists worldwide recognize Juran as one of "the vital few" a seminal figure in the development of management theory. Juran has contributed more to the field and over a longer period of time than any other person (Donaldson 2004, 26).

It is difficult to surround Juran's total work , but let us introduce it in these points :

a. Juran Principle

In 1937, Juran conceptualized the Pareto principle, which millions of managers rely on to help separate the "vital few" from the "useful many" in their activities. This is commonly referred to as the 80-20 principle. In 2003, the American Society for Quality is proposing renaming the Pareto Principle the "Juran Principle". The universal application of these principles makes it one of the most useful concepts and tools of modern-day management (Nike 2008, 3).

b. The Books

Juran has written more than 20 books and hundreds of published papers, including three standard reference books of quality management, which are:

1. ***Quality Control Handbook***: One of the standard reference work on quality control, first published in 1951 with Bingham R.S. and now in its fifth edition. This handbook is the reference for most quality departments and business improvement agents since it has provided an important how-to information dedicated to improve, an organization's performance by improving the quality of its product and services.
2. ***Managerial Breakthrough*:** First published in 1964, presented a more general theory of quality management. It was the first book to describe a step-by-step sequence for breakthrough improvement. This process has evolved into Six Sigma today and is the basis for quality initiatives worldwide.
3. ***The Quality Trilogy*:** Or Juran Trilogy, published in 1986, was identified and accepted worldwide as the basis of quality management. After 50 years of research, his trilogy defined three management processes required by all organizations to improve. Quality control, quality improvement and quality planning have become synonymous with Juran and Juran Institute, Inc., the paper will discuss it Later .

c. The Institute

In 1979, Juran founded Juran Institute . It is an organization aimed at providing research and pragmatic solutions to enable organizations from any industry to learn the tools and techniques for managing quality. It helped organizations throughout the world pursue excellence in quality. The institute provides consulting, training, and professional services. These services are devoted to improve an organization’s performance through upgrading and reengineering the quality of its goods, services, and processes .

Juran's Six Sigma program is designed for academic purposes which are the additional advanced statistical tools and methods that support each segment of Juran's Trilogy are taught. Each of the three quality processes in

these trilogy has a universal sequence of steps. Each process draw on certain tools. The Juran training programs related to each quality process are designed to ensure participants learn the process steps, the tools and the skills/competencies required to apply the process in many organizations.

d. Quality Management

Juran's thinking according to these logic is to improve business results we need to improve the quality of products, services and processes. These is driven by macro-economic events and customer demands for better products and services at the lowest possible costs.

Juran describes the quality from the customer perspective as having two aspects: (*)

1. Higher quality means a greater number of features that meet customers' needs.
2. "Freedom from trouble": higher quality consists of fewer defects.

The man provides ethical standards that allow managers to manage many organizations to achieve breakthrough results, during respecting the customer requirements (Needs, Desires and expectations) .

If the manager cannot answer yes to these four questions then may they need to review improvement initiatives:

- Do you have 100% loyal customers and no dissatisfaction?
- Do your processes provide consistent service delivery and little rework?
- Does you organization lead the competition in quality (high sigma) in the marketplace?
- Are you able to create new and successful products that meet customer needs and shareholder expectations?

e. Juran Trilogy (*)

Juran's thoughts are based on the proven and globally accepted Juran Trilogy. The Trilogy provides a model of how an organization can improve its bottom line by better understanding the relationship between processes that plan, control and improve quality and hence business results. This model created in the 1950's, it defines managing for quality as three basic quality-oriented, interrelated processes: (exhibit (4))

(*) For more details :

- Juran ,J.M. (2003), ***Architect of Quality,*** **McGraw-Hill, USA.**

(*) Also See

- **Gryna, F. M.,(1988),** ***Manufacturing Planning*****, Juran's Quality Control Handbook, Fourth Edition, McGraw Hill, USA.**
- **Edmund ,M. (2008),** ***The Architect of Quality Joseph M. Juran (1904-2008),*** **April QP live A Tribute to Juran , Mon. 14 Apr.**

1. **Quality Planning**: The process for designing products, services and processes to meet new breakthrough goals. This is the activity of developing the products and processes required to meet customers' needs. It involves a series of steps which can be abbreviated as follows:
   - Establish quality goals.
   - Identify the customers (those who will be impacted by the efforts to meet the goals) .
   - Determine the customer's needs.
   - Develop product features that respond to customers' needs.
   - Develop processes that are able to produce those product features.
   - Establish process controls, and transfer the resulting plans to the operating forces.
2. **Quality Control**: The process for meeting goals during operations, it consists of the following steps:
   - Evaluate actual quality performance
   - Compare actual performance to quality goals
   - Act on the difference
3. **Quality Improvement**: The process for creating breakthroughs to unprecedented levels of performance. This process is the means of raising quality performance to unprecedented levels (breakthroughs). The methodology consists of a series of steps:

• Establishing the infrastructure needed to secure annual quality improvement.
• Identifying the specific needs for improvement(the improvement projects).
• For each project, establishing a project team with a clear responsibility for bringing the project to a successful conclusion.
• Providing the resources, motivations, and training are needed by the teams to diagnose the causes, stimulate establishment of remedies and establish controls to hold the gains.

In order to accomplish the quality improvement depicted in the Trilogy, Juran suggested the following:

- Top managers are responsible for designing the quality by making quality planning (goal setting) as a part of business planning.
- Quality goals or quality improvement projects should be deployed down through the hierarchy by breaking them into sub-goals "bite-size" or micro projects at lower levels0.
- In the case of macro processes that have no ownership and cannot be broken into pieces and deployed, top managers should form quality councils that establish and oversee project teams in order to improve macro processes.

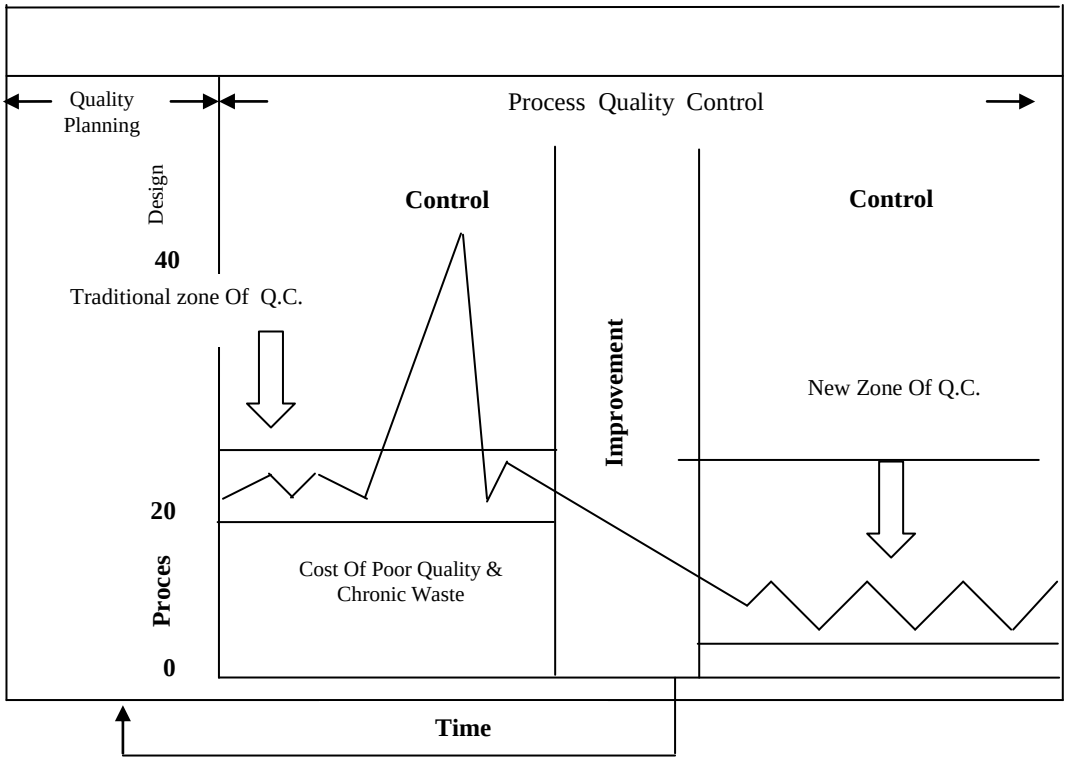

Exhibit (4)
Juran's three universal processes (Juran Trilogy)
Source: http://www.juran.com/article _images/ trilogy. jpg

These three universal processes are interrelated in ways we can depict in Juran Trilogy.

- The starting point is Quality Planning, also known as (Design for Six Sigma (DSS)), or (Concurrent Engineering (CE)).
- Following planning, the process is turned over to the operating forces. They carry out quality control to ensure that the process runs at optimal effectiveness, or at least to ensure that any level of chronic waste inherent in the process does not get worse.
- Maintaining control which will not guarantee your business is successful. You must constantly challenge your processes and continuously improve them. The Trilogy figure shows that in due course the chronic waste falls to a much lower level, to adhere to a new zone of quality control. Such a reduction does not happen of its own accord. It results from purposeful Quality Improvement or "Breakthrough." .

f. Introducing Six Sigma

Six Sigma Breakthrough is a term coined at Motorola, Inc. in the 1980's. This came after years of continuously improving product and process quality. Motorola used this term as a banner and target to achieve breakthrough results. The tools and techniques are basic fundamentals of quality management originally documented by Juran. These tools also

launched the Japanese Quality Revolution of the 1970's and the American Quality Revolution of the 1980's (http:// www. Pqsystems .com / eline / 2009/06/six-sigma.htm).

This term was used at Motorola to define their quality improvement initiative. Juran's experience with Motorola, Texas Instruments, and other early pioneers have led to today's Six Sigma expertise.

The Six Sigma Quality Improvement Program is an accelerated training approach designed to guarantee results. It systematically educates internal employees (known as "Black Belts, Masters or Experts") and they enable Many Organizations to champion six sigma quality improvement within the organization, the program also accelerated breakthrough results through a series of interventions and statistical tools that lead to breakthrough improvements in profitability and quantum gains in quality, whether a company's products are durable goods or services.

g. Performance Improvement

Juran believes that breakthrough improvement is systems based; that is, there are linkages between an organization's strategic plans and goals, and its supporting infrastructure. For example, a company's internal processes must be capable of meeting both customer requirements and strategic goals. These processes must in turn be adequately supported by its human capital and internal systems.

Any change to one part of the system has an effect on other parts. Many organizations embark on improvement initiatives without giving sufficient thought to the impact on the rest of the organization.

Balancing the often conflicting and changing interests of all stakeholders (Customers, Suppliers, Employees, Regulatory bodies, Shareholders and the Community at large), while achieving bottom-line results can often be a significant challenge.

Juran determined some tools along with a transformation framework to help different organizations to achieve a higher level of performance by assessing its business and quality systems against a set of competencies and best practices, which is named later by Robert Camp "Benchmarking" offered by the 1989. That will be results in actionable items that can lead to breakthrough performance. Specific areas where Juran can assist include:

- Selection of an improvement methodology and tools.
- Tactical advice on deployment and operationalzing best practices.
- Design of Measurement Systems.
- Developing a communications strategy .
- Using an integrated approach to achieve operational excellence.

h. Lean Techniques

Lean manufacturing techniques originated within the Toyota Production System (TPS). Toyota focused on adopting an integrated approach to the production process while ensuring resources were utilized as efficiently as possible.

Chronic waste, which is a cost of poor quality that can exist in any process, may exist due to various factors including deficiencies in the original planning. The cost can range from rework time to scrap product to overdue receivables. If the waste does get worse (sporadic spike), a corrective action team is brought in to determine the cause or causes of this abnormal variation. Once the cause(s) has (have) been determined, and corrective action taken, the process again falls into the zone defined by the "quality control" limits.

Lean techniques focus on eliminating waste within the organization. This is done via the streamlining of planning and production systems. Although the tools and techniques utilized relatively simple, efforts to transform an organization into a lean enterprise require a cross-functional, process-centric approach. In order to be truly effective, this often involves a significant element of change management. Although traditionally utilized in manufacturing, lean techniques apply equally well to office environments, benefits of lean include increased flexibility, more efficient asset and resource utilization, Increased cash flow via reduced inventory. Better ability to meet customer requirements, Improved quality and reliability

Some of the most common lean tools that Juran has assisted clients in deploying include: (5S, Visual Factory or Office, Kanban, Poka-yoke , Designing Cells, Pull Production , Total Productive Maintenance (Hoshin Kanri), SMED, Takt Time, Routing Standardization, Production Smoothing, Kaizen Events, Standard Operations Tools).

5. Matching the Two Philosophies

Table (2) declare a comprehensive comparison between Deming's and Juran's works , it discuss the different point of view against one idea which consider to be a base to introduce the following :

5-1: Meeting Points: There are several points having an acceptance from Deming and Juran which are:

A. **Role of Upper Management in Quality :** Deming shares credit with Juran for the realization of the vital role of upper management in quality. 85% of all quality problems are management problems (that is, symptoms of a malfunctioning system), Juran agree with these point and he determined these ratio 80% .

B. **People :** Deming tried TO full flowering of his philosophy, which was centered on people and the dignity of work. Which should be designed to enable workers to reach their full potential to contribute to the enterprise.
C. **Supplier :** At Deming organizations and their suppliers need to work together to optimize results for both, Juran named these as a teams or partnership.
D. **Customer :** Juran In his definition of quality, "fitness for use" adopted a similar view to that of Deming which highlights the importance of being close to the customer.
E. **Statistical Ideas :** Deming's statistical ideas had finally reached the point that the statisticians would do the most job in advancing the welfare of the country and society, at Juran these point must driven by a Total Management Quality (TMQ).
F. **Quality Management :** Juran's concept on quality management has been very much influenced by that of Deming. Juran also emphasizes managerial responsibility for improvement to meet customer's needs, but he does not use the term "system" to describe this managerial responsibility. Instead, he uses the term "macro processes" to refer to cross-functional systems .
G. **Improvement :** Juran's approach of improvement is very similar to that of Deming stressing on the manager's responsibility for improving systems and processes that goes beyond the traditional responsibility for achieving results or "getting things done through others". According to Juran's suggestion. The managers must act as leaders by setting the vision, providing the means to achieve that vision .

h**. Another Points of Meeting :** (*)

- The Importance of (Controlling the process and not the product),(Not forgetting the human process)(Emphasizing in changing employee's belief and attitudes and enhancing their competencies in carrying their duties) (Prevention of product defects, not inspection after the event) (the reduction of the costs of quality to improve competitiveness) .

(*) For further readings see also :

- **Cloke , K. and Goldsmith, J., (2002),** ***The end of management and the rise of organizational democracy*****, john Wiley & sons Inc. USA.**
- **Beckford ,J.,(2002),*Quality,* 2nd ed. Rutledge- Taylor &Francis Group, London.**
- **Ghobadian , A. and Speller, S.,(1994), Gurus of Quality :A Framework For Comparison, *Total Quality Management,* Vol. 2, No 1. 43-48**

- The management Should focus on fitness with global prizes requirements as an incentive to that companies that achieve there goals in quality applications .

5-2: Disparate Points : It seems to be a few point which indicates the differences between the two philosophies. They are as follows:

- Deming highlights the issue of respect for people. "Drive out feat" and "remove barriers that rob employees of their pride of work", according to him workers do not need motivation, because they are naturally motivated and want to do a good job. When employees do not do their jobs, it is usually because of built-in barriers or de-motivators in the system. Employees must be given the power and authority to do it right for themselves.
- Deming was convinced in a fact that applying statistical methods was the complete remedy for quality problems. Statistics was an essential element of the remedy.
- Quality responsibility at deming emphasized on managers and systems, Juran concentrated on these two area, but also on the workers too .
- The believes on benchmarking at Deming is the last stage of civilization, Juran calling for using these technique as a learning tool from competitors, then its a base for improvement.
- Deming's plans are sometime vague , Juran's control plans are clear.

Table (2)
A Comparison of Some Ideas of the Two Gurus

No	Characteristics	Deming	Juran
1	Philosophy	Statistics For Quality	Managing for quality
2	Structure	Fourteens golden points	Ten stages to improve quality
3	Approach	Using a systematic & functional logic to reduce variability using continuous improvement ; cease mass inspection	Reduce variability using problems solving tech.(human elements)
4	Definition of quality	A predictable level of Uniformity, Dependability At Low Cost & Fit To Market	Fitness For Use to satisfied customer's needs
5	Books & Papers	Over 170 books and papers	Hundreds of papers, articles and Speeches, as well as more than 30 books
6	Institute	The W. Edwards Deming 1993 By daughter Diana Deming Cahill	The Juran Institute 1979 & Juran Foundation
7	Years Of Contributions	1900 – 1993	1904 – 2004
8	Changes Of Systems	Comes from outside the system, No matter how hard employees work or how few defects they produce, the tide of innovation and change cannot be held back.	Comes from clashes between management and employees or situations in which changes he had recommended were rejected by clients for no logical reason
9	Medals	the Second Order Medal of the Sacred Treasure by the Emperor of Japan in 1960, the National Medal of Technology in 1987, the Edison Award in 1989, and the Shewhart Medal of the American Society for Quality and Control in 1955.	In 1992 Juran received the National Medal of Technology from President of usa , Before That He given by the Japan's imperial in 1981 middle of honor
10	Innovation	Comes from freedom from people who are responsible only to themselves, management before technology	Comes from Team spirit , From Efficient & Effective Goal , & Freedom From Trouble
11	Iso	ISO 9000 shows a lack of brains	ISO 9000 Learn Managers How To Reach Fitness
12	Benchmarking	Is the last stage of civilization	Learning From Competitors Is A Base For Improvement
13	Business Ethics	The 14 Golden points (2,6,7,8,9,11,12)	Ten Steps To Improve Quality (1, 2, 4, 6, 7, 8)
14	Causes of variation	Difference between common causes of variation and special causes, senior management responsible for 94% of Q. problems	80% of problems come from 20% of causes, and management should concentrate on that 20% “vital few.” Which are due to workers
15	Quality Costs	No Optimum Level (Depending Upon Continues Improvement)	No Optimum Level (Quality Have A Price)

No	Characteristics	Deming	Juran
16	Employee Participation	Yes, Especially In Decision Making, Implement SQC Tools	Yes, Especially To Quality Circles, Improvement Teams
17	The Role Of supervisor	Has two responsibilities: to assist those who need special help and to improve the system.	Overlap The Root Cause: resistance to change or, cultural resistance.
18	Organization for quality	Means : 1. The consideration of quality goals and responsibilities for the entire company. 2. Setting up of sub-units of the organization to be in charge of process improvement.	General Management Approach To Quality , Concentrated On Humane Aspects
19	Manager and the production supervisor	A coach Not A cop	Develop, coach, and lead cross-functional process improvement teams
20	Motivation	Effective motivation of individuals is needed to keep this human bond strong and vibrant.	Avoid Campaigns To Do Perfect Work
21	Supplier Rating System	No Need	Yes To Help Him To Improve Its Performance
22	Purchased Material	Inspection Too Late (Sampling System Allow Un conformance To Penetrate)	Most Important & complex Problems (Surveys Are Best Solution)
23	Statistical Process Control	Must Be Used	Recommends It Unless It Doesn't Lead To Tool Based Approach

6. Suggested paradigm

Exhibit (5) represent a collection of applicable ideas in Deming's and Juran's philosophies , this means an investment of strength points in the both approach which is embodied in knowledgeable personality of the two gurus.

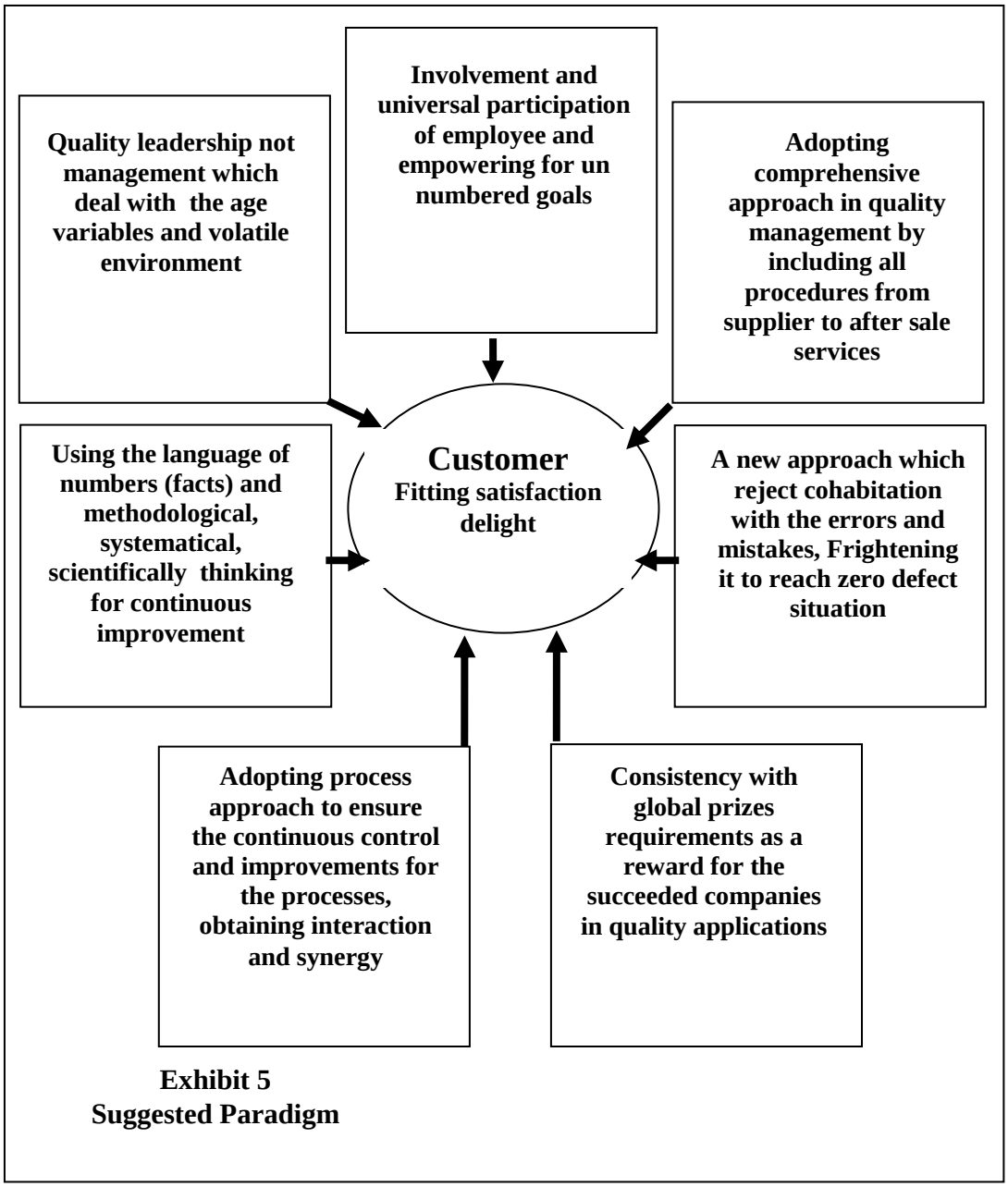

Exhibit 5
Suggested Paradigm

In order to apply this paradigm, the company most survey the current situation according to introducing adequate answers to the following questions:

1. Is there actual need to review the content of currently applied approach in quality management in the company ?
2. What are the trends of the vision adopted by the company towards the quality activities and its systems ?
3. What are the expected risks in the case of failure to formulate quality objectives corresponding with the contents of Diming's and Juran's philosophy ?

4. What are the necessary processes that insure the deployment of company's concern on quality for to stakeholders ?
5. What are the range of correspondence of new approach with national arrangements (Certification, Registration , Accreditation) ?
6. What are the company's independency level in the frame of its variety to obtaining innovation and creation ?
7. Is there possibility of gaining coincidence when the company apply the new paradigm ?
8. What are the additional required steps combined with a unique characteristics of the company which comply with its circumstances and environment ?

According to the above, the company will be in front of two options, the first engage with negative answer of question one, which force the managers to stop all steps of transforming to new paradigm, may be in that case the company's success on its own efforts about the quality, which invert at increasing the market share, good reputation and highly exports .

The second option dealing with the positive answer of question one, that will encourage the company to adopt the new paradigm, then it must searching for the answers of following questions .

To complete the requirements of activating the suggested paradigm, a number of prerequisites must be offered which insure the success of the application procedures as follow :

1. The essential focus on the preventive approach in quality management that lead the manager to totality and integrity horizons .
2. Achieving the harmony in thinking which stem from the points of coincidence between Deming's and Juran's philosophies, one of the most important point is the stakeholders in generally and customers especially are the starting and ending of all quality goals, activities and procedures.
3. The excellent fields has to be embedded subjective evaluation strategy, coupled with continuous improvement as a constant work methodology.
4. Focusing on products, processes, results, procedures, tools and structures, in other words focusing from wall to wall .
5. The precise choosing of tools, techniques and systems which facilitate the new paradigm .

To assure the success of executing that prerequisites, the company must exceed the following critical corners :

1. Rarity or shortages of data and / or information in precise and quick manners because of absence of effective information systems which transfer, handle and communicate information to decisions makers at appropriate time .
2. Absence of the qualified training staff .

3. A centralism of policies formulation and decisions making processes .
4. Financial limitations .
5. Cultural and social obstacles (change resistances, fair of responsibility and fear of obligation with new criterion .

According to section 6 the paper proof its hypothesis which is there is a possibility of deriving the knowledgeable mixture from Deming's and Juran's philosophies and gaining the totality of quality management .

7. Conclusions:

The two philosophies can be taken separately . Each of which has its own criterion . These are included in totality and integrity . They have been sought to be a reference of all researchers for several years .

According to Deming, the system of profound knowledge is the basis of 14 golden points. They are the basis of the massage written by Deming books. This massage is an essential axis for management transformation. Also, the focusing on continuous improvement lead to introducing PDCA cycle .

According to Juran, the theory of quality management and its critical factor (quality trilogy) is the basis for breakthrough improvement , which will be the corner stone for contemporary concepts like six sigma and lean manufacturing .

In conclusion, it is possible to proof the hypothesis and introduce a paradigm that collect the two integrated philosophies helping to invest a strength points of each one, which had been the main objective of the current paper .

So, the leaders of many companies must :

1. Abandon the preceding paradigm of quality management. So, the leaders may require a new one which characterized by totality of quality management.
2. This new perspective has one of everlasting change in a considerable impact, not only on the organization, but also on the individual one, changes require leadership, and much of the change is normally started at the top of the organization.
3. The new style of management allows leadership to change and develop a new basis for understanding the interrelationships between themselves and their environment (people, system , organizations). This needs to dispose the power of change resistance or culture resistance, emphasizing on changing employee's belief, attitudes and enhancing their competencies in carrying their duties .
4. The tools and techniques of a new approach must help to indicate the importance of changes not only inside the company, but in society,

customers, shareholders and regulators, because the changing of systems come from outside the system itself .

Bibliography

1. Beckford, J.,(2002), *Quality*,2nd.ed. Rutledge-Taylor & Francis Group, London.
2. Cloke, K. and Goldsmith, J.,(2002),*The End of Management and the Rise of Organizational Democracy* , John Wiley & Sons Inc.
3. Dale, B. G.,(2004), *Managing Quality*, 7st,ed., Prentice Hall International Inc .
4. Deming, W.E.,(1982),*Quality, Productivity & Competition Position* Massachusetts Institute Of Technology, Centre of Advanced Engineering Study, USA.
5. Deming, W.E.,(1986),Shotgun Of Quality Control, *Quality Progress*, Feb.26 .
6. Donaldson, D.P.(2004), Gurus Of Quality: 100 Years Of Juran, *Quality Progress*, May .26, 34.
7. Edmund ,M. (2008), *The Architect of Quality Joseph M. Juran (1904-2008),* April QP live A Tribute to Juran , Mon. 14 Apr.
8. Fellers G. (2008), The Deming Vision: SPC/TQM for Administrators ASQC, *Quality Press*, American Society for Quality Control.
9. Gitlow, H. O., (1995), *Quality Management*, 2nd edi., Irwin Inc.USA .
10. Ghobadian , A. and Speller, S (1994), Gurus of Quality :A Framework For Comparison, *Total Quality Management*, Vol. 2, No 1. 43-48
11. Gryna, F. M.,(1988), *Manufacturing Planning*, Juran's Quality Control Handbook, 4 th , ed., McGraw Hill, USA.
12. http://www.juran.com/article _images/ trilogy. jpg
13. http//www.thecqi.org/knowledge - Hub/Resources/ Fact sheets /total-quality management
14. http://www.pqsystems.com/eline/2009/06/six-sigma.htm
15. Http://www.stclementsu.net/ResourceDownLoad.aspx.) .
16. Http://deming.Org/index.cfm? content=511).
17. Http://www.juse.or.jp/e/deming/pdf/winnrers_list_individuals_2009.pdf
18. Juran J. M., (2003), *Architect of Quality*, McGraw-Hill,USA.
19. Logothetis , N., (1992), *Managing for Total Quality: from Deming to Taquchi and SPC*, prentice-Hall .
20. Nike,B. (2008) Joseph Juran 100 Pioneer in Quality Control , The New York Times, March 3.
21. Pat H., (2007), *The Philosophy of TQM*, University of Michigan Press.
22. Pietenpol, D. B., (2008), *Leadership, Quality and Learning: Three Sides of the Same Coin*, ASQ. Press .
23. Stevenson, W.J. (2005) *Operation Management* , 8th edi., McGraw-Hill Companies Inc., USA.