Address at 10th Anniversary Day of
CII Institute of Quality
Bangalore
1 June 2011

Creating brand India through quality

"Quality is a Life Time Mission"

I am delighted to participate in the 10th Anniversary Day of CII Institute of Quality (CII-IQ), Bangalore. My greetings to the CII team and distinguished members. I am glad that CII has been sensitive to the need of injecting quality into all products and services of member industries right from 1986. Later in the year 2001, CII introduced total quality management (TQM) in the small and medium and enterprise sector. I understand that CII has launched the concept breakthrough management and facilitate many companies for getting recognition for total productive maintenance, practices and results. In the education sector, CII has been offering counseling services for the introduction of quality tools and techniques in schools and in higher education institutions. During the last decade, CII-IQ has trained over 3 lakh people from industry, education and healthcare institution and public service organizations which has direct bearing on the products and services delivered by their respective institution. I am sure, CII-IQ would have studied the results and impacts of

your missions in the products and system produced and marketed within India and abroad. I would like to talk to you on the topic "***Creating brand India through quality***". First I would like to discuss on how the nation needs brand for its output.

Nation needs brand for its products and services

There are three dimensional changes required for evolving a quality organization.

a) It has to ensure that any product exported from Indian manufacturers should be known to customers and buyers that Indian product meets all the performance and quality parameters including packaging which have been promised by the manufacturer. That means, the institute like CII-IQ has to work for a brand. Are you?

b) It is said, that the quality has to be built right at the design stage of the product. If the quality is not built in the design stage of the product, quality cannot be built later whatever testing one does and whatever time it takes for testing. That is why in some of the great institution in India and abroad, quality team is involved in the design stage itself.

c) For a quality organization to emerge, the personnel in the quality team have to be equally brilliant and experienced, as in the system development teams.

This is my unique experience wherever I worked.

Now I would like to discuss about certain experience in evolving a quality culture and the quality interventions needed in agriculture, education system and medical system to enable the benefits of quality which has presently percolated in the urban areas to reach our rural people.

Let me discuss on quality interventions needed in agriculture and food processing.

Quality in agriculture and food processing

During my visit to various parts of the country and interacting with the farmers, I find that the farming is one area which can benefit substantially through quality system support. I would like to give two successful examples.

Seed cotton productivity: In 2005, I visited a village called Gheri Buttar near Bhatinda in Punjab, where I met the farmers who have successfully increased the production of seed cotton from four hundred and sixty kilo gram per acre to eight hundred and sixty kilogram per acre. This has been achieved through a productive partnership between farmers, agricultural scientists, textile industry supervisors and the Government by following a scientific approach to farming, provision of quality inputs, strengthening of quality in every farming steps, adopting pre-harvest and post-harvest

techniques with an assured market for quality products namely seed cotton. Most important action is to enable farmers to get quality seeds, quality fertilizers and quality pesticides from cooperative societies. I have suggested the farmers in that village to mount a programme of second green revolution in Cotton meaning that instead of selling the cotton produce directly in the market, they should add value to certain quantity of cotton into yarn, cloth and apparel in the village complex itself and market it in the national and international markets which again would need quality standards for processing, storage, packaging and delivery.

Seed quality in food production: An experiment has been carried out by the TIFAC team in Bihar, in the RP Channel 5 and Majholi distributory and later extended to Paliganj and other 5 distributaries on the request of farmers. The productivity of paddy has increased in these villages from 2 tons per hectare to 5.8 tons per hectare and in respect of wheat productivity; it has increased from 0.9 ton per hectare to 2.6 tons per hectare. Presently, paddy and wheat crops are spread in an area greater than 2500 hectares involving 3000 farmers. This project has been carried out by the TIFAC, in collaboration with a farmer's co-operative society, Indian Agricultural Research Institute (IARI) and the agricultural university in Pusa, Bihar. Using scientific method of farming involving soil characterization, matching the right seed to soil, seeding in time, fertilizer and pesticide selection, water

management, pre and post harvesting methodology productivity has been more than doubled. Imagine the impact if every one of the six hundred thousand villages have the benefit of quality specialty in terms of its growth in GDP, employment potential and the increase in per capita income of the farmer.

Organizations like CII-IQ will have to ensure that certified quality seeds alone reach the farmers like fertilizer, so that they are not subjected to unexpected reduced output and related losses leading to distress of the farmers in many parts of the country.

Now I would like to discuss my experience in evolving quality culture in organizations.

Evolving the quality culture: My Experience

During the 1970s, I was working with my team in ISRO in Thumba near Thiruvananthapuram in the design, development and launch of the first Satellite Launch Vehicle of the nation, SLV-3. First time in India, it was an important project to be completed within a time frame of seven years. It had 64 Subsystems and 20,000 sub-subsystems and more than 100,000 components. Design, development and realization of hundreds of components encompassing several new disciplines for the country was a big challenge in technology and management.

Learning for quality: Looking back, I see how we learnt day by day on the quality aspect needed during the life cycle of the project. We initiated innovative concepts of quality mechanisms, standards, procedures and documentation. I will come to that in a moment. Let me first tell you one most important factor needed for ensuring quality. That is the quality of people, attitude and commitment to the given tasks with focus only on mission success. Spotting the talent, selecting the right persons from the right tasks and facilitating them to perform in a free environment is the fundamental requirement for quality. At that point in time, we were in the preliminary stage of development of the new technology related to spacecraft and launch vehicle and the concept of quality for space system was in very nascent stage at that time.

Developing quality culture: Initially, quality was synonymous with inspection of materials, processes and components. From there, we had to conceive concepts of quality control, quality assurance, product assurance, flight readiness and mission readiness. The integrated action on the shop floor by the quality assurance team will ensure reliability of the system. Today they have become common practices. But then at that time it required enormous efforts to make people accept the quality discipline and inculcate standard practices in the overall scheme of development and realization of launch vehicle and spacecrafts. The main challenge was to

ensure overall mission quality and reliability at every step involving thousands of parts, sub-assemblies and assemblies, their integration and validation. A total life cycle quality environment through concept – design – development – realization and flight testing was established by our team so that we translated our designs as reliable products for the mission.

Quality is built in design: After the completion of a design phase we divided the whole activity into three parts: device, sub-system and system. Device reliability should be 99.999; sub-system reliability should be 99.98 and the overall system reliability should be 99.5. The sub-systems were developed by both work centres within VSSC and certain external industries. While studying the quality of products designed and by different agencies, I found a unique phenomenon. Some sub-systems after design and development were able to get qualified for flight after 3 or 4 tests. In some cases series of tests were involved before its gets qualified for flight. In one case, the system was not cleared even after 15th tests. A system review team was formed. It established an important aspect that whenever the sub-system had gone through detailed design, systematic design review, the system manager was in a position to realize the product within a few tests. Wherever adequate time had not been spent in detailed design, series of tests and modification and leading to a large iterative process. Based on this experience, in ISRO

a policy was made that the time spent in design should be 60%, development should be 20% and the testing should be 20%.

The Quality Leverage

The best way to achieve quality is to build it into the design. The scope for building quality into a product decreases as we move along the product life-cycle from design to manufacturing to servicing and product support. Therefore, for world class quality, it is essential to have indigenous R & D and design.

Quality Assurance in LCA: In my recent experience with LCA, I found that the design of LCA took around 10,000 man years, the design review was carried out for 100 man years, the system testing has been done for over 10,000 hrs. In addition, the system went through pre-flight review, flight readiness review and post flight analysis. The results of the post flight analysis go as the inputs for the design improvements. Because of extensive design, design review and simulator tests, when the test pilot came back after flying the first LCA said he felt that he was flying the simulator flight. Today, seven prototypes are successfully flying, completing 1700 sorties, and they have logged of over 1000 hour of flight. Production order from Air Force has been received by ADA and HAL. 40 LCA MK-I have been ordered with each aircraft

generating about Rs. 200 crores in revenues. Further, about 90 MK-II business is in pipeline.

Of course, in all these systems, apart from design and development of systems lot of ground equipments like launcher, test bed, ground simulators, Ground Checkout System, launch console have been designed and built with quality and reliability specifications. So many systems have been built in the country we have adequate database in the establishment of quality and reliability of systems. CII-IQ may like to visit apart from public-private industries and also the establishment like DRDO, ISRO, HAL and Atomic Energy establishments who have established not only the methodology for the design, development, testing and production but also the documentation of the systems at each stage. Without proper documents neither a design review will take place nor will a flight review take place. The CII-IQ has to study these organizations and evolve a proven quality and reliability model for applications. During the LCA and Launch Vehicle Design, we had developed software quality assurance method. In the commercial sector with the country producing over $ 45 billion dollars worth of automobiles and accessories including auto components they have also developed a robust quality assurance system. In the IT sector we are producing $ 36 billion worth of products including the export of $28 billion worth of products and services. Technology has three

important dimensions, viz. competence in design and software engineering, process engineering and production capability. Quality management is essential to improve our competence in all these three dimensions. It will enable us to understand the customer's aspirations and deliver quality products to meet the customers requirements, using available knowledge, skills, infrastructure and manpower.

Next important area which I would like to discuss is quality in education.

Quality in education

You all agree with me that the real quality in education is fundamental to the quality of the human resource of the nation as a whole which is responsible for delivering the products and services to the community. In this context, I would like to share my conversation the President of Finland, Her Excellency Mrs. Tarja Halonen, who visited Rashtrapati Bhavan. During the discussion, I asked the President of Finland, what is the significance and how Finland is always in the first few positions in the competitiveness index during the last few years. She gave three reasons: (1). Education, Education, Education - it is the foundation for the Finland's Competitiveness, (2). Life Long learning is promoted in Finland - people continuously are in learning mode, (3). Women are empowered with Education. There is a message for quality people from this response. Presently, due to initiatives of National Council of Education Research & Training (NCERT),

Ministry of Human Resource Development has resulted in the formulation of the National Curriculum Framework – 2005 which aims to:

(a) Connect knowledge to life outside the school

(b) Ensure that learning shifted away from memorizing methods

(c) Enrich the curriculum to provide for over all development of children rather then remain textbooks centric and

(d) Make examination more flexible, non threatening and integrated into classroom life.

Now, I would like to present the need for quality in primary health care.

Primary Healthcare

When I visit rural areas of the nation, I find that there is an urgent need for improvements in the Primary Health Centres (PHC) particularly in remote areas with properly maintained infrastructure, doctors, paramedical staff, supporting staff and cost effective medicines. One of the important tasks CII-IQ can undertake is to evolve a strategy to ensure that spurious drugs are not injected into the market. Of course, they have to take the assistance of pharma companies, doctors, paramedical personnel, chemist and druggist and the consumer in this important mission. PHCs should also have modern means of connectivity through

telemedicine with district and multi specialist hospitals. The emergency systems in the primary healthcare centre should always be in a state of readiness and with ambulance facilities to reach the needy to specialized centres as required. CII-IQ should bring out a directory of various primary health centres in six hundred districts of the country with the help of state governments and NGOs and provide guidelines for quality improvements in human resource, hospital infrastructure, training and availability of quality medicines. I have suggested the medical colleges and corporate sectors to adopt the PHCs in their neighbourhood of 100 kms. CII-IQ may consider training the medical students for undertaking this task. Now I would like to talk about the quality requirement in infrastructure.

Infrastructure

Recently I was in Champaner village in Gujarat, where I could see the happiness of the representatives of 18,000 villages when continuous three phase power supply was switched on and made available to the last of the villages. This involves the upliftment of 30 million rural citizens with the provision of more opportunity for local employment, better health services and infrastructure facility, better computer based education to the children, help local dairy and milk testing process leading to the improvement in the lifestyle of the villagers and reduce migration from rural to urban area. I

have explained the quality aspect of one type of infrastructure only. This is required in highways, roads within cities and villages, drainage, buildings, transportation system such as airports, railways, bus and seaports which form the face of the nation in the global environment. CII-IQ may consider designing and implementing a mechanism through which the total quality consciousness can be brought about among the persons who provide these services to the community. One of the methods by which quality can be improved is through the feedback from the consumers. Let us see, how the consumers can contribute.

Feedback on quality of services

Though India is known to be one of the best destinations for outsourcing of many of the service and knowledge products, within our society we are yet to grow to appreciate and pay for the services. However, developed nations are gauged by the quality of service the citizens get from the government and from the corporate with which they do business. One mechanism by which we can continuously increase the quality of service is through feedback. This should be done by everyone without fear or bias. This feedback will enable all service providers to constantly improve the quality of service irrespective of what the service is. We will see a substantial increase in the services such as electricity, water, telephone, gas, transportation, education, insurance,

banking, legal and police. The service providers whether they are in Government or in private sector have to take the feedback in the right spirit and provide customer satisfaction both in the short-term and in the long-term. Customers should also acknowledge positive developments and celebrate improvements. This scenario should lead to the pride of service and competitiveness.

CII-IQ must work with different agencies to streamline the system existing for feedback and promoting its utilization for continuous improvement of the system.

Friends, in a globalized world, one common component which would be important element of quality would be the adherence to the highest level of integrity and ethics in business. Let me discuss about this issue.

Profit with integrity

Profit with integrity leads to sustained growth. How is it possible? We need to have National ethics for sustained growth and peace. Where from it starts?

* Nation has to have ethics in all its tasks, for sustained economic prosperity and peace.

* If nation is to have ethics; society has to promote ethics and value system.

* If society is to have ethics and value system, families should adhere to ethics and value system;

* If families have to get evolved with ethics and value system, parenthood should have inbuilt ethics.

* Parental ethics come from great learning, value based education and creation of clean environment that leads to righteousness in the heart.

Here I am reminded of a divine hymn which is normally recited in the some of the spiritual centres in our country.

Righteousness in the heart

Where there is righteousness in the heart
There is beauty in the character.
When there is beauty in the character,
There is harmony in the home.
When there is harmony in the home.
There is an order in the nation.
When there is order in the nation,
There is peace in the world.

Conclusion

Since I am in the midst of business leaders, I would like to discuss the linkage between national economic development and creative leadership.

- A nation's Economic development is powered by competitiveness.
- Competitiveness is powered by knowledge power.
- Knowledge power is powered by Technology and innovation.

- Technology and innovation is powered by resource investment.
- Resource investment is powered by return on Investment.
- Return on investment is powered by revenue.
- Revenue is powered by Volume and repeat sales.
- Volume and repeat sales is powered by customer loyalty.
- Customer loyalty is powered by Quality and value of products.
- Quality and value of products is powered by Employee Productivity and innovation.
- Employee Productivity is powered by Employee Loyalty.
- Employee Loyalty is powered by employee satisfaction.
- Employee satisfaction is powered by working environment.
- Working Environment is powered by management leadership.
- Management leadership is powered by Creative leadership.

For success in all missions we need creative leaders. Creative leadership means exercising the vision to change the traditional role from the commander to the coach, manager to mentor, from director to delegator and from one who demands respect to one who facilitates self-respect. Creative Leader will have a mission to work with integrity and succeed with integrity. Also creative leaders are concerned about quality which will derive a brand for Indian product all over the world.

With these words, I greet all the members of CII Institute of Quality for their excellent contribution over the past decade. My best wishes to the members in their mission of making the nation quality conscious and internationally competitive in all facets of national endeavour.

May God bless you.

Third lecture to the students
At ISRO, Bangalore
1 June 2011

Unique You

Dear friends, Look up, what do you see, the light, the electric bulbs. Immediately, our thoughts go to the inventor ***Thomas Alva Edison***, for his unique contribution towards the invention of electric bulb and his electrical lighting system.

When you hear the sound of aero plane going over your house, whom do you think of? ***Wright Brothers*** proved that man could fly of course at heavy risk and cost.

Whom does the telephone remind you of? Of course, ***Alexander Graham Bell.*** He suggested in 1905:

> **"Don't keep forever on the public road, going only where others have gone. Leave the beaten track occasionally and dive into the woods. You will be certain to find something you have never seen before. It will be a little thing, but do not ignore it. Follow it up, explore all around it; one discovery will lead to another, and before you know it, you will have something worth thinking about."**
>
> ..... Alexander Graham Bell

When everybody considered a sea travel as an experience or a voyage, a unique person questioned during his sea travel from United Kingdom to India. He was pondering on why the horizon where the sky and sea meet looks blue? His research resulted in the phenomena of scattering of light. Of course, ***Sir CV Raman*** was awarded Nobel Prize.

Do you know an Indian Mathematician who did not have formal higher education but had inexhaustible spirit and love for mathematics which took him to contribute to the treasure houses of mathematical research – some of which are still under serious study and engaging all-available world mathematicians' efforts to establish formal proofs. He was a unique Indian genius who could melt the heart of the most hardened and outstanding Cambridge mathematician Prof G H Hardy. In fact, it is not an exaggeration to say that it was Prof. Hardy who discovered a great mathematician for the world. This mathematician was of-course ***Srinivasa Ramanujan*** for whom every number was a divine manifestation.

Do you know about a man of science and about a life completely dedicated to innovation, creativity and scientific research. His most famous success was the astrophysical Chandrasekhar limit. The Chandra limit describes the maximum mass (greater than 1.44 solar mass) of a white dwarf star, or equivalently, the minimum mass for which a star will ultimately collapse into a neutron star or black hole following a supernova. The limit was first calculated by a

scientist while on a ship from India to Cambridge, England. Yes, I am referring to ***Prof Subramanian Chandrasekhar***, who lived his entire life for research, research and research on cosmos.

Friends, I have, so far, met 12 million youth in India and abroad, in a decade's time. I learnt, **"every youth wants to be unique, that is, YOU! But the world all around you, is doing its best, day and night, to make you just "everybody else".**

The challenge, my young friends, is that you have to fight the hardest battle, which any human being can ever imagine to fight; and never stop fighting until you arrive at your destined place, that is, a UNIQUE YOU! Friends what will be your tools to fight this battle. There are four criteria for building a unique personality, what are they: have an aim in life, continuously acquire the knowledge, work hard and persevere to realize the great life.

My greetings and best wishes to all you success in your educational mission.

May God Bless you.