
RBL Trichy – Journey in HR excellence through TQM / TEI

HR excellence is achieved in organisations with people who have a high amount of passion with Total employee involvement (TEI) . At RBL -Trichy plant, in our journey towards HR excellence - we have integrated TQM in our organisational culture with TEI as the base.

About RBL

Rane Brake Lining Ltd., is a 50 + year company with strong foundation in TQM . It is the first friction material company in the world to win the Deming Grand Prize (Formerly JQM) in the year 2013 . RBL is a market leader in friction material in India and has established 4 plants in South India .

Background of RBL, Trichy

Rane Brake Lining Ltd., Trichy facility was established in the year 2008. The plant was established in a TQM way with project implementation, facility commissioning to recruitment. The plant manufactures and supplies Asbestos free Disc Pads and Brake Linings to passenger car vehicle and heavy commercial vehicle segments.

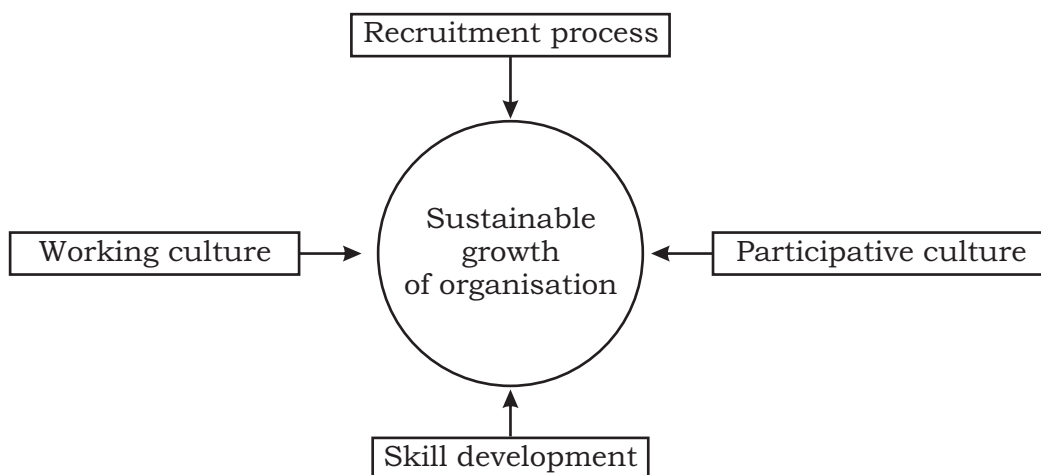
The following were the main challenges while setting up typical TQM based facility at Trichy.

- ❖ Leveraging IT to arm the manufacturing process and enhance facilities
- ❖ Development of machines indigenously in India at global standards
- ❖ Efficient and effective equipment maintenance
- ❖ Lean manufacturing
- ❖ Building of HR excellence – through TQM and TEI

We shall now see the framework taken up at our plant in the establishment of Best HR practices through TQM and TEI

Organisational growth in Trichy plant

Organisational growth at Trichy plant was designed based on the below framework.



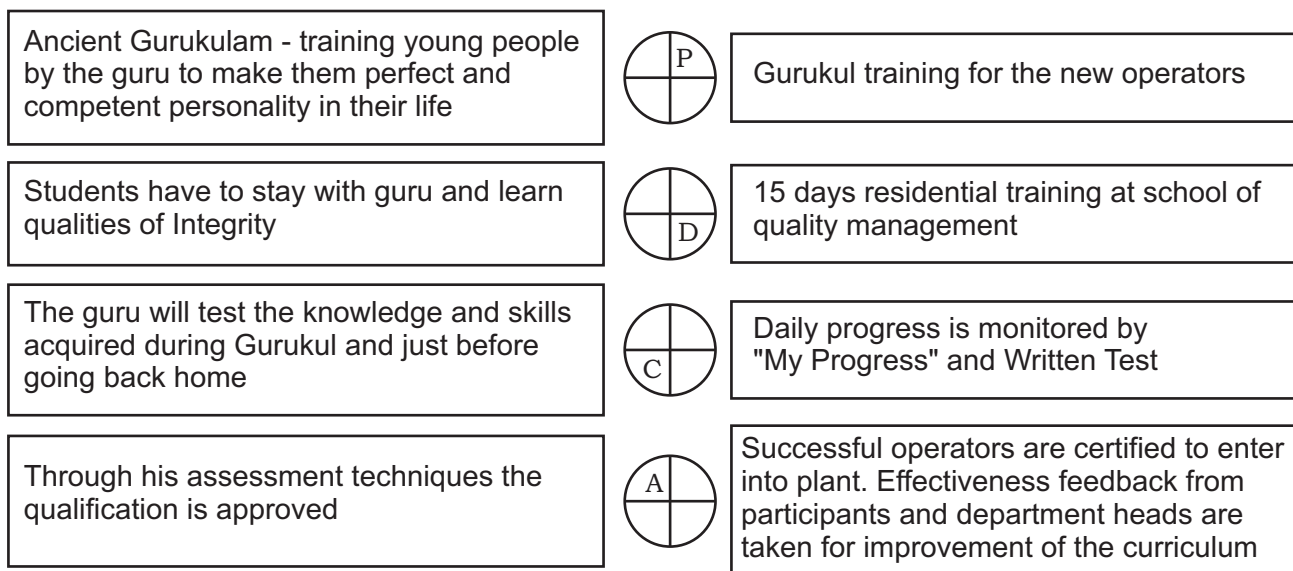
Recruitment

The first priority in plant establishment was to build a team of high skilled and highly motivated employees. Towards this objective, we recruited candidates after detailed evaluation with check list including medical fitness (Army method – 3 layered recruitment process).

Academic progress and social background were also checked during three stages of interviews. One of the primary objectives of setting up a facility in Trichy was to generate employment opportunity to the deserving rural youth who have successfully completed their higher secondary education. The challenge in this process was --- How to transform the rural youth into organizational assets ?

Gurukul system at Trichy plant :

Gurukul is an ancient Indian education system wherein students stay at Guru's home as a family and acquire life skills and discipline. Post training, the Guru would evaluate the skills and confidence level of trainees and on his satisfaction, guru would send them back to home to lead their normal life.



At RBL Trichy plant we recruit young boys / girls in the age group of 18-21 immediately after their schooling. Since the new joinees are from village background with school education, to transform them to industrial environment we organize a 15 day residential programme as that of Gurukul.

After the classroom training, they undergo a three day induction programme and subsequently they study the standard operating procedure for a period of three days and attend written test. If the trainee scores above 80% in the written test then he/she will be allotted to work under the supervision of a skilled operator for a period of three months. Thereafter, he/she will be evaluated by his immediate superior using skill evaluation form.

Based on the outcome of the evaluation, the trainee will be assigned to work independently. Later, their skill will also be evaluated along with the other operators once in a year. This training system is helping us to prepare the trainees into a productive and quality conscious workforce with required technical knowledge in a short span of time.

Uniqueness of Gurukul

- ❖ Trained through practical situations
- ❖ Residential training for 15 days – behaviour / Attitude is observed and course correction is initiated in this time
- ❖ Knowledge on product and systems while entering into plant which gives confidence and clear perception
- ❖ Psychological determination

Participative working culture - TEI Enhancement

Suggestion Scheme :

Operators are encouraged to give & implement their suggestions relating to improvements on Productivity, Quality, Cost, Delivery, Safety, Morale and Environment.

In 2008, even though we had 100% participation in suggestion scheme, only 3 implemented suggestions per employee per annum was achieved. To improve this situation we involved operators for brainstorming and implemented various Kaizens. Revised suggestion process consists of individual passbook for each operator with unique pointage reward system. Employees are allowed to select their rewards in the form of household articles based on their needs. This resulted in improvement up to 32 suggestions per employee per annum. This facilitated positive employee morale and also happiness in employees' families.

Suggestion Passbook

The suggestions are periodically evaluated and rewarded during monthly communication meetings. The photographs of the best suggestors are also displayed at shop floor which motivates them to involve in such activities.

Morale enhancement

The employees' morale is improved through following initiatives:

Communication

- ❖ To create enabling atmosphere and to keep our employees abreast with the changes communication programmes are organized periodically.
- ❖ Every day before the commencement of the work, DRM meetings are conducted in all departments.
- ❖ In the DRM meetings discussions are held on the previous day's plan Vs actual and plan for the day is also shared with all executives and operators.

Monthly communication meetings are conducted at all plant locations. In the said communication meetings the plant head shares the information pertaining to the performance of the plant for the previous month. The information includes customer related information, significant accomplishment of the plant, details on TEI activities and business challenges.

Family Visits

Representatives from the management visit the employee's home and interact with their family members. This visit establishes a trust among employees; similarly family members are also allowed to visit the factory to see the work environment. Family members are also encouraged and given opportunity to participate in corporate social responsibility activities along with the employees. This creates a sense of belongingness amongst the family members

Awards and Recognition

1. IMEA – Gold Award (Indian Manufacturing excellence award) 2014
2. ACMA – manufacturing excellence awards consecutively in 2013 and 2014
3. CII – Best HR practices awards
4. Great place to work award – Top 3 in auto component industry for consecutive second year
5. "Par Excellence" – National award in 5 S
6. Customer awards – performance and Delivery

Conclusion :

With the above initiatives – with foundation of TQM with TEI as the base - we have embarked on a path of excellence with continuous improvement. TEI will continue to play a very important and significant part in our journey .

NIQR thanks RBL Trichy for sharing their actual practice for the benefits of other organisations.

TQM

Dr. ARMAND V FEIGENBAUM, the developer of TOTAL QUALITY CONTROL concept, passed away and the NIQR HQ Executive Committee observed two minutes silence for the departed soul. He was the President and CEO of General Systems Company. In 2008 US President Bush presented the National Medal for Technology and Innovation to Dr. ARMAND V FEIGENBAUM, The concept of "Total Quality" and "Hidden Plant" were V Feigenbaum's innovations. He established the principles of Total Quality Management (TQM). This approach to quality and profitability has profoundly influenced management strategy and productivity in the competing world.

End to End Strategy for Enhancing Competitiveness by Implementing TQM

Dr. Venkatesan Swaminathan, Ph.D.

Presented in ICQ 14, Tokyo, Japan on 20th October, 2014

Abstract : Competitiveness Scalability is the catch word for survival and enlarging the market presence. In business “end to end” refers to the beginning steps of Incoming materials through processes of changes to end points of a method or service. End-to-end theory embraces the philosophy of reducing the number of levels in between and derives optimal performance and efficiency in each of the processes, be it within or with the supplier or with the customer. Many describe the word competitiveness in many ways. Competitiveness is the ability of an organization to offer goods and services at international standards at competitive prices ensuring appreciable returns. While TQM itself is a Strategy to be adopted for climbing the ladder towards world class manufacturing, the author in this paper gives out a comprehensive Strategy, enhanced with TQM tools & techniques, keeping Competitiveness as the key result area, both within and beyond the organization. The 7C approach Model, advocated by the author for implementations: Consolidate, Converge, Conceive, Convert, Communicate, Collaborate and Challenge. Consolidating and Converging the data, enables conceiving a concerted Strategy to be communicated to the people between the ends, seeking collaboration and conversion to Challenge the competitiveness dimensions.

Key Words: Consolidate, Conceive, Convert, Collaborate, Challenge

1. Introduction

The companies for whom I facilitated to strategies the Deming Awards enhanced their competitiveness capabilities. During

the facilitation, training and hand holding sessions, I put in more thrust on implementation of TQM principles. Lean Manufacturing Consultants who rendered part time support for my initiatives, acknowledged that the amalgamation of TQM methodologies with Lean Six Sigma tools provide a wholesome tonic to achieve competitiveness. My own experience while facilitating Companies, My learning from Japanese and Indian Gurus and My interaction with Leading Lean Manufacturing Consultants in India prompted me to evolve a comprehensive Strategy model to support an end-to-end solution to attain and enhance Company's competitiveness. Before I proceed further on describing the strategy, it would be appropriate to have an understanding about the terms used in the Title.

1.1 TQM

It is quite interesting to hear the varied definitions of TQM – from four pillars of TQM to eight pillars of TQM and still more. As per JUSE, 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. In other Terms, An action to produce and Deliver Commodity or Service which are Conforming with Customers Needs or Requirements by better, cheaper, faster, safer, easier Processing than Competitors With Participation of All Employees Under Top Management Leadership.

Probably the term “Total” throws open a wide scope to cover every facet of any Industry, Institution, Function or Business. After all we need “Quality” in

everything. Added to this, another term “Management” opens the flood gates of all aspects of performance evaluation, analysis and control. It's original explanation which encompasses the Customer Focus, Continuous Improvement and Collective Participation by all in the Organization to strive hard for Customer satisfaction remains intact and applies to any sector. Over the short span of time, with the advent of Deming Award, TQM acquired a great deal of understanding from its definition, which crossed all limitations. TQM stands as the single largest philosophy of excellence encompassing every other tool developed to achieve excellence in single or multiple functional areas. Tools like 5S, Kaizen, JIT / Lean were brought under TQM umbrella which helped to gain an exclusive and unique place for itself whenever we talk about World Class Manufacturing or Organization. TQM methodologies are well recognized as the route map for excellence. If any company wants to challenge the coveted Deming Prize, then the first lesson to be learnt and implemented is the TQM tools.

For any business the driving force is “Competition”. Competitiveness is the derived factor of all the three primary requirements Q, C, D. Quality when referred to in TQM, is the totality of characteristics that bear on Company's ability to exceed the stated and implied needs of the Customer. Therefore, TQM insists to put the Customer First. Customer – Contract relationship exists both internally as well as externally. We all know for sure that small lapses in the internal chain might cause a greater damage to the external chain. This amounts to say that Quality characteristics need to be built-in in every process. In order to guide and ensure Quality at all levels, TQM suggests a systematic Quality Planning, which consists of an approach to measure, deliver and sustain Quality, a comprehensive

communication system both internally as well as externally, all with conviction and commitment in an organized way. TQM is like a double edged weapon – Inner band emphasizes Working in Teams with Tools and Systems and the Outer band is the exposition of how well you are in Communication, Commitment and in Culture. In one of the Pillar theories I learnt that TQM has Five Pillars – Product, Processes, Organization, Leadership and Commitment.

1.2 Strategy

“Strategic thinking is the art of outdoing an adversary, knowing that the adversary is trying to do the same to you.” “It is also the art of finding ways to cooperate, even when others are motivated by self-interest, not benevolence. It is the art of convincing others, and even yourself, to do what you say. It is the art of interpreting and revealing information. It is the art of putting yourself in others shoes so as to predict and influence what they will do.” One of the definitions for strategy is that it is planning that allows you to delight your customers. Strategy is about getting customers and keeping them. As per Drucker: “The purpose of a business is to create a customer.” He further says “Product first, not profits”. The process of strategy includes:

- Data Collection
- Analysis
- Formulation
- Implementation
- Follow-up

However, with reference to Competitiveness, the natural flow of Strategic Action plan goes through the following seven steps:

1. Studying the Overall Business Environment
2. Researching on the particular Industry environment
3. Studying the Competitor's Activities

4. SWOT Analysis
5. Checking the fitness of the Present status quo
6. Reading the unexpressed Customer Requirements
7. Realizing what need to be done

This type of analytical approach is necessary to combat competition from various sources. If we can quote from Michael Porter, there are five forces surround to shape the Competition: Existing Competitors, New entrants, Furious or second hand or substitute Manufacturers.

1.3 Competitiveness

A common definition is that it is the “Ability of a firm to offer products and services that meet the quality standards of the local and world markets at prices that are competitive and provide adequate returns on the resources employed or consumed in producing them. According to the Lean Expert Dr. V M Gunasekaran, Competitiveness is the 360 degree alertness and ability of an individual or a firm or an institution or for that matter a nation, to combat competition of any intensity, to stand for stability and scalability, with products or services of high standards offered at an affordable price

1.4 End-to-End

A term used in many business arenas referring to the beginning and end points of a method or service. End-to-end theory embraces the philosophy that eliminating as much middle layers or steps as possible will optimize performance and efficiency in any process. An example of end-to-end processes includes directly connecting buyers and sellers in the ecommerce arena or in manufacturing. This occurs when one company provides a service to another in which it manages all aspects of design and production of a

particular product - end product directly to end user.

2. The Five Facets

Successful organizations focus on the five facets (Ref Fig.1). Organization being at its core, the five facets are surrounded one after the other in order so that each one embedded upon the core together with the previous facet. They are:

1. Structure
2. Culture
3. System
4. Process
5. CSR & EHS

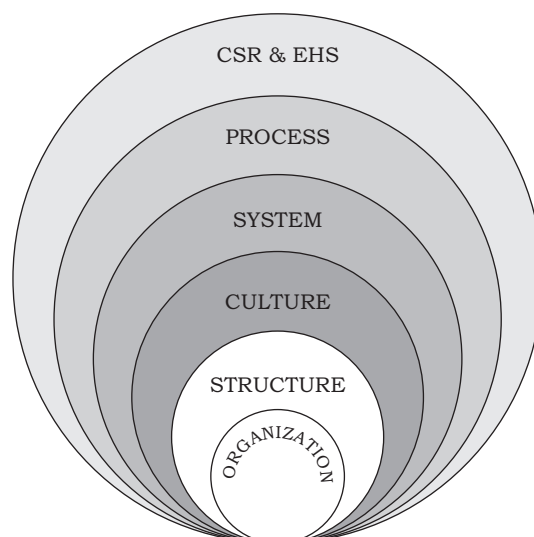


Fig.1 Five Facets of an Organisation

2.1 Structure

By definition, Structure is the arrangement of and relations between the parts or elements of something complex. It is the Construction or framework of identifiable elements (components, entities, factors, members, parts, steps, etc.) which gives form and stability, and resists stresses and strains. Structures have defined boundaries within which (1) each element is physically or functionally connected to the other elements, and (2) the elements themselves and their interrelationships are

taken to be either fixed or changing only occasionally or slowly. By Structure, I refer to the building / layout and the reporting hierarchy functionally as well. Scientific Management Principles by Frederick Winslow Taylor describes about line function. Today, the modern Management System propagates flat organization structure with limited layers and that is the one I suggest. At the same time, I am not saying that re-organization would not help. It will certainly, in some companies. But many worldwide, as we witness, are constantly struggling despite re-organization because when doing so, Companies missed out to do restructuring. While Centralization works for a few companies, a De-centralized Structural modification really pays.

2.2 Culture

We are able to appreciate how well the intended description for Culture gels with the Organization Culture. During the course of the proceedings of the National Institution of Quality and Reliability's 14th

National Convention held on 20th-21st June 2014, it was deliberated by the eminent participants, that to develop a culture the prerequisite is a Philosophy. When there is a philosophy, then there emerges a set of principles to follow and a Culture to nurture and grow in that principle.

In Ancient famous Cultures, mere possession of wisdom or a feeling better than others or being seen as better than others was considered very important and that worked in that environment. But now, in business, even for survival, one has to keep running and changing the way of working (Ref. Fig.2). Culture is the life fiber of any society. In a similar way this particular facet in an Organization ensures and aligns all activities towards Customer delight and face a competitive force. Cultural Change actually binds all activities together in one particular new paradigm which enhances the intensity of competitiveness of an Organization and this change should begin from Top.

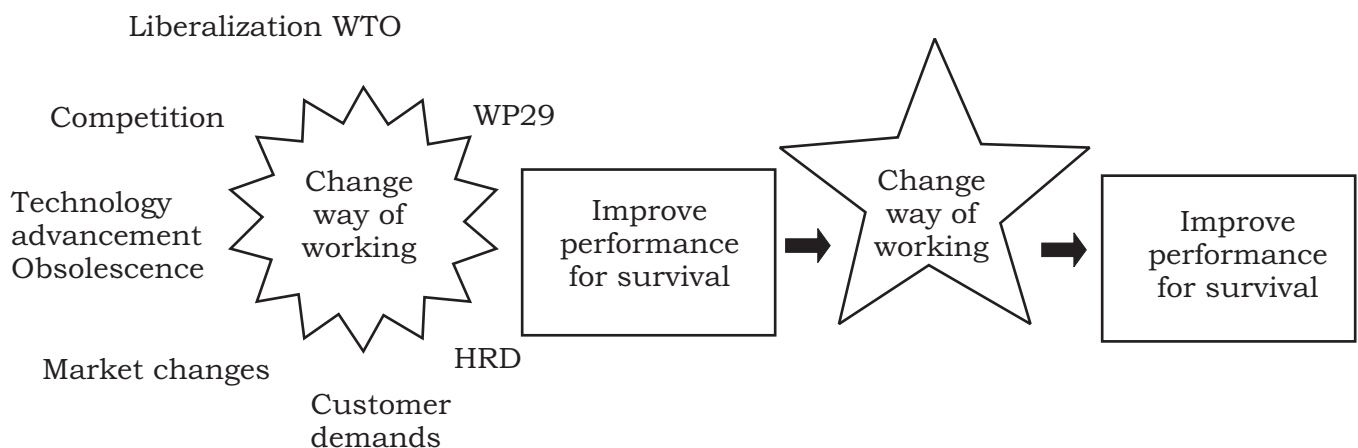


Fig.2 On-going improvement in Culture

2.3 System

It is a set of things working together as parts of a mechanism or an interconnecting network; a complex whole or more precisely an organized, purposeful structure that consists of interrelated and interdependent elements. These elements continually influence one another to maintain their activity and the existence of the system, in order to achieve the goal of the system. All systems have (a) inputs, outputs and feedback mechanisms, (b) maintain an internal steady-state despite a changing external environment; (c) display properties that are different than the whole but are not possessed by any of the individual elements, and (d) have boundaries that are usually defined by the system observer. Systems underlie every phenomenon and all are part of a larger system. Systems stop functioning when an element is removed or changed significantly. The end-to-end Strategy advocates a strong and healthy system in place for moving towards achieving competitiveness from start of the procurement through conversion till inspection and dispatch to the Customer. Any snag in the system or if people are not adhering to the system, then you can be sure you are in for trouble and accrued loss besides losing Customer.

2.4 Process

Process is a series of actions or steps taken in order to achieve a particular end. Normally we understand that from I / O Chart, Process lies between Input and Output, denoting the ways and means of converting the Input into Output. Here I suggest that in every single and micro process, the essence of customer-contract relationship must be felt in letter and spirit from the vendor through the process shops till Customer end. End-to-End strategy emphasizes the well known saying, "Quality needs to be built into the process."

2.5 CSR & EHS

Corporate Social Responsibility and Environment Health and Safety are the two inter-related areas, any successful Organization aiming to be World Class need to focus upon as one of the facets. Before we could get into an acute shortage on Energy, Propagating a paradigm shift in basic belief and attitude towards Energy efficiency is vital. Besides holding on the gains, sustaining, monitoring, combined with concerted effort on course correction initiatives, over a time, will mould individuals to become "Knowing", "Doing" and "Being" persons, practicing energy efficiency as a way of life. (Extract from Society of Energy Engineers and Managers, Journal Oct-Dec 2013)

3. The Seven Steps

End-to End encompasses three main stake holders corresponding to the I/o chart – Supplier, Company and Customer. To challenge the exemplary levels in the above Five Facets layered between these main stake holders – Supplier-Company-Customer, I trust the TQM way of work life.

It is imperative to have a step by step structured approach to augment this herculean task of moving forward from one end through Shop Floor to the other end Customer. For this, I suggest a seven step approach model and presenting as an End-to-End strategy. The steps are:

1. Consolidate,
2. Converge,
3. Conceive,
4. Communicate,
5. Convert,
6. Collaborate,
7. Challenge

3.1 Consolidate

To understand the status quo is always the first and foremost appropriate action. The Company, at the outset needs to understand or put emphatically, to realize where they are at present with respect to the levels of World Class Standards. It is not an easy task to bring together the entire

plus and minuses into a single or unified whole. We can see in Military that they, quite often rearranging the ground combat troops in order to strengthen their position. In the downstream, either the supplier end or within the manufacturing company, or in both, Capabilities might not meet the challenging requirements posed from the other end – Customer. This may boil down to be a mere data collection. But still, the data collection should cover all critical areas surfaced in all the five basic facets; Facility as well reporting structures with the supplier and the company, Culture that is prevailing at present, whether the system is adequate enough, process in terms of transaction as well as operational are in line, whether the Health, Safety & Environment initiatives gel with the legal requirements etc.,

3.2 Converge

“To come together from different directions” or “To tend to move toward a common conclusion” are a few definitions for the word converge. In my 7C approach model, the second step is the “Converge”. The information on the five facets as prevailing with the Supplier and in the Manufacturing Company as collected and consolidated need to be analyzed for one to one matching with each other and the areas of weaknesses are to be identified. Accordingly, depending upon the lapses, additional action plans needed to be born in mind while in the converging stage. It would be a better way, to trim-off the extra information during the consolidate stage itself, so that only essential items are in focus in all the five facets are converged to a common objective. There is, as I see a coordinating job of linking the various aspects found in all the five facets together and make out one common thesis from where one could conceive and come to certain derivative action plans.

3.3 Conceive

On the meaningfully converged data from

within, from Suppliers and from the Customers, the team members have to spend adequate time to apply their mind and understand the situation and develop an appropriate action plan to be carried out in all the three fronts: Supplier, Company and the Customer with respect to Structure, Culture, System, Process and CSR & EHS

3.4 Communicate

The word “Communicate” though it appears a simple one, Business communication is a complex subject. The “conceived” idea warrants a lot of work to be done by the Supplier and the Company. Every individual in the Supplier-Company-Customer network needs to be well equipped with the tools to communicate effectively. .Being a good communicator is half the battle won. Many a transaction fails due to poor communication. After all, if one speaks and listens well, then there is little or no scope for misunderstanding. Inability to speak well, write well, act well or listen effectively will cause loss of sales and in many cases loss of customers as well. Actually a simple and effective communication system drives the business into a great successful one. Good visualization within supplier's premises as well as within the Organization improves operational efficiency. The use of e-gadgets comes in handy but one should have the talent to make use of them for profit.

3.5 Convert

Now in the fifth step the real action starts. Conversion calls for a change. It calls for a change in the structure, Culture, System, Process and in CSR & EHS policies / methods. In its verb form it means “to change into a different form, substance, or state: transfiguration. A metaphorical change is the one I am referring to. Companies need to change completely, leaving no trace of the old version. Is it not a huge task to make every one change? Let the company find a Change Master to

accomplish this task externally and within. Let there be a Continuous Improvement Champion for the process Change. Let there be a dedicated Public Relation to augment CSR & EHS Initiatives. The strength and intensity of the earlier four steps of Consolidate, Converge, Conceive and Communicate will decide the effectiveness of the conversion.

3.6 Collaborate

In History we are seeing many kings, even in the modern era; political leaders collaborate to combat the enemies. Here, in our sixth step, it is not the question of conquering the competition. But the customer comes even before the competitor. Customer delight is not enough. It is all about to be competitive to make success to the customer. Maintenance of a sound and good

Customer-contract relation is the price you have to pay in return for a collaborative act both within the Organization as well as with the supplier.

3.7 Challenge

This last step is set as “Challenge”. Unless aggressive approach is given in letter and spirit, the high limits of excellence in the five facets of an organization could not be challenged. Unless the limits are challenged, one cannot reach the goal, the goal of making the customer comfortable and successful. One can always reach a competitive state. But to make the customer success is a difficult task. One has to foresee even the unexpressed requirements of the Customer.

4. The 7C Model

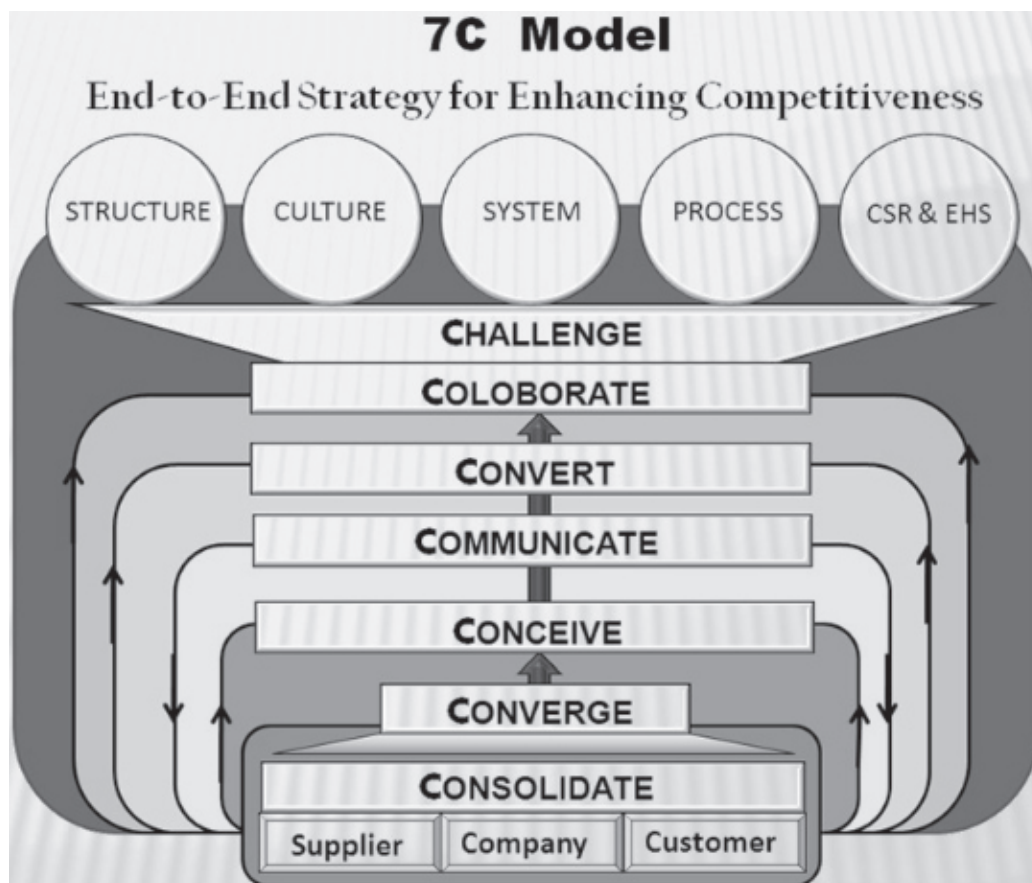


Fig.3. The 7C Model

The various Techno-Commercial and inter-personal skills must be layered over the multiple Tools and Techniques described in TQM / TPM / TOC / Lean Six Sigma while moving forward from Consolidation stage through Converge, Conceive, Communicate, Convert, Collaborate to Challenge phase, connecting the Supplier and the Organization to tune up to the taste of the Customer.

5. Conclusion

As we have seen there are five facets in an organization. The 7C strategy model advocates seven steps. To help the reader quickly start the work a simple metrics (Work Sheet) is drawn and given below for pooling all relevant information of “Things to-do” in the five facets against the seven steps.

S Stage	Structure	Culture	System	Process	CSR & EHS
1 Consolidate	Present Layout / Reporting Structure	Geo-Historical alignment with Organization Culture	Availability of IMS / QA Diagram	Product Or Process Type	Check list for Community Initiative
2 Converge	Collate the three status	Identify Cultural unity	Check for System Mismatch	What is best suited for all the Three	Is there Congruence in action by all
3 Conceive	New Layout / Role Clarity	Develop a std uniform code	Iron out differences	Create a Value Chain	Evolve idea for Environment Sustainability
4 Communicate	Deploy Electronic media / VCS	Language and Style	Propagate the oneness	Bind the flow with one voice	Concede ISO 26000 14001/18001
5 Convert	Re-Layout / Redefined roles	Calibrate approaches	Obtain feed back	Deploy Lean Tools	Go Green
6 Collaborate	BPR / IPR	QC Teams	IMS / QA Diagram	SCM / B2B & B2C	Charity, sponsorships philanthropy
7 Challenge	Simplified Structure / Flat Organization	Unity in diversity with one Goal	Data Migration / Data Hi-jacking	Transaction & Engineering Processes	Triple Bottom Line (TBL)
TQM TOOLS & TECHNIQUES					

Table 1. Work Sheet

Excellence in each of the facets enables the organisation to become competitive in the global scenario. It may not be an easy task. Because the Company has to take all its stakeholder- Suppliers, Working people, Customers, Investors, Government for Legal Compliance- in hand and connect them legitimately on its Vision and move on an integrated road.

Acknowledgements

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Dr. V. Swaminathan, National Vice President - NIQR is a Post Graduate Engineer and TQM Consultant. He has facilitated six corporate companies to earn the prestigious Deming Award and guided two Indian companies to obtain TPM Excellence Award. This paper was presented in ICQ-14 at Tokyo on 20th October, 2014.

Improving Hazard Identification Skills and Techniques for safe work places

Mr. R. Ravichandran

Introduction

Occupational Health and Safety Management System is not about only avoiding accidents in work places but is also about establishing safe work conditions and safe work practices in the work places. The system advocates a systematic approach in identifying the work place hazards, analyzing associated risks and determining control measures to eliminate the hazards or mitigate the risks, these control measures are enacted through plans, policies and programs and are monitored through safety audits, inspections and safety committees.

Hazard identification is the first and important step in establishing safety management system in an organization. In many organizations which implemented safety programs after having captured hazards in all its work area have either met many incidents/ accidents or finds no synchronization between the identified hazards and the accident causes or the system is felt non effective. There can be many reasons attributed for such kinds of scenario, however poor and improper hazard identification is the first and foremost reason for making the safety management system less effective.

What is Hazard Identification?

Hazard is source, situation or act with a potential for harm in terms of human Injury or ill health or a combination of these and hazard identification is the process of recognizing existence of these hazards in the work place and defining its Characteristics. These hazards can be grouped under two broad categories as unsafe work practices and unsafe work conditions. It is universally accepted that 80 percent causes for accidents are due to unsafe work practices and 18 percent are

due to unsafe work conditions and if hazards in the above both groups are fully identified in the work places 98 percent of the accident causes can be eliminated by devising controls, any way the remaining 02 percent may be attributed to god's act.

Problems in Hazard identification

Observations, surveys, interviews, inspections and reviews are the methods adopted in hazard identification. Efficiency of the person carrying out the hazard identification exercise plays a vital role in hazard identification but the process has some inherent problems which affects the effectiveness of hazard identification, until unless the problems are correctly understood and the skills are developed, objectives of the safety management system cannot be achieved.

Psychological barrier

Man's behavior is guided by his past experiences, learning from his own mistakes and from mistakes which he witnessed determines his awareness and awareness is the key for correct hazard identification. An inspector (hazard identifier), who had earlier witnessed a fall from height, will probably identify all fall hazards but may miss out some slippery hazards, take another case if the hazard identifier is from a work background with well established work practices, certain work place conditions may not seem hazardous to him. So hazard identifier tend to miss or concentrate less on potential hazards depending upon their past exposure to the hazardous conditions and practices, subsequently due to this psychological barrier in each inspector, the quality of the hazard identification is affected

Neglected changing hazardous conditions

It is an easy task to identify the hazardous conditions in a work place for an inspector. Exposed electrical parts, uncovered moving machine parts, slippery floors, unguarded working platforms at heights, blocked walk ways etc., are some of such conditions. Most of the unsafe work conditions are manmade, routine and happens at various locations in the work places. These conditions are not permanent in nature, they appear and disappear depending upon the work process. The severity and the frequency of the injury associated with the risk depend on the exposure of the worker to the hazard. The inspector normally takes account of the hazardous conditions visible at the time of the exercise, however the probability of arising of such conditions all over the work places during all routine and non-routine activities and the exposure of working personnel in such conditions are not given a serious thought about and they are normally neglected. Break down, maintenance and installation work processes and the hazardous conditions which may arise during these processes are mostly not considered by the inspector which affects the quality of hazard identification

Unpredictable hazardous work practices

Identifying hazardous work practices is a tougher job when compared with identifying hazardous work conditions. Various factors viz., process, procedure, targets, management's role, supervisor's role, employees socio cultural background and environment affects the work practices. Generally smart practices are exhibited by the employees when he knows that he is being observed, this can be evident from a list of identified hazards in a work place will have more hazardous conditions than practices. Since these factors are not correlated during the hazard identification process, many of the

actual hazardous practices in the work are not predictable and hence the quality of hazard identification is affected.

Employees' reluctance to give inputs

Employees are mostly comfortable with the way they work, they advocate logic for the way they work, many of them consider sprain, strain as part of occupational life and do not take it as an occupational injury, many feel that they are immune to chronic effects of hazards like MSDs and they normally prioritize time over safety even if time is not a constraint. Some employees feel that the actual inputs may have a back fire on him, some feels that revealing actual situation is against the interest of the management, some feels that they should act neutral. Whatever the case may be in most cases the inputs received from the employees are biased which affects the quality of hazard identification.

Hazards in unknown activities

In many organizations this typical situation exists, some of the activities which are temporary in nature like a truck driver spending time inside the organization during his waiting period, scrap segregation and loading in contractor's vehicle, contractors repair works, party for a staff send off in a department, etc., are not listed for hazard identification, similarly some activities which goes on beyond the organization's fencing like thatched roof habitations, storing inflammable materials, chemical effluents are not considered for hazards identification. Not taking hazards in these activities affects the quality of hazard identification.

Overcoming the problems for effective Hazard Identification

With the problems discussed above, the hazard identification will miss out many potential hazards in the work places and the plans, policies and programs

formulated to control the hazards will be incompatible to ensure safe work practices and safe work conditions in workplaces. To overcome the problems, hazard identification skills and techniques are to be improved,

Improving Hazard identification skills

Adopt any of the hazard identification methods viz., Observations, surveys, interviews, inspections and reviews but ensure the following,

- ♦ Consider every work place and the hazards in them are unique and do not draw parallels between the work places and apply your experience to dig out the potential hazards rather than over look them.
- ♦ Note all non-routine and temporary activities carried out in the work place and the provisions available for those activities to ensure that all type of potential hazardous situation are identified
- ♦ Get an insight into the organizational processes, procedures, methods, instructions, targets, employee relations, etc., to understand the behavior pattern in the organization before starting the hazard identification exercise, this will help in predicting hazardous work practices in the work places
- ♦ Identify those activities which are not included in the exercise in the work place also look for those activities which takes place adjacent to/ outside the work places.
- ♦ Select the work cycles smartly for observation, your selection of day, shift, time and group should ensure that the employees are neither in a motivated nor in depressed state.

- ♦ Select those employees who have involvement in improving their work place safety
- ♦ Always counter check the document with actual while reviewing the documents.

Use the problem solving techniques effectively for hazard identification

Problem solving techniques like why? Why? Analysis, Mind mapping, cause and effect diagram can smartly be used for identifying potential hazards in the work places. Using cause and effect (Fish bone) diagram for hazard identification is given bellow,

- ♦ Identify injuries and ill health which can happen in the work place, e.g., slip. Trip, fall (minor injuries) , fracture, tear (major injuries), fatal, etc.,
- ♦ Take each possible injury as an effect
- ♦ For each effect draw a fish bone diagram taking possible causes like equipment, materials, environment, people, procedures, methods, etc., relevant to the work place.
- ♦ Start why? Why? analysis for the causes in each activity covering whole work place which can lead to the considered effect
- ♦ You will come across many causes before reaching the root causes which can lead to the considered effect (injury)
- ♦ These causes and the root cause are the hazards.
- ♦ You can use the Quality circles to assist in completing this analysis

Using these problem solving techniques will help in effectively identifying all hazards in the work place.

Ensure Hazard identification a Continuous process in the Organization

Hazards are not permanent in nature, they keep arising during the course of work activity and hence hazard identification should be a continuous process in the organization. Employee participation can make it happen. Safety committee can be assigned with this function

Make use of the existing technology for hazard identification

Organizations nowadays install CCTV to monitor the work, this technology can be used for hazard identification, and CCTV

monitor can be trained on hazard identification. This also will help in effective hazard identification.

Conclusion

There are more than 300 million work places accidents in a year affecting 150 million people resulting in 2.3 million work place deaths and causing an estimated economical burden of 4 percent of global gross domestic product each year. These figures can only be reduced through establishing safe work practices and safe work conditions in work places. Effective hazard identification will help the organization to register and understand all work place hazards and to take necessary controls.

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NIQR Awards

NIQR has instituted various awards to recognize and honour World Class Organizations and distinguished individuals, which are conferred during the National convention.

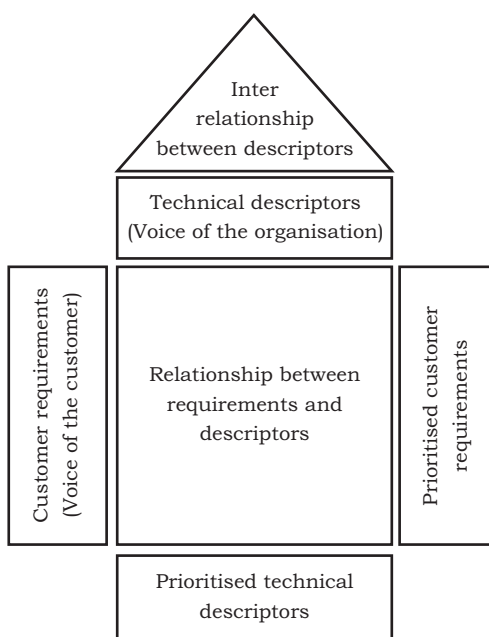
Recognition	Conferred on
NIQR - GKD Award	Outstanding Manufacturing Industry
NIQR - LUCAS TVS Award	Outstanding Service Organization
NIQR - TVN KIDAO Award	Outstanding Educational Institution
NIQR - SUSIRA Award	Outstanding Small Scale Industry
NIQR - BAJAJ AUTO Award	Outstanding Quality Person
NIQR - INDIA PISTONS Award	Life Time Achievement
NIQR - T.S.KRISHNA Award	Outstanding Student

House of Quality

Mr. C.V. Gowri Sankar

The 'House of Quality', the basic design tool of the management approach known as Quality Function Deployment (QFD), originated in 1972 in the design of an oil tanker by Mitsubishi Heavy Industries. Toyota and its suppliers developed in many ways. The house of quality has been used successfully by Japanese manufacturers of consumer electronics, home appliances, clothing, integrated circuit, etc.

House of Quality is a diagram, resembling a house used for defining the relationship between *customer* desires and the firm/product capabilities. It utilizes a *planning matrix* to relate what the customer wants to how a firm (that produces the products) is going to meet those wants. It increases cross functional integration within organizations using it, especially between *marketing*, *engineering* and *manufacturing*.



- ❖ The **exterior** walls of the house are the **customer requirements**
- ❖ On the **left side** is what the customer **wants** from the product
- ❖ On the **right side** are the **prioritised** customer requirements
- ❖ The **ceiling** of the house contains the **technical descriptors**
- ❖ The **interior** of the walls are the **relationship** between customer requirements and technical descriptors
- ❖ The **roof** of the house is the **interrelationship** between technical descriptors

Let us construct a House of Quality with an example. A parts supplier for a bicycle wants to produce handle bars.

QFD starts with a list of customer needs or WHATs.

Customer Requirements

Two primary customer requirements are aesthetics and performance.

Secondary customer requirements under aesthetics may include: Aerodynamic look, Fine finish, Corrosion resistance and Reasonable cost.

Secondary customer requirements under performance may include: Light weight, Strength & Durability.

Technical Descriptors

QFD then lists engineering characteristics or technical descriptors (HOWs) that will affect one or more of customer requirements.