Summary of the deliberations and learnings during the 'Advanced TQM Session by Dr. N. Kano' Pune: 6th to 8th December, 2018

1. The session on "Advanced TQM for the 21st Century" was conducted during 6th to 8th December, 2018 at Pune with the objective of 'how to succeed in challenging business environment'. The session was led by one of the most respected Management Consultant and an Individual Deming Prize winner, Dr. Noriaki Kano.

2. The program conducted by TQMI, was sixth in the series of similar sessions. The session was attended by 92 delegates from companies representing several sectors of Industry like Steel, Automotive, Auto components, Tyres, Engineering Industry, Life Insurance, Chemicals, etc.

3. The program consisted of
   - Lecture sessions by Dr. Noriaki Kano, Mr. Janak Mehta and Anil Sachdev
   - Open Question/ Answer session
   - Group work
   - Experience sharing on TQM journey and on application of, Quality Assurance Tata Steel.

4. Key topics covered and learnings from these specific topics:

Day	Topic	Key Learnings
1.	Advanced TQM	• Learn new concepts but keep the basics in control. • 20th Century focus was quality for cost and 21st Century focus will be on quality for Sales
2.	Business and TQM	Business comes first; TQM is an enabler for achieving business objectives. Strategies are of two types: 'A'(American type) useful for faster decisions & 'J'(Japanese type) for implementation. Today we need both 'A' & 'J' Strategies, TQM is a effective package for company-wide efforts which requires both A+J Strategies.
3.	ISO 9000 vs. TQM	• TQM focuses on customer and company profit while ISO is for customer focus. • TQM has both strategic and operational management while ISO 9000 primarily focuses on operational management.
4.	House of Quality	• Objective of TQM is customer delight, employee satisfaction and environment protection. • Foundation is general education level, political stability, intrinsic technology and Information technology supported by motivation for change/ improvement • Three pillars of the house are: Principles (such as Market in, next process is customer, control by facts, etc.); Vehicles (such as Policy management, daily management, cross-functional management, QC Circles); and methods/ tools (such as Seven QC tools, Seven Management tools, QC Story, QFD,

		etc.)

5.	Motivational approach	• Quality requires hard work/ sweat and motivation for TQM is either a crisis or a visionary leadership. As such there are two approaches:
		   ○ CLSQ (sense of crisis and leadership): Crisis consciousness & leadership drive people to sweat for quality.
		   ○ VLSQ (vision and leadership): Vision and leadership drive people to sweat for quality.

6.	Policy Management	• 4-student model is a good way to track the effectiveness of Policy management. • Increase in % A category indicates higher maturity. • As company matures, we need to assess level of target of the policy (ALTP). More and more targets should be in World class and best in domestic category.

7.	Causal relationship model	• Improvement within the same framework:
		   ○ Maintain SOP to reduce abnormalities
		   ○ Problem solving for chronic problems (even when SOP is complied with)-QC Story
		• Break-through the framework
		   ○ New mechanism/ paradigm/ framework-Task Achieving QC Story

8.	PDCA	• Do step is very important in PDCA cycle • Immediate remedy is more important than recurrence prevention when there is a crisis. • Sampling inspection is more effective than 100% inspection • Under-control process is essential pre-condition for sampling inspection.
9.	Basic behavioural Principles of QA	• Next processes are our customer...focus on problems caused by your process • Expose hidden problems→ claims and internal rework may increase when you introduce the TQM. • Process control is very important but we should not neglect inspection.
10.	Quality Assurance	• Start with the process. Study product specification→ convert into process parameters (use of QA matrix)→ develop SOP & QCPC for work→ follow SOP and update SOP as and when situation changes.
11.	QA System chart	• Develop end-to-end QA system chart covering all phases and all functions involved. It will look a rectangular with no waist. • It is typically phase-gate system chart. • Diagonal will show typically key role of the function, e.g. product development will be role of R&D, production will be role of manufacturing function. • Activities on right side of the diagonal help in feed-forward in the phases downstream→ helps prevention by prediction→ better preparation for Q, C and D. • Activities on left side of the diagonal help in feedback to upstream phases→ helps prevent recurrence of the problems.

12.	Butterfly Model	• First focus on abnormality control and then look for process capability. Process capability issue can be due to high dispersion (variation) or bias (process mean away from the target of the spec). • Abnormalities happen due to non-observance of SOP. • SOP alone may not be sufficient; supervisor must train and coach his employees. • To reduce abnormalities, operations need to be monitored and control on day-by-day (or even hour-by-hour) basis. This kind of control will help differentiate if the defect is due to non-observance of SOP or defect is generated even when SOP was observed.
13.	2*2 Matrix	• A simple way to understand current state of process is use of 2*2 Matrix (Process stability and capability matrix). No of characteristics in each quadrant should be tracked. Over time, more characteristics in 'stable-capable' quadrant should increase and 'unstable-incapable' quadrant should reduce. This tracking can be on monthly or quarterly basis.

14.	Vertical evaluation	• Any process output is inspected so that customer is protected.
		• Inspection can be carried out at supplier end, incoming stage, final stage and still few defects may leak to the customer.
		• Horizontal evaluation looks at data of rejection at each plant or line independently.
		• Vertical evaluation looks data on all stage of each line together, which helps to identify weakness in detection at a specific stage.
		• If Pareto before and after can be added on left and right sides of the trend in vertical evaluation, you can see:
		    o What has been done by looking horizontally?
		    o What needs to be done by looking vertically?

15.	QA for non-repetitive work including project work	• Project is unique with specific objective and clear start and end points
		• Learnings of one project (A of PDCA) should lead to better planning of next project cycles.
		• Projects of similar nature are from typically same project platform.
		• Use SECI (Socializing, Externalization, Combination and Internalization) model developed by Prof. Ikijuro Nonaka. Pl see the link http://en.wikipedia.org/wiki/SECI_model_of_knowledge_dimensions for the details.
		• QA in R&D:
		    o Difficult to do it right first time, it is important to detect through effective design reviews.
		    o Categorize design defects as critical, major and minor.
		    o Design review should target to have zero critical defect to customer (both operations and end users).
		    o It is important to invite specific persons who can critically review and contribute to design review process.

		- QFD & T-Matrix are useful tools. - QFD helps translate voice of customer (VOC) into company language. - T-Matrix helps learn from previous projects & strengthen the detection system.
16.	Three levels of quality	- Three levels of quality are: - Conformance to basic requirements→ needs quality control (1950s) - Customer satisfaction→ needs quality management (1970s) - Customer delight→ needs attractive quality creation→ address latent needs (today and tomorrow).
17.	Theory of attractive quality	- Quality of a product needs to be defined in terms of its quality elements (smallest understandable items), e.g. picture quality for a TV. The quality element can further be broken down into quality characteristic. - Quality is measured by objective measurement of quality characteristics on physical product and there is a subjective perception of the customers using the product. - The physical state is plotted on X axis and subjective perception is plotted in the Kano Model. - Kano model classifies quality element as: - Must-Be - One-dimensional - Attractive - Indifferent - Reverse - Classification is based on customer survey when the same customer is asked how he/ she feels if an element is fully functional and how he/ she feels if this element is dysfunctional. - What is attractive today may not remain attractive tomorrow. Typical life cycle of quality is: Indifferent → Attractive→ One-dimensional→ Must-be.
18.	Internal structure of quality	- External structure of quality include price, brand, delivery and condition for sales/ services. - Internal structure of quality include: - Value Axis: - Usefulness (such as performance, sensory, emotional characteristics) - Harmfulness (such as labour/ product safety, social and environment quality) - Space and time axis - Economic (excluding price) - Direction of quality development is typically in the order of: - Function creation/ development→ Performance development→ user-friendliness enhancement→ psychological characteristics upgradation - Identifying latent needs requires more focus on circumstantial issues (such as skill of photo taker) rather than the specific product (such as Camera)

19.	Daily Management	• Is meant for sustenance of routine activities • Mainly Middle Management role • Five Questions of Dr. Kano are useful: ▪ What is the Mission/Role of your department? What is the Objective of the Job of your department? ▪ How do you evaluate whether the job of your department is successful or not? For this, do you have any KPI's? If so, Do you have their Data? ▪ How do you evaluate the current status of your department by these data? What are the critical issues? ▪ How do you analyse out of control situations and take corrective actions for recurrence prevention?
19.	QC Circle	1. Display Human capabilities fully and eventually draw out infinite possibilities. 2. Respect humanity and build a worthwhile to live and happy bright workshop, contribute to the improvement and development of the enterprise. 3. Should focus on Quality of work life in addition to Quality of products and service.

For any clarification and/ or support to implement these concepts and methods , please feel free to contact:

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