Quality transformation in the digital world
Executive summary
This new state of quality, known as quality 4.0 aims at excellence in delivery, by way of doing right the first time, doing on-time every time and doing within budget. Quality discipline has evolved through its history from quality control, quality assurance quality management, delivery excellence and now reaching business excellence. Elements of quality transformation are automated processes, optimised operating model, faster delivery, self-diagnostic and self-healing systems, and in-process quality enablement. Quality transformation gives promising results in productivity improvement, defect reduction, cost optimisation and better customer experience.

In the age of digital, it is imperative that the discipline of quality needs transformation to evolve to the demands of industry 4.0. Quality transformation addresses the areas of people, process and technology, which involves empowered and engaged workforce, automation of repeatable activities and agility in execution. There are, however, some challenges impacting quality 4.0 such as lack of creativity, less involvement in delivery, inability to understand customer experience and outdated methodology.

In the age of digital, it is imperative that the discipline of quality needs transformation to evolve to the demands of industry 4.0.
Disruptions are a norm of the present age, which has tremendously changed the way we do business. Digital, which used to be an enabler for some industries, is now the lifeline of several industries and has come to the forefront as its face to the external world. Evolution and change of business models are now a constant phenomenon. Businesses want to deliver faster, cheaper, better and happier. Customers long for products and services within budget, earlier than schedule, without any defects, inclusive of good-to-have and nice-to-have features. Time to market has shrunk to the extent that customers wish for near real-time delivery of products and services.

With the change in industry operations and business models, it is imperative that the role of quality management in organisations also needs transformation. Quality principles and philosophies are to be redefined or interpreted in the context of newer lifecycle models. Quality teams should update and refine their skills to meet the challenges of digital world. Quality concepts and methodologies should be redesigned to be of relevance to continuous business operations. Quality tools should be automated to seamlessly enable delivery processes.

In this article, we present the transformation of quality management disciplines to meet the demands of the new industrial revolution powered through cyber physical...
systems, artificial intelligence and internet-of-things, more popularly known as Industry 4.0. This transformation of quality resulted in Quality 4.0, which is presented in this article using a structured approach. The article also analyses and discusses the disruptions affecting quality domain externally and internally. The transformation expected in quality methodologies is proposed with a futuristic view. The benefits seen through such transformational changes in quality are demonstrated using quantitative results.
Organisations of today use digital technology to improve the efficiency of operations and be effective in the eyes of the customer. Traditional enterprise resource planning systems and workflows have given way to more advanced, less time-consuming cloud-based systems. Machine learning and artificial intelligence are used for making and implementing decisions at a quicker pace and at an accuracy level much higher than manual methods.

**Themes and enablers of futuristic organizations**

- **Strategic leadership**
  - Demonstrated through vision and objective goal setting

- **Customer connect**
  - Enhanced through insights and value

- **Process agility**
  - Nurtured through lean and adaptable systems

- **Delivery excellence**
  - Ensured through built-in-quality

- **People maturity**
  - Achieved through engagement and empowerment of workforce

- **Growth**
  - Demonstrated through vision and objective goal setting

**Key enablers**

- Governance
- Process maturity
- Cyber security
- People maturity
- Risk management
- Disaster recovery
- Machine learning
- Digital marketing

Delivery excellence involves meeting organisational commitments, delivering projects to operations on time and with high reliability. It can help deliver complex projects, increase innovation thereby increase customer satisfaction. Companies need to develop a structure that will support project delivery, motivate their employees, sharpen all the processes and tools and re-align the system to the needs of market.
Processes in organisations are expected to be simple and seamless to bring agility. Practitioners do not appreciate volumes of documentation, but just enough documentation to ensure development of good quality products and services. Efficiency, security, safety and adaptability are critical to quality attributes desired by organisations. Technology use is expected to be transformational to enable organisations to be fast paced and agile in a demanding market. Data privacy and integrity become central themes as processes become transparent. Workforce of today seeks involvement and empowerment rather than command and control. Inclusive and involved leadership styles are preferred over supervisory.

**Process**
- Agility in transaction
- Seamless end-to-end
- CTQs: Efficiency, security, safety, adaptability.

**Technology**
- Automation of repeatable processes
- Integration with multiple platforms
- Data integrity
- Transformation from legacy systems.

**People**
- Inclusive and involved leadership
- Seek involvement and empowerment
- Open and transparent work culture.
Automation has simplified the lives of process practitioners. In the view of delivery and quality leaders of organizations, automation in processes have seen decreasing costs, reduced time for transactions and reduction in manual errors. The machines are made to do the tasks, which will reduce or eliminate human error. By adopting automation in processes, one can see benefits such as streamlined communication, clarity in accountability and reduction of costs and errors.

Organisations are striving to optimise their costs and operating margin more than ever. Every effort is explored to identify non-valued added activities and eliminate them. In this process, there is a possibility of giving less importance to value enabling activities such as quality. While it is expected that products and services have to be of good quality, the discipline of assuring quality is not adequately focused upon.

The delivery lifecycle models have changed from a traditional way of phase-wise development to new age models such as iterative and incremental development. This shift in development process means change in the way in which quality stage gates are executed. Quality involvement will need to be ongoing and continuous, rather than based on milestones, in such a development environment.

Self-healing systems can make significant progress in reducing time to recover and install systems that can understand, respond and sometimes predict failures. This will change the way in which quality control and quality assurance is practiced in organisations.

The development and service operating models have changed to address customer needs on a real time basis. This will require quality also to be ingrained real time, while the process is in operation, to constantly meet customer expectations.
Innovation and quality are two sides of the same coin. An organisation, while being adaptable towards innovation, shall be balanced with grounded principles of quality to deliver scale and stability of operations. If the quality discipline fails to adopt the growing quench for innovation, it can disrupt the way in which quality functions. Quality shall play a pivotal role in fostering and enabling innovation. Quality assurance is traditionally considered as an internal discipline managing the way in which products and services are developed and delivered. However, in the current context, there are many processes and systems in an organisation’s context which directly impact the client organisation. As a result, quality needs to understand the customer expectations and pain points to add value to the delivery process. Inward focused approach of quality assurance may not work especially for organisations striving for customer experience.

Quality shall play an active role in understanding the pain points of delivery. The engagement of quality shall be proactive to solve problems rather than be reactive to wait till the time issues arise. This is possible only if quality is seamlessly integrated with the delivery process in execution. Also, quality professionals need hands-on exposure to the delivery processes and technologies, the absence of which can lead to theoretical rather than pragmatic solutions.

Just like any other discipline, theory of quality also needs constant redefinition to meet the expectation of today. The concepts that worked in the past may not have any relevance now due to the changes in lifecycle models, technology and even people factors.
Evolution of quality

Quality control
- Testing
- Inspection

Quality assurance
- Defect prevention
- Cost of quality
- Audits and reviews

Quality management
- Process improvements
- Management systems

Delivery excellence
- Effectiveness and efficiency
- Defect elimination
- Adaptability and agility

Business excellence
- Uncertainty is the only certainty
- Self governing and self sustained systems
- Integrated early warning systems

Discipline
Standardization
Regulatory Compliance
Continual Improvement
Transformation
Craftsmen/foremen
Quality department
Engineering process groups
Self-directed teams
CXOs and customers
The advent of quality management started with a focus on discipline. This was executed by foremen and craftsmen who were managing the shop floor. Quality control during this time was ensured through testing and inspection. This gave way to standardisation of processes propagated through a host of ISO standards, specifically ISO 9001. Standard operating procedures and templates were defined for use in organisations. Quality assurance enabled through audits, defect prevention and reviews proved to be useful at this stage. Regulatory compliance was later built on top of generic standardisation. Domain specific standards such as aero standard, telecom standard, medical standard, etc. introduced more stringent clauses for compliance in their respective industry domains. The key theme of this era was process improvement and management systems, spearheaded by engineering process groups. Then came business excellence models such as Capability Maturity Model Integration (CMMI®). The focus of these models was continual improvement and optimisation of processes. The priority for organisations at this stage was operating within budget, at acceptable quality levels and delivering on-time. The key stakeholders during this stage were self-directed teams.

The current era is a phase of transformation. CXOs and customers are at the forefront of this transformation. The emphasis is on developing self-governing and self-sustained systems, which has the potential to deal with uncertainty as a natural process.
Change is expected in the mindset of quality professionals too. Amongst a series of choices, quality fraternity shall aspire to seek intent of process over approach. They shall be trailblazers in defining the right path for delivery and operations. They shall proactively identify improvement triggers and pain points, than being passive participants. They shall seek clarity in execution over loads of details. Above all, quality professionals shall strive for excellence in business through adaptive application of sound principles.
The quality role is transforming from delivery excellence to business trend setting. In delivery excellence, a dedicated quality department manages quality. This is accomplished through audits, work-product review, facilitation and process trainings. Through this, contractual compliance and process compliance are ensured and the defects are reduced.

In business excellence, quality is the integral part of the delivery. Here self-diagnosing systems, automated warning systems and digital quality tools are used to drive to achieve customer experience. This process helps in value generation, customer centricity through built-in-quality.
Encouraging results are seen in organisations which have adopted innovative practices in quality.

- A multi-national technology organisation reduced post release defect density by 62 per cent over a one-year period
- A leading IT services organisation reduced defect density by 9.1 per cent over a six month period
- A global capability centre of leading industrial engineering organisation improved average customer satisfaction to 4.7, on a 5-point scale
- A software organisation specialising in the support of applications in financial services domain, improved service level compliance to 99 per cent, through implementation of improvement projects
- A mid-sized IT organisation in telecommunications domain reduced effort variance with respect to initial estimates to less than 5 per cent.
• To fully realise the potential of quality 4.0, organisations need to empower the quality function to make radical and transformational changes in the way in which delivery processes are structured.

• Improvements shall be innovative, rather than focusing on low hanging fruits.

• A strong governance mechanism with elements for continuous review and monitoring of execution will be useful to sustain the momentum of quality initiatives.

• Thoughtful investment may be done in the area of tools and automation to improve delivery efficiency.

• Above all, leadership and practitioners may be oriented to change their mindset towards achieving constant customer experience and value delivery.
Acknowledgement

- Sameer Hattangadi
- Rahil Uppal
- Aashruti Kak
- Raynette Furtado
KPMG josh IT SHOWS

IN OUR ABILITY TO TRIUMPH OVER ANYTHING
IN OUR SPIRIT OF UNDYING ENTHUSIASM
OUR DRIVE TO ACHIEVE THE EXTRAORDINARY
UNMOVED BY FEAR OR CONSTRAINT
WE’RE DRIVEN BY JOSH AND IT SHOWS

THIS ADVERTISEMENT FEATURES KPMG INDIA EMPLOYEES
The information contained herein is of a general nature and is not intended to address the circumstances of any particular individual or entity. Although we endeavour to provide accurate and timely information, there can be no guarantee that such information is accurate as of the date it is received or that it will continue to be accurate in the future. No one should act on such information without appropriate professional advice after a thorough examination of the particular situation.

KPMG Assurance and Consulting Services LLP, Lodha Excelus, Apollo Mills Compound, NM Joshi Marg, Mahalaxmi, Mumbai - 400 011 Phone: +91 22 3989 6000, Fax: +91 22 3983 6000.

© 2021 KPMG Assurance and Consulting Services LLP, an Indian Limited Liability Partnership and a member firm of the KPMG global organization of independent member firms affiliated with KPMG International Limited, a private English company limited by guarantee. All rights reserved.

KPMG (Registered) (a partnership firm with Registration No. BA- 62445) converted into KPMG Assurance and Consulting Services LLP (a Limited Liability partnership firm) with LLP Registration No. AAT-0367 with effect from July 23, 2020.

The KPMG name and logo are trademarks used under license by the independent member firms of the KPMG global organization.

This document is for e-communication only. (055_THL1220_RU)