



SNS COLLEGE OF TECHNOLOGY

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DEPARTMENT OF AEROSPACE ENGINEERING

19MEE304 Total Quality Management

Topic: Performance measures in various industries

1. Introduction to Performance Measurement

Performance measurement in Total Quality Management (TQM) is the process of evaluating efficiency, effectiveness, and quality in an organization. It helps in:

- ✓ Identifying strengths and weaknesses.
- ✓ Driving continuous improvement.
- ✓ Enhancing customer satisfaction.
- ✓ Ensuring compliance with industry standards.

Performance is typically measured using **Key Performance Indicators (KPIs)** that vary across industries.

2. Key Performance Metrics in Different Industries

✦ Manufacturing Industry

1. **Overall Equipment Effectiveness (OEE)** = Availability × Performance × Quality.
2. **First Pass Yield (FPY)** – Measures defect-free production on the first attempt.
3. **Defects Per Million Opportunities (DPMO)** – Evaluates process quality.
4. **Cycle Time Reduction** – Measures time taken from production to delivery.

✦ *Example:* Toyota uses Lean and Six Sigma techniques to improve **OEE and FPY** for cost efficiency.

✦ Automotive Industry

1. **Production Efficiency (%)** – Measures output vs. planned production.
2. **Supplier Quality Performance** – Evaluates defects in supplied parts.
3. **Warranty Claim Rate** – Percentage of sold vehicles returned under warranty.
4. **Customer Satisfaction Index (CSI)** – Based on post-sale feedback.

✦ *Example:* Ford monitors warranty claims to improve product design and reduce defects.

✧ Healthcare Industry

1. **Patient Satisfaction Scores (HCAHPS)** – Measures hospital service quality.
2. **Average Length of Stay (ALOS)** – Tracks bed turnover efficiency.
3. **Medication Error Rate** – Percentage of incorrect prescriptions.
4. **Hospital Readmission Rate** – Indicates quality of post-hospital care.

✧ *Example:* Apollo Hospitals tracks **ALOS and medication errors** to enhance patient safety.

✧ Service Industry

1. **Customer Retention Rate (%)** – Measures customer loyalty.
2. **Net Promoter Score (NPS)** – Evaluates customer recommendations.
3. **Service Response Time** – Measures customer service efficiency.
4. **Employee Productivity Index** – Tracks service output per employee.

✧ *Example:* Amazon uses **NPS and service response time** to optimize customer experience.

✧ Retail Industry

1. **Sales Per Square Foot** – Revenue generated per retail space.
2. **Inventory Turnover Ratio** – Measures stock movement efficiency.
3. **Shrinkage Rate** – Losses due to theft, damages, or errors.
4. **Customer Footfall Analysis** – Tracks store visits.

✧ *Example:* Walmart uses **inventory turnover and shrinkage rate** to optimize stock management.

✧ Information Technology (IT) Industry

1. **System Uptime (%)** – Measures availability of IT services.
2. **Mean Time to Resolve (MTTR)** – Measures issue resolution speed.
3. **Software Defect Density** – Number of bugs per KLOC (1000 lines of code).
4. **Project Delivery Timeliness (%)** – Measures adherence to deadlines.

✧ *Example:* Google maintains **99.99% system uptime** to ensure uninterrupted services.

Construction Industry

1. **Cost Performance Index (CPI)** – Measures budget efficiency.
2. **Schedule Performance Index (SPI)** – Evaluates adherence to project timelines.
3. **Safety Incident Rate** – Tracks workplace accidents.
4. **Material Waste Reduction (%)** – Evaluates efficient resource utilization.

 *Example:* L&T uses **CPI and SPI** to deliver projects on time and within budget.

3. Importance of Performance Measurement

- ✓ Helps identify **bottlenecks** and areas for improvement.
- ✓ Drives **continuous improvement** and quality assurance.
- ✓ Ensures compliance with **ISO, Six Sigma, and Lean Manufacturing**.
- ✓ Enhances **customer satisfaction and profitability**.

4. Conclusion

 **Performance measurement is industry-specific** but crucial for operational excellence.

 **Key Performance Indicators (KPIs) help track quality, efficiency, and customer satisfaction.**

 **Continuous monitoring and benchmarking drive industry competitiveness.**