

Continuous Improvement Toolkit

Key Performance Indicators (KPIs)



Managing Risk

PDPC
FMEA RAID Logs
Fault Tree Analysis
Risk Assessment*
Traffic Light Assessment

Deciding & Selecting

Pros and Cons
Break-even Analysis
Force Field Analysis
Decision Tree
QFD
Kano Analysis
Critical-to Tree
Cause and Effect Matrix
Confidence Intervals
Probability Distributions
Graphical Analysis
Run Charts
Control Charts
Sampling
Brainstorming
Nominal Group Technique
Affinity Diagram
Lateral Thinking

Planning & Project Management*

Importance-Urgency Mapping
Cost Benefit Analysis
Pugh Matrix
SWOT
TPN Analysis
Prioritization Matrix
Paired Comparison
Pareto Analysis
ANOVA
Hypothesis Testing
Scatter Plot
Correlation
5 Whys
Chi-Square Test
Fishbone Diagram
TRIZ***
SCAMPER***
Mind Mapping*
Attribute Analysis
Visioning

KPIs

Understanding Cause & Effect

Lean Measures
OEE
MSA
RTY
Cost of Quality
Reliability Analysis
Benchmarking
Focus groups
Photography
Observations
Data Collection
Critical Incident Technique

Understanding Cause & Effect

Design of Experiments
Regression
Multi-vari Charts
Relationship Mapping*
TRIZ***
SCAMPER***
Mind Mapping*
Attribute Analysis
Visioning

Identifying & Implementing Solutions***

RACI Matrix
Stakeholder Analysis
PEST
PERT/CPM
Activity Diagram
Roadmaps
Project Charter
Gantt Chart
PDCA
Control Planning
Gap Analysis
Hoshin Kanri
Kaizen
How-How Diagram
Standard work
Simulation
TPM
Mistake Proofing
Pull Systems
JIT
Ergonomics
Work Balancing
Automation
Bottleneck Analysis
Visual Management
Flow
Value Analysis
5S
Waste Analysis
SMED
Time Value Map
Process Redesign
IDEF0
Value Stream Mapping
SIPOC
Flow Process Chart
Process Mapping
Flowcharting
Service Blueprints

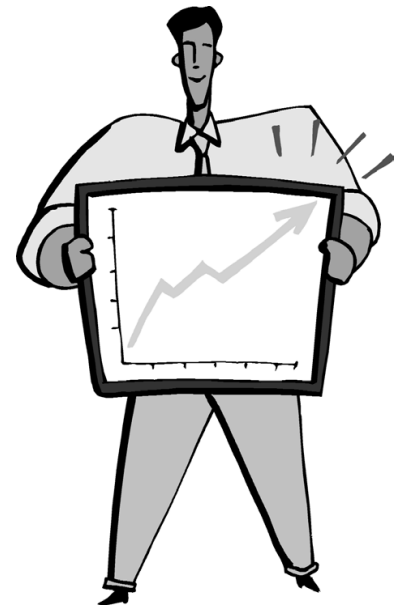
Creating Ideas**

Designing & Analyzing Processes

- Key Performance Indicators (KPIs)

Performance Management:

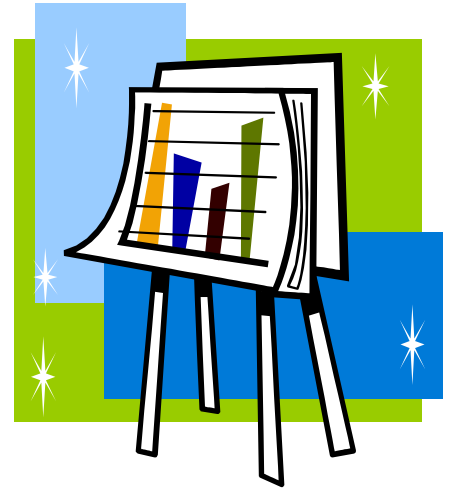
- ❑ An approach used to manage performance in an organization.
- ❑ It plays an important role in the success or failure of a business.
- ❑ It can be applied to measure the performance of:
 - An organization.
 - A business unit.
 - A single department.
 - A project.
 - An employee.
 - A process that builds a product or service.



- Key Performance Indicators (KPIs)

Performance Management:

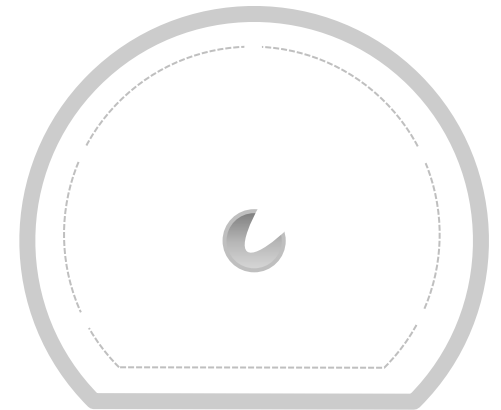
- ❑ It includes activities that will help to ensure that goals are consistently being met in an effective manner:
 - Planning and setting expectations.
 - Developing the capacity to perform.
 - Continually monitoring performance.
 - Periodically rating performance in a summary fashion.
 - Rewarding good performance.



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Performance Indicators:

- ❑ Measurements that define and assess the performance and the success of an organization.
- ❑ Means to periodically assess the performance of organizations, departments and employees.
- ❑ Objectives to be targeted in order to add the most value to a business.
- ❑ **Used to assess the success of:**
 - An organization goal.
 - An operational goal.
 - A particular activity.



- Key Performance Indicators (KPIs)

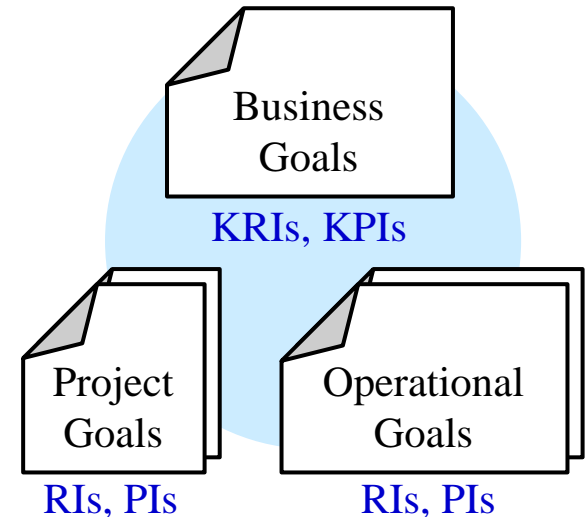
Two Types:

□ Result oriented indicators:

- Focus on the key outputs of a process.
- Related to the critical success factors.
- **Examples:** *customer complaints* and *return on investment (ROI)*.

□ Process oriented indicators:

- Focus on the inputs to a process.
- **Examples:** *time to process customer order* and *late deliveries*.



- Key Performance Indicators (KPIs)

When They Are Used?

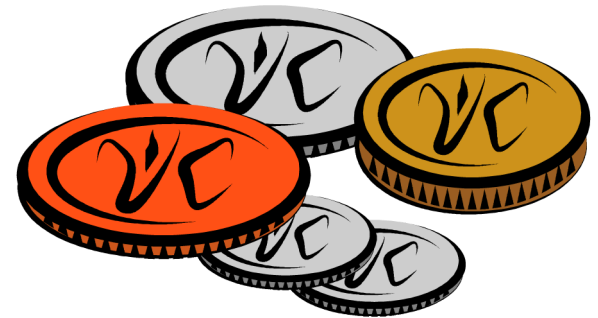
- ❑ Help an organization to understand its performance level.
- ❑ Help set realistic performance goals.
- ❑ Help align daily work to the strategic goals.
- ❑ Help monitoring its progress on a real-time basis.
- ❑ Help to understand the weaknesses and establish improvement priorities.
- ❑ Determine whether an improvement is being made and maintained.
- ❑ Help benchmark internally and externally.
- ❑ Identify if staff are doing well and to help them if they are not.
- ❑ Provide a basis for recognizing and celebrating achievements.



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Selecting the Proper Performance Indicators:

- ❑ Performance indicators should be developed based on the **Critical Success Factor (CSFs)**.
- ❑ CSFs are the elements that are necessary for a strategy to be successful and for an organization to achieve its mission.
- ❑ CSFs selection is a very subjective exercise
- ❑ It requires active leadership by senior management.
- ❑ **Examples of CSFs are:**
 - *Delivery on-time and in-full.*
 - *Providing superior customer service.*
 - *Short time to market new products.*
 - *Management commitment.*



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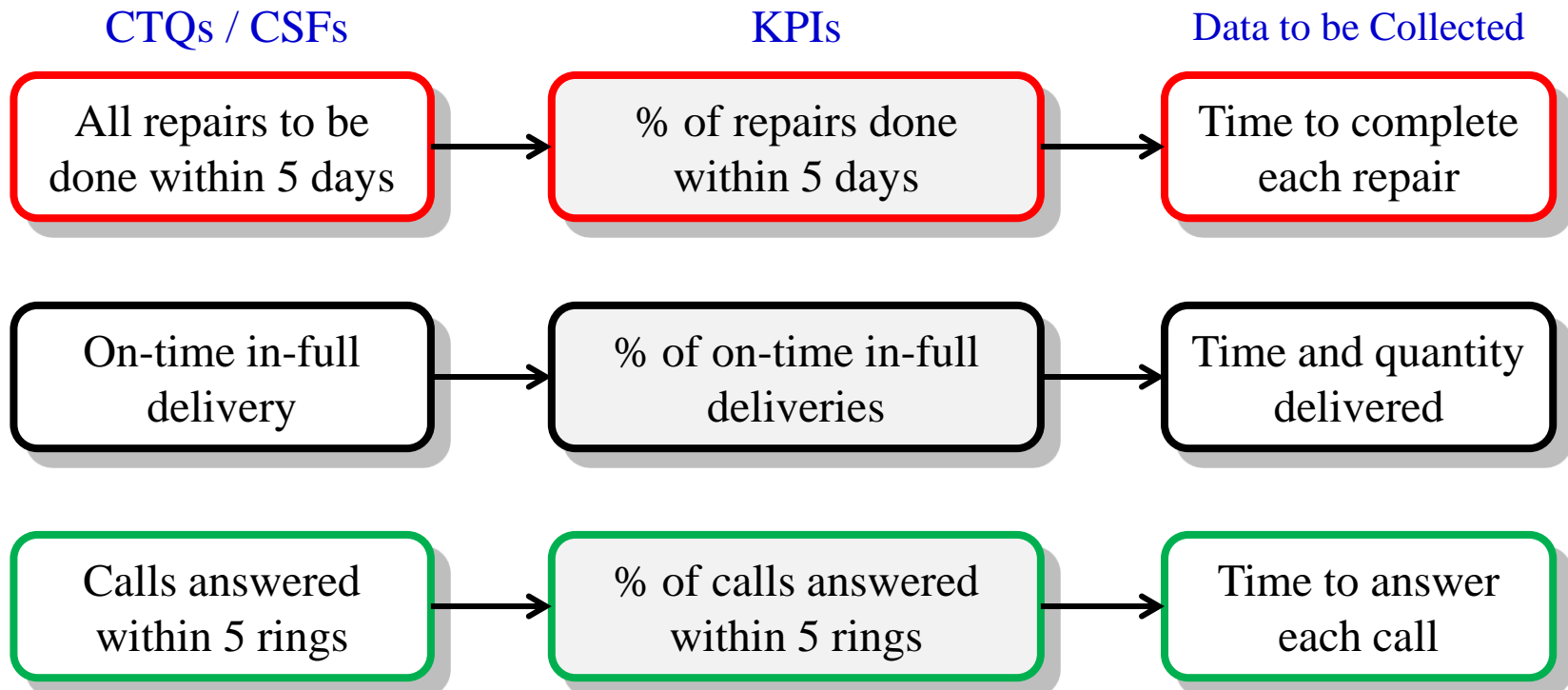
Selecting the Proper Performance Indicators:

- ❑ Performance indicators should reflect the Voice of the Customer.
- ❑ The **Critical-to-Quality** characteristics (CTQs) features of your customer should be then used as the basis to select your KPIs.
- ❑ Raw data needs to be collected from customers.



- Key Performance Indicators (KPIs)

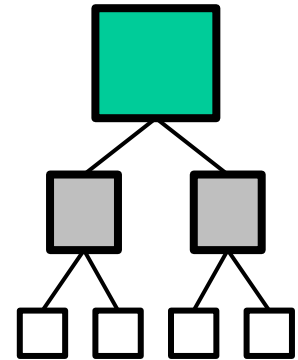
Selecting the Proper Performance Indicators:



- Key Performance Indicators (KPIs)

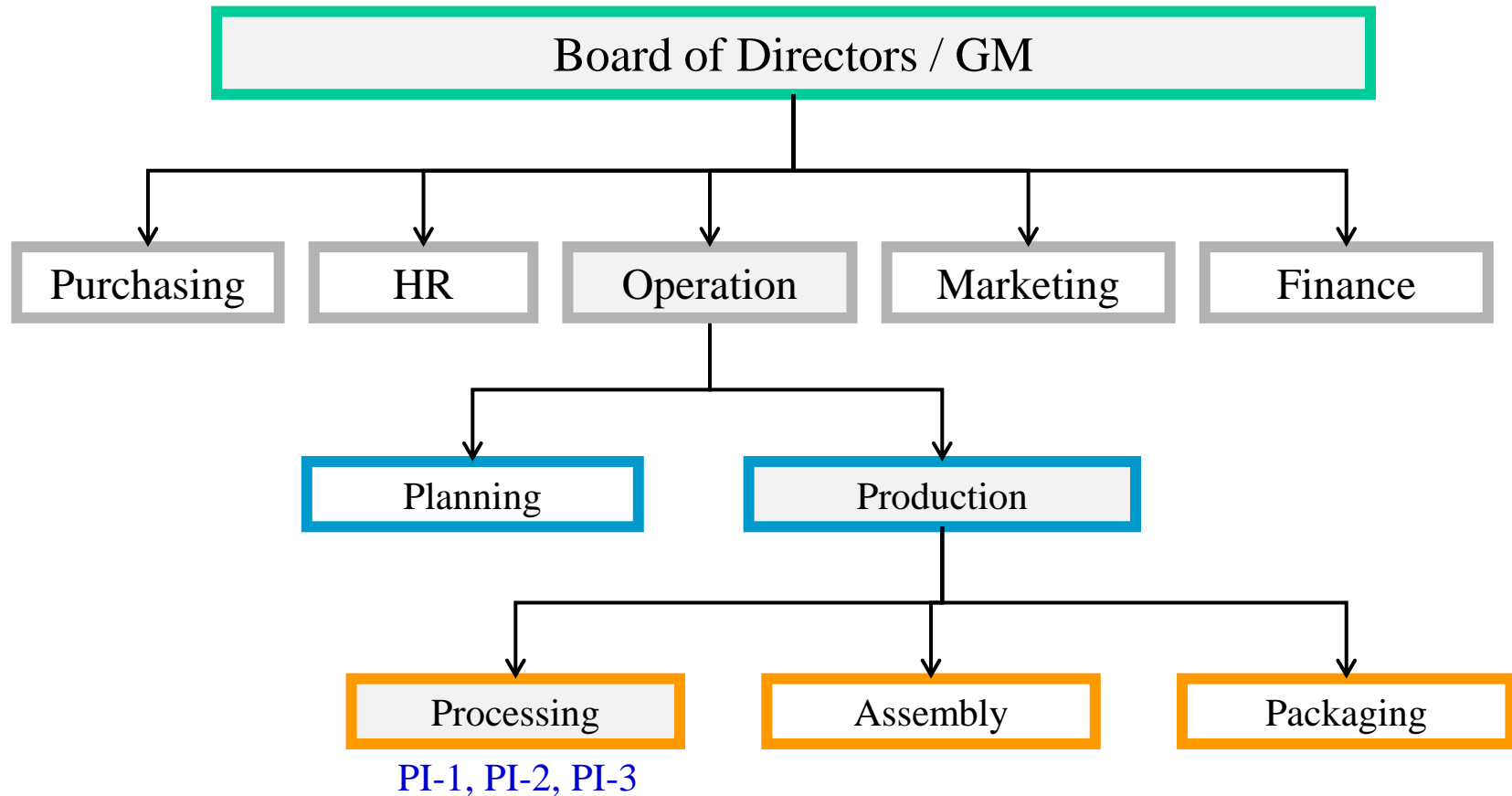
KPI Tree:

- ❑ An ideal situation is where performance indicators cascade down through an organization.
- ❑ A **KPI Tree** is a visual method of displaying measures:
 - In an organization.
 - Related to a project.
- ❑ It helps people work in such a way that their activities are aligned with the organization strategy.
- ❑ It helps bringing all measures together.
- ❑ It provides a visual representation for which measures contribute to other measures.



- Key Performance Indicators (KPIs)

KPI Tree:



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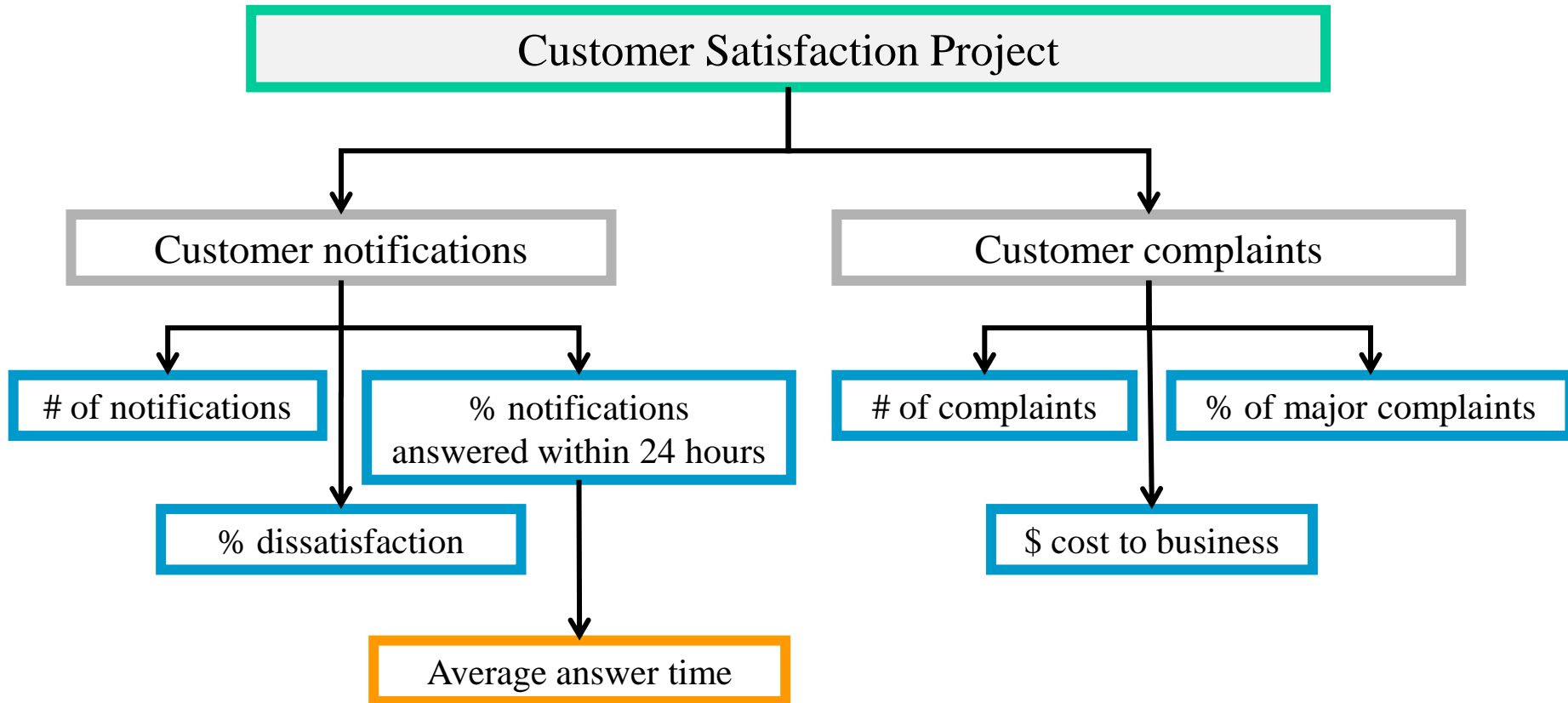
KPI Tree:

- ❑ A successful KPI tree is the one that contains a **balance** of measures covering efficiency, effectiveness, quality, delivery and cost.
- ❑ **Effectiveness performance indicators** measure processes in the eyes of the customer.
- ❑ **Efficiency performance indicators** measure processes from business perspective.
 - Are of interest of internal customers.
 - Measure the amount of resources used by a process.
 - Likely to have close links with the 8 Wastes.



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KPI Tree Example:



- Key Performance Indicators (KPIs)

Characteristics of Effective Performance Indicators:

- ❑ Reflect the Voice of the Customer.
- ❑ Relate to critical success factors.
- ❑ Are agreed with & owned by the areas themselves.
- ❑ Are well defined and understood by all.
- ❑ Are measured regularly and consistently.
- ❑ Enable open and transparent communication.
- ❑ Are acted upon by the senior management team.
- ❑ Are used for continuous improvement.



- Key Performance Indicators (KPIs)

Balanced Scorecard:

- ❑ A common way to manage and monitor performance indicators.
- ❑ It is simply a report that displays a collection of performance indicators.
- ❑ It has evolved from its early use as a simple performance measurement framework to a full strategic planning and management system.
- ❑ **It helps:**
 - Align business activities to the vision and strategy.
 - **Monitor performance against strategic goals.**

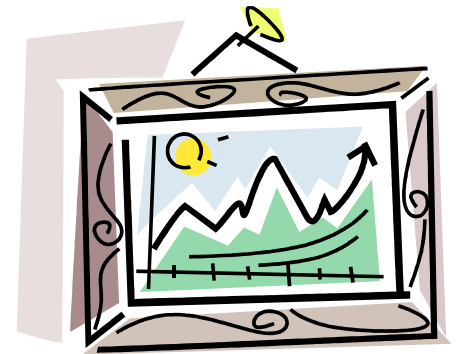


The Four-Perspectives Balanced Scorecard

- Key Performance Indicators (KPIs)

Performance Dashboards:

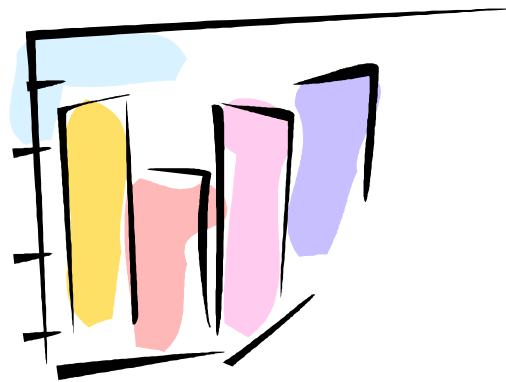
- ❑ Used to easily monitor the performance in an organization.
- ❑ They are often a series of graphics, charts, gauges and other visual tools that can be easily interpreted and analyzed.
- ❑ They allow to see if the performance indicators are succeeding in their purpose or not.
- ❑ If not, they will visually alert that corrective actions should be made.
- ❑ They are typically limited to show summaries, comparisons and trends.



- Key Performance Indicators (KPIs)

A Good Dashboard:

- ❑ Is simple and easy to understand.
- ❑ Conveys important information at a glance.
- ❑ Contains minimal distractions and visually appealing.
- ❑ Displays real-time information.
- ❑ Should be displayed on the shop floor using a screen or a bulletin boards.



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Examples of Performance Indicators:

Manufacturing / Production	Purchasing and Inventory	Sales, Marketing and Shipping
<ul style="list-style-type: none">• Spoilage / Rejection Rate• Re-work Rate• Time Spent on Product Re-work• Total Units Manufactured• Units per Day• Units Per Labor Hour• Line Efficiency• Production Capacity• Capacity Utilization• First Time Right Ratio• Rolled Throughput Yield (RTY)• Average Change Over Time• Material Usage	<ul style="list-style-type: none">• Cancelled Purchase Requests• Purchase Orders Completed• Purchase Order Cycle Time• Emergency Purchase Rate• Rejected Receipt Rate• Late Deliveries from Suppliers• Changes in Approved Suppliers• Unloading Time• Stock Level• Inventory Days Coverage• Re-work on Procured Inventory	<ul style="list-style-type: none">• Time to Process Customer Orders• Time to Resolve Customer Claims• Visits to Key Customers• New Customers Rate• Customer Retention Rate• Sales Forecast Accuracy• Market Share Growth• Marketing Expenses• Product Availability• Loading Time• Not On-Time In-Full (NOTIF)

- Key Performance Indicators (KPIs)

Examples of Performance Indicators:

Finance and Accounting	Maintenance	Human Resources
<ul style="list-style-type: none">• <i>Net Profit Margin</i>• <i>Cost of Goods Sold</i>• <i>Operating Income</i>• <i>Cost per Unit</i>• <i>Working Capital</i>• <i>Accounts Receivable Turnover</i>• <i>Inventory Turnover Ratio</i>• <i>Return on Investment (ROI)</i>• <i>Budget Variance</i>• <i>Capital Expenditure (CAPEX)</i>• <i>Monthly Department Expenses</i>	<ul style="list-style-type: none">• <i>Response Time to Breakdown</i>• <i>Mean Time Between Failures</i>• <i>Mean Time to Repair</i>• <i>Spare Parts Inventory Turnover</i>• <i>Work Orders Completed</i>• <i>Preventive Maintenance Completed</i>• <i>Repair Cost</i>• <i>Repair Cost per Unit</i>• <i>Maintenance / Repair Downtime</i>	<ul style="list-style-type: none">• <i>Staff Turnover Ratio</i>• <i>Employee Satisfaction Index</i>• <i>Exit Interview Satisfaction Ratio</i>• <i>Internal Promotion Rate</i>• <i>Labor Utilization Rate</i>• <i>High Performing Employees</i>• <i>Training Hours Ratio</i>• <i>Training Attendance Ratio</i>• <i>Absenteeism Rate</i>• <i>Part-Time Employees</i>• <i>Disabled Staff Ratio</i>

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Examples of Performance Indicators:

Health, Safety and Env.	Quality	Lean
<ul style="list-style-type: none">•Recorded Safety Observations•Workplace Inspection Audits•Risk Assessments Implemented•Lost Work Days•Significant Injury Cases•Near Miss Cases•First Aid Treatment Cases•Environmental Incidents•Safety Circles Conducted•Satisfaction with Ergonomics•EHS Training Hours	<ul style="list-style-type: none">•Customer Complaints•Returns from Key Customers•Customer Satisfaction Index•Customer Surveys Conducted•Defects at Customer Site•Defects per Million Opportunities•Defects per Unit•Cost of Non Quality•Quality Personnel to Total Personnel•Quality Circles Conducted•Audits Performed on Schedule	<ul style="list-style-type: none">•Value Added Time•Takt Time•Operator / Machine Cycle Time•Order Processing Cycle Time•Net Available Time•Work in Process Time•Value Stream Ratio•Process Cycle Efficiency•Uptime Ratio•Overall Equipment Effectiveness•Muda-Free Cost

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KPIs and Continuous Improvement:

❑ KPIs are used to establish priorities and track the progress.

❑ **Examples:**

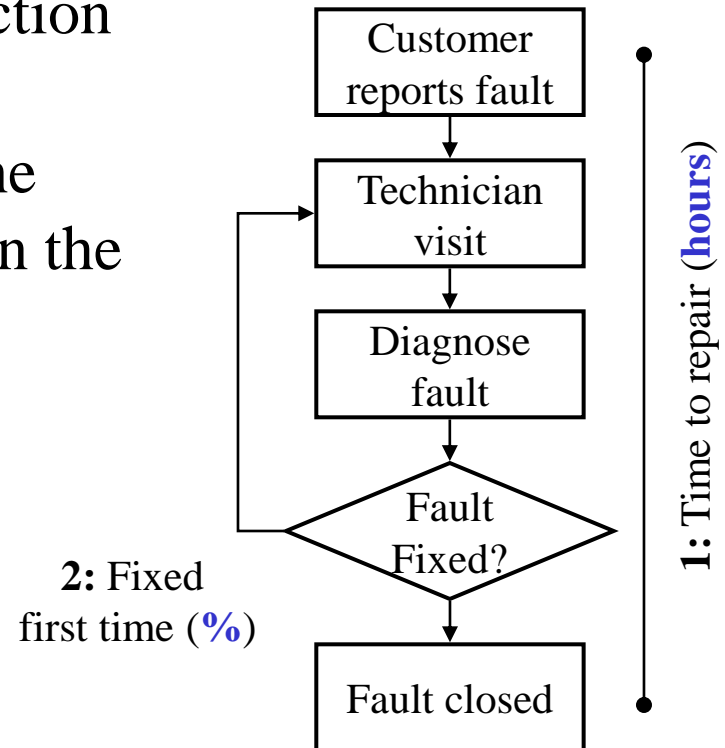
- Chartered improvement projects
- Project charters approved and signed off
- SOPs developed after improvement projects
- Completed improvement projects
- Financial department involvement in improvement projects
- Processes perform at 4.5 Sigma or higher
- Staff trained in Lean Six Sigma
- Savings resulting from an employee suggestions
- Time to respond to suggestions
- Idea conversion rate
- Kaizen events conducted
- Cross-industry benchmarking studies conducted



- Key Performance Indicators (KPIs)

Operational Definitions:

- ❑ A clear and detailed description of a performance indicator.
- ❑ They will ensure consistent data collection and will eliminate ambiguity.
- ❑ They will ensure data is collected in the same ways and standards are applied in the same manner.



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Components of Operational Definitions:

Performance Indicator:	Perspective:	Unit:
Description / Formula:		
Data Source:	Measurement Instrument:	Process Diagram or Drawings:
Method of Test (How):		
Frequency (When):	Decision Criteria:	
Data Collector (Who):	Owner:	
Baseline:	Target:	

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Utilizing Performance Indicators:

- ❑ Review the quality of the current data collection methods.
- ❑ Train staff on CTFs, KPIs, empowerment and process improvement methods.
- ❑ Start by a few easily understood performance indicators.
- ❑ Relate to critical success factors and reflect the voice-of-the-customer.
- ❑ Allow teams to define and select their own performance indicators.
- ❑ Have performance indicators approved by senior management.
- ❑ Measure and report only what matters.
- ❑ Monitor performance using dashboards.
- ❑ Display at workplace (on screens or display boards).
- ❑ Use them as a basis for team meetings and decision making.
- ❑ Identify and pursue improvement goals.



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Tips:

- ❑ A problem can arise when managers struggle to understand and identify the vital few performance indicators, and instead collect and report a vast amount of everything that is easy to measure.
- ❑ Many of the customer related performance indicators (mentioned earlier) are developed and managed using customer relationship management software.