RELIABILITY
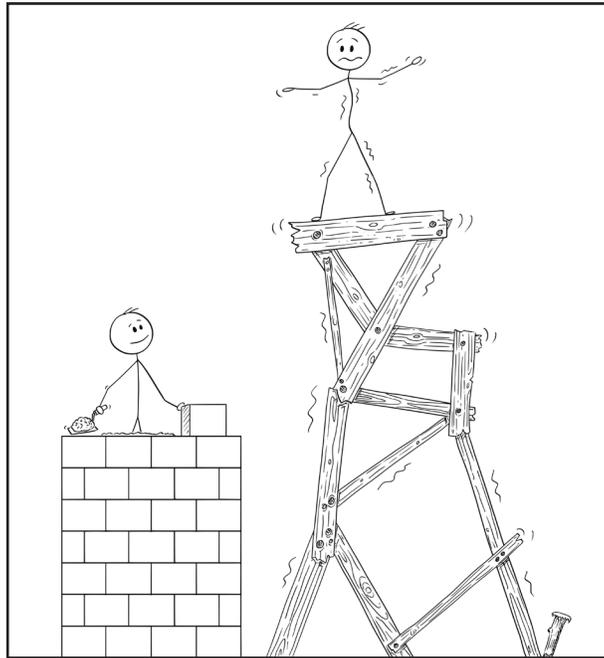

DEFINITION

— The quality of being trustworthy or of performing consistently well

— The degree to which the result of a measurement, calculation, or specification can be depended on to be accurate

— The extent to which an experiment, test, or measuring procedure yields the same results on repeated trials

System/Service Reliability

The probability that (the processes within) a system, or service will satisfactorily perform its intended/designed function/task for a specified time, and in a defined environment.

Manufacturing/Product Reliability

The probability of failure-free performance (within a process) over a product's useful life, or a specified timeframe, under specified environmental and duty-cycle conditions. Often expressed as Mean Time Between Failures (MTBF).

THE BIG PICTURE

The definition of reliability can be subjective based on who your customer is; regardless, to be reliable, systems (processes, equipment, services), must be stable, consistent, repeatable, standardized and predictable.

In manufacturing, arguably, one of the key elements to process/system reliability is equipment reliability, which focuses on MTBF, zero losses, standard work, and asset management. A true equipment process reliability mindset occurs when focus shifts from maintenance being fix and repair to keeping the equipment in a state of order, enabling the production schedule to be consistently met.

In admin and service sectors, unreliable processes are generated by variability—in demand, methods, people skills, data and customer expectations. A true service reliability mindset refers to creating shared work standards, sharing the latest information, reinforcing training, managing time and resources through a visual flow management system, and effectively responding to customer demand.

RELIABILITY

KEY RELIABILITY METRIC: MEAN TIME BETWEEN FAILURES (MTBF)

While typically thought of as a manufacturing-related metric, MTBF is also relevant in the service sector. MTBF is a basic measure of a processes'/asset's reliability that looks at the average elapsed time between unplanned/unscheduled failures during normal system operation, and the next time it occurs. It's the "pulse" of reliability.

To calculate MTBF, divide the total number of net operational hours in a period by the number of failures that occurred in that period. MTBF = # of operational hours ÷ # of failures.

Note: in manufacturing, assets taken down for routine scheduled maintenance or inventory control are not included in the calculation.

Additional Manufacturing Metrics

While MTBR is the key metric, your Reliability Scorecard should include additional metrics. Consider the list below. What are your numbers telling you?

- Improved OEE (Quality, Performance, Availability) —world class = >85%
- Reduced unplanned downtime
- Reduced production losses
- Increased number of inventory turns
- Reduced maintenance costs
- Shortened lead times
- Improved first pass yield
- Improved on time delivery
- Optimized spare parts inventory
- Improved/lowered Life Cycle Costs (Acquisition cost + Ownership cost)
- Improved percentages of reactive, predictive, and preventive maintenance
- Increased capacity
- Reduced WIP / supermarkets
- Improved environmental, health and safety concerns
- Increase shareholder value / stock price

Key Service Metrics / Examples

The same is true for the service sector. Some potential ideas for your Scorecard could include:

- Reduced order backlog
- Increased On-Time Delivery and total lead time (i.e. on-time: FedEx deliveries, scheduled computer updates, and execution of wire transfers)
- Increased Right First Time (i.e. laboratory test results, answers on legal issues in a law office)
- Reduced number of errors/rework
- Reduced overtime hours
- Reduced customer complaints
- Improved customer satisfaction measures (Net Promoter Score

EVERYONE PLAYS A ROLE

Everyone plays a significant part in maintaining reliable processes to ensure customer satisfaction, from HR on-boarding the right skill sets, to sales and marketing selling according to what the equipment processes are capable of producing, to customer service building standards of response. Are all of your departments involved?

TAKING IT BACK HOME / FOR REFLECTION

Reliability isn't an abstract concept. It's something we take into consideration in all aspects of our lives without even realizing it. Consider the following examples:

1. Does driving less due to recent restricted travel mandates mean routine asset maintenance is neglected? Even if your vehicle is sitting in the driveway, doesn't it still need to be maintained according to calendar-based or time-based PM's to ensure reliability?

2. As a consumer, don't you purchase products with the expectation they will perform as advertised...that the manufacturer's warranty is valid?

3. When you board a commercial flight, don't you make the assumption that the airline industry takes asset management and reliability much more seriously than the average organization, in actions not just words?

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RELIABILITY

IN THE NEWS

Click here to read how automakers launch redesigns effect vehicle reliability.

Famed American chef and 7 Michelin star holder Thomas Keller shares his 6 lessons for reliability achieving exceptional customer experience. Click here: https://www.forbes.com/sites/shephyken/2019/07/14/thomas-keller-from-dishwasher-to-world-renowned-chef/#243c09a85f2d

FAMOUS QUOTES RELATED TO RELIABILITY

"Each system is perfectly designed to give you exactly what you are getting today."

Dr. W. Edwards Deming

NOT SO FAMOUS QUOTE

"At least we are consistently inconsistent."

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