Track Adoption, Performance and Improvement Metrics Through Maintenance Business Intelligence
Asset and maintenance management has evolved significantly over the years. Organizations that once had hand-me-down computers and used pen and paper or spreadsheets are now using mobile devices and enterprise-wide maintenance management solutions to maximize asset performance, increase equipment uptime and reduce maintenance and operations costs. Modern Computerized Maintenance Management Software / Enterprise Asset Management (CMMS / EAM) solutions provide the means to improve maintenance effectiveness, increase profits and ensure product quality and throughput. In today’s economic environment, organizations are looking to gain efficiencies and competitive advantages from their maintenance organization, so how do you turn the vast amounts of data entered by the maintenance group into actionable information?

For years, organizations have been leveraging tactical transactional reports and static charts to see if their maintenance performance approached industry Best Practices for Preventive Maintenance (PM), compliance, backlog, Mean Time to Repair / Mean Time before Failure (MTTR/MTBF), etc. Unfortunately, those reports and charts do not allow leadership to truly identify trends and highlight the complex performance relationships that are typically hidden from day-to-day tactical reports. Using a Maintenance Business Intelligence (BI) solution gives you the ability to dig deeper into your maintenance data and uncover the true contributors to equipment reliability, availability and performance to systematically identify ways to improve and eliminate ‘bad actors.’ The old saying, “You can’t manage what you don’t measure” is becoming the mantra for maintenance organizations to help proactively and continuously drive inefficiencies out, turn expense dollars into bottom line savings, give availability and capacity back to operations and institutionalize a culture of maintenance excellence.

Ideally all data stored in your CMMS / EAM systems should be accessible by a Maintenance BI solution for the creation and distribution of user-configurable dashboards, Key Performance Indicators (KPIs) and metrics that meet your specific asset management business objectives. Additionally, leveraging your CMMS / EAM data and merging it with important enterprise data from other solutions often yields significant value, reveals important cross departmental correlations and helps drive continuous improvement efforts across the entire organization. Do you have real-time access to the relevant and comprehensive CMMS / EAM data that is needed to support your asset performance goals and objectives? Have you identified the KPIs that are vital to your operation? If not, how are you measuring the results and determining how well each business area is functioning?

The Importance of Measuring Adoption, Performance and Improvement Metrics

To be successful and make continuous improvements to your organization, you must begin by defining your strategic goals, and no maintenance program or strategic initiative can be effective without the proper metrics to measure progress. One single static metric is not an acceptable means of measuring progress, so starting with the most tactical first, you will need to create metrics that continue to build and measure achievements throughout all levels of the organization.
Adoption metrics are critical to establishing whether the CMMS / EAM system is being utilized, and these base metrics must be stabilized to ensure that upstream performance and organizational metrics are reliable.

For example, measuring Work Order (WO) Hours establishes the trend and amount of those hours logged within the system. This can then be compared against scheduled or payroll hours to determine how close the organization is to achieving the goal of 100% of hours logged in the system. This data can further be defined by resource groups to help track down variation sources.

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<thead>
<tr>
<th>Calculation</th>
<th>Depiction/Visualization</th>
<th>Goal/Target</th>
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<tbody>
<tr>
<td>(Total # of Hours booked on WOs) / (Total Available Labor Hours per week)</td>
<td>Bar Chart by week for last 6 weeks. Time Period can be broken down further, if required.</td>
<td>85% or better</td>
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Performance metrics provide ongoing information as to how well the Work Processes are impacting the entire scope of work activity. These metrics often provide the week-to-week management information necessary to monitor the steady-state flow of work activity and judge the performance of the different job roles.

An example of a performance metric is Preventive Maintenance (PM) Compliance. Tracking Preventive PM Compliance can determine how well the organization is able to adhere to the PM schedule that has been established.
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<tr>
<td>% of PMs that are completed on time (within 1 day of requested completion)</td>
<td>Line Chart by week for last 12 months</td>
<td>90%</td>
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**PM Compliance**

*Improvement* metrics translate maintenance performance to its impact in other areas of the organization, such as Operations, Quality and Engineering. These metrics are often the target of continuous improvement projects and/or collaboration activities between maintenance and the other departments.

An example of an Improvement metric relating to procurement is Single Line Purchase Orders (POs). This metric is used to manage the procurement process efficiency and determine how well procurement is able to aggregate items to a minimum # of POs. The more multi-line POs, the more streamlined the purchasing and associated processes will be.

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<tr>
<td>Count of POs that have single vs. multiple lines</td>
<td>Bar Chart comparing single line and multiple line POS per month for last 12 months</td>
<td>80%</td>
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By identifying and measuring Adoption, Performance and Improvement metrics against industry Best Practices, the maintenance organization can improve maintenance initiatives and convey to upper management how an effective maintenance program contributes to the bottom line and performance of the organization, as a whole. Through the effective use of metrics, the maintenance organization can manage maintenance activity and improvement initiatives in functional areas, such as:

- Work and Equipment
- Performance
- Inventory
- Procurement

**Key Performance Indicators**

Key Performance Indicators (KPIs) measure how well a facility, department, business function, job role or asset is performing. KPIs help your organization monitor a specific business process and manage the compliance of that process. The success of your maintenance management program is dependent on the adherence to a disciplined process, quality data input and well defined roles and responsibilities. KPIs are critical to understanding how well you are performing and where you need to make improvements, but identifying the correct performance measures to implement and analyze is also extremely important. The right measures are directly tied to the department or organizational objectives and maturity level. For example, attempting to measure WO Response Times without an effective Work Request System in place does not make much sense.
In order to remain focused, your organization will need to identify the accurate number of performance measures needed to be tracked and analyzed. Too many measures can dilute focus and create paralysis, but too few measures provide an incomplete picture of performance. You do not want important processes to go unmonitored and cause key improvement opportunities to be missed.

One example of an important KPI is Equipment Downtime. The focus of the Equipment Downtime metric is to ensure that critical operational equipment is available and working properly when it’s called upon to produce. This metric helps the maintenance group provide more effective repair procedures by understanding which equipment is of concern. It also aids the formulation of an effective preventive regimen.

![Equipment Downtime Hours by Equipment Class](image)

It is important to remember that even though Maintenance and Operations roles and functions are separate, their activities are integrated. Having the correct types and number of KPIs and thus the ability to provide effective asset care programs and procedures will ensure a cohesive vision across maintenance operations.

**Evolution of Maintenance**

As your organization looks to mature and improve its asset performance and deliver more efficient and cost effective products / services, metrics that provide easy to understand visualizations of Adoption, Performance and Improvement achievements and progress are vital to management and staff success.
Typically, maintenance organizations operate in either a Reactive / Failure Driven (run-to-failure) mode or practice PM activities that have not been proven to effectively detect failure modes. Others employ Predictive or Condition Based Maintenance (PdM / CBM) techniques that only monitor the progress of machinery deterioration, rather than utilizing that intelligence to eliminate the root cause of their equipment failures. While those strategies are referred to as a maintenance evolution, one strategy does not eliminate the need for another.

Your organizational focus should shift as a means to increase proficiency and reduce costs, and your maintenance management solution provider should partner with you to develop your maintenance strategies. User-configurable dashboards, KPIs and metrics are critical in aiding and evaluating your current maintenance performance, spotting opportunities for improvement and tracking effectiveness of efforts to achieve greater performance.

Most organizations operate at various degrees of proficiency across multiple strategies, with the majority of their maintenance operations utilizing a single strategy. A good approach to determine the expected performance of your maintenance organization is to evaluate, with your CMMS / EAM solution provider, each facet of your maintenance process to see where it fits on the “Evolution of Maintenance Strategies” chart and devise strategies for advancement and management metrics to measure success.
Summary

A robust, user-friendly CMMS / EAM solution is an important step toward becoming a Best-in-Class maintenance organization, but you also need an integrated maintenance BI solution that gives instant insight into the unique KPIs and metrics that are important to your organization’s success.

TabWare Analytics directly accesses data stored in TabWare CMMS / EAM and enables your maintenance organization to continue to evolve towards Best-in-Class by providing powerful data management, predictive analytics and reporting technology. With TabWare Analytics, you have the ability to manage KPIs, trends, multi-dimensional and “what if” analysis and can be merged with relevant enterprise data from other departments or external vendors. TabWare Analytics provides:

- Out-of-the-box, role based reports and KPI dashboards based on industry Best Practices
- Anywhere, anytime access on smartphones, tablets or computers
- Powerful, interactive multi-dimensional analysis
- Flexible, user-configurable comprehensive views of data
- An easy-to-use solution from end-users to power-users
- The ability to view relevant data for your unique business needs

By establishing and adhering to industry Best Practices metrics and KPIs, your organization can experience substantial improvements in asset performance, reduced maintenance and material costs, improved labor productivity and increased operational equipment effectiveness (OEE).

TabWare Analytics can help you manage your business processes and evolve toward a Best-in-Class maintenance organization, contact us at: 864-458-3333 or sales@assetpoint.com.