How transportation operators optimize asset management to maximize value

IBM analysis finds asset managers are using strategic methodologies and predictive metrics to increase reliability, reduce costs and improve service

IBM

Introduction

Whether a commercial bus line, a government department maintaining bridges and highways, or a railroad operator with both rolling stock and infrastructure assets, most organizations in the travel and transportation industry understand that optimal asset management is crucial. It is a vital component in the overall strategy of service to the customer. Increasing system reliability and asset service levels—while maximizing the bottom line and meeting the needs of regulators—is a crucial link in the chain of uninterrupted transportation schedules.

The primary objective of an effective asset management program is to ensure that transportation operators meet the expectations of their customers. Any activity related to assets can maximize value to all stakeholders in the value chain—from the operator itself to the end users of its services. Improvements to the way assets are managed can reduce lifecycle costs, increase system reliability and safety, and lower exposure to risk. Effective asset management can help guide operating and maintenance schedules, budgeting, resource management and investment decisions.

Planning and implementing the best asset management program requires navigating and overcoming multiple complex scheduling hurdles—including coping with aging assets and infrastructure, balancing detailed process and configuration requirements and meeting corporate cost-reduction dictates—all while ensuring uninterrupted operational schedules.

In 2014, IBM collaborated with ReliabilityWeb.com to conduct a survey of asset management executives and professionals from many of the world's most asset-intensive companies—those that are IBM customers and those that are not—to gain a broad understanding of asset management practices, investments and challenges.[1] With 933 participants from a wide variety of industries around the world, this is the largest and most inclusive asset management study ever conducted.

An IBM analysis of the participant responses shows how 51 savvy asset managers in the travel and transportation industry are using advanced strategic plans, processes and technologies to solve the challenges of enterprise asset management in three key areas:

- The ability to have a deep view of every asset, its lifecycle and its place in the asset management process
- The ability to predict and plan for failure of assets
- The ability to make informed, strategic decisions about asset investments

The most effective asset management takes a strategic approach

A central finding of the IBM analysis—and one that may point the way for any travel and transportation operator wishing to improve its operations strategy—is that the asset managers who work proactively, use the most advanced methods and achieve the best results employ a more formal approach to asset and risk management than their peers, who rely on short-term, reactive management procedures. Ninety-six percent of asset managers who use a strategic approach, for example, are already conducting asset benchmarking, completing benchmarks, or planning to conduct benchmarks. In addition, 57 percent who employ a strategic approach support their ability to realize the desired results with asset service level agreements—compared to only 18 percent of their peers.

Strategic planners in transportation adopt more formal management

83% vs. 43%
Strategic planners — Other firms
Adopt an asset management policy

91% vs. 64%
Strategic planners — Other firms
Adopt a formal risk management approach

* Source: "Research Report on Asset Management Practices, Investments and Challenges 2014-2019," *Reliabilityweb.com*, 2014.

The most successful asset managers also budget differently, relying more on asset assessments, asset criticality and asset performance data to allocate budgets. Such a focus on the current and the desired future state of their assets helps them improve operations by avoiding a backward-looking, "this-is-the-way-we've-always-done-it" mindset.

Comprehensive information about every asset enables strategic planning

Asset managers in the travel and transportation industry clearly understand the need for strategic planning. In 2014, 45 percent already had a strategic asset management plan in place—a group that IBM refers to as "strategic planners"—and 49 percent expected to implement a plan within 12 months.

Strategic planners in transportation rely on data to allocate budgets

- **87%** Condition assessments
- **78%** Asset performance data
- **74%** Risk assessment
- **65%** Asset criticality
- **61%** Asset management plans
- **48%** Previous maintenance budget

* Source: "Research Report on Asset Management Practices, Investments and Challenges 2014-2019," *Reliabilityweb.com*, 2014.

More than 80 percent of strategic planners said they have implemented or will implement a plan to help increase system reliability over an aging infrastructure. They tend to use asset performance measurement and metrics to identify inefficient and ineffective assets, processes and resources before moving to implement advanced analytics capabilities. Strategic planners already rely heavily on assessments and performance data to allocate budgets—with 61 percent saying they plan to increase their use of analytics over the next five years. In addition, strategic planners are twice as likely as their less effective peers to use risk analysis as a factor in operational maintenance schedule and more than four times as likely to use asset management plans to detail scope.

Strategic planners in transportation focus on analytics and planning

61% Implement data analytics

61% Implement asset performance management software

57% Implement new MRO material and spare parts software

57% Implement asset health management software

35% Implement asset investment planning software

35% Implement reliability-centered maintenance software

30% Implement root-cause analytics software

* Source: "Research Report on Asset Management Practices, Investments and Challenges 2014-2019," *Reliabilityweb.com*, 2014.

Unlike traditional reporting, operating metrics typically measure results against specific and quantifiable targets. In asset management, performance metrics are mainly used to precisely measure operational health of an asset. Careful timing of when to apply proactive correction reduces maintenance costs, asset failures, increasing availability and scheduled service compliance. Analysis and metrics enable companies to prioritize and focus maintenance and investment resources where they are most needed and most effective.

Strategic planners utilize performance metrics more than their non-strategic peers do. For example, asset failure metrics are used by 78 percent of the strategic planners in the transportation industry who participated in the study, while only 43 percent of non-strategic managers use them. Other asset metrics used by strategic planners include:

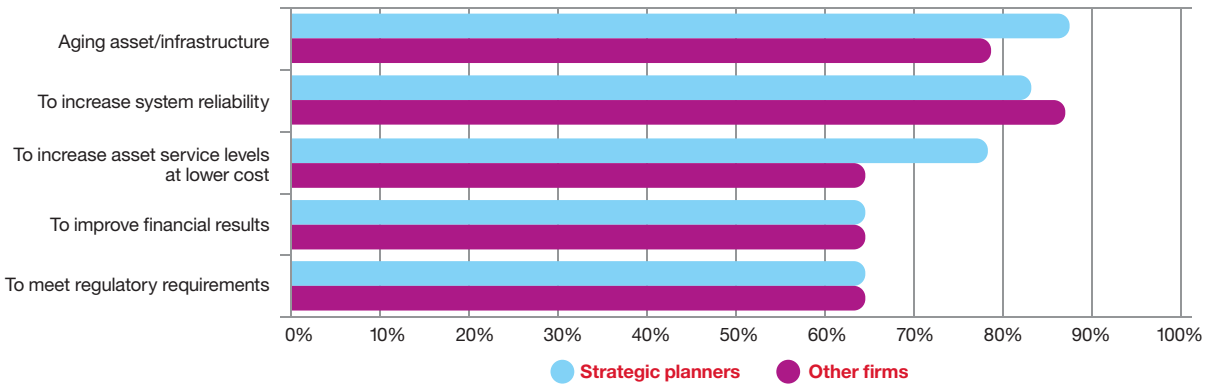
- Availability rates
- Reliability rates
- Unit cost metrics
- Asset service level agreement metrics
- Maintenance cost metrics

Asset maintenance cost metrics enable companies to answer questions such as:

- What is the optimal schedule for maintenance of this asset relative to the operational schedule demands?
- What is the true cost of risk?
- What is the cost of work by asset?

Asset failure metrics can provide valuable information such as mean time between failure (MTBF) and show how failure of specific assets and systems of assets will affect the reliability and availability of the operator's services—and the bottom line. Maintenance can be planned to be performed during downtime, lowering costs and ensuring continuation of service. More than 75 percent of all travel and transportation asset managers say that increased reliability—the ability of an asset to perform a required function under specific conditions for a specific time interval—is a primary reason for improving asset management.

In transportation, asset reliability is a top priority



* Source: "Research Report on Asset Management Practices, Investments and Challenges 2014-2019," *Reliabilityweb.com*, 2014.

Without comprehensive, reliable, up-to-the-minute information about all assets, it is impossible to take advantage of strategic analysis, planning and effective budgeting. To increase operational and financial performance across asset management processes, organizations require business intelligence solutions that provide complete information about all assets. However, to be truly effective, solutions must also deliver robust metrics to measure performance across work orders, assets and inventory, providing drill-down analysis to identify root causes of failure, unreliability and unavailability. Solutions should provide easy-to-use dashboards that facilitate both rapid analysis and long-range strategic planning.

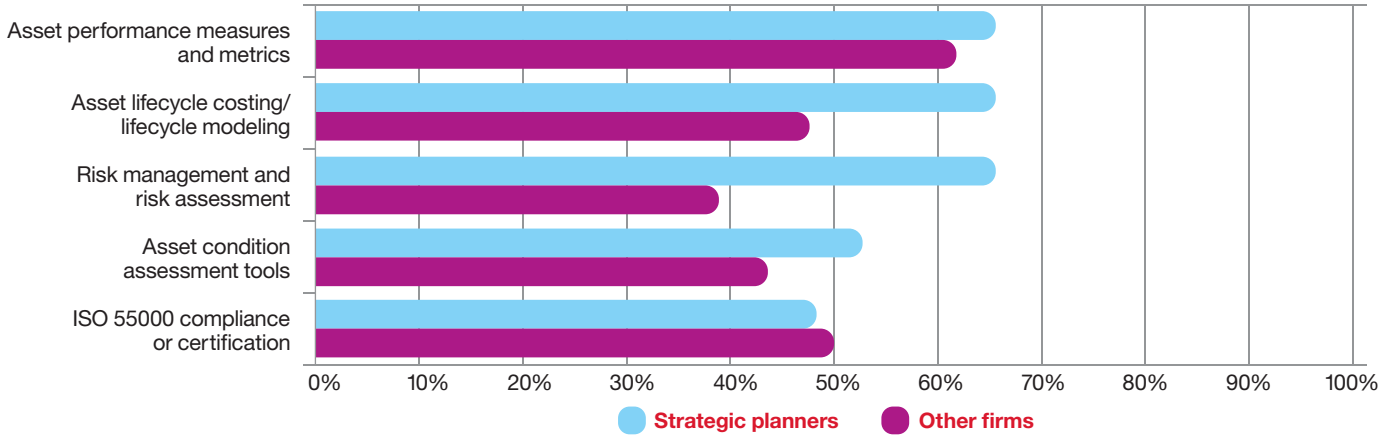
Proactive planning for failures can increase reliability and reduce costs

For most of the travel and transportation industry asset managers who participated in the ReliabilityWeb.com survey, maximizing the reliability of aging infrastructures was the main priority. The ability to anticipate the failure of assets allows an operator to take corrective action in advance, increasing reliability and reducing costs. More than 90 percent of the surveyed travel and transportation industry asset managers understand that there is economic value in implementing predictive and prescriptive analytics for long-term maintenance planning or to accelerate corrective actions toward real time—yet the survey shows that only 65 percent plan to apply analytics to asset performance metrics.

When historical or real-time data is available, asset managers can use analytics to predict asset failures and reduce the impact of failure on operating schedules. The lead time created by insight helps them manage maintenance costs, based on details of an asset and its operating environment. They can use data and analytics to evaluate when to apply maintenance, eliminating risk of meeting required missions. From there, they can optimize inventory levels, define a more efficient maintenance schedule and allocate appropriate resources. Stated goals of the majority of asset managers included the implementation of evidence-based decision-making processes, creating senior management's awareness of asset management needs and the ability to mitigate risk. Predictive analytics can use real-time data to detect if a failure is imminent—and then use that insight to direct necessary corrective actions, recommending immediate or future repair as needed.

Asset managers need technologies that enable new capital planning analysis and that provide processes and reports to support the change from short-term operational management (characterized by expense management based on previous maintenance budgets) to a longer term asset management strategy (characterized by increased return on existing assets and future asset acquisitions).

Over the next five years, transportation companies will invest heavily in analytics



* Source: "Research Report on Asset Management Practices, Investments and Challenges 2014-2019," *Reliabilityweb.com*, 2014.

Intelligent investments reduce risk and maximize value

The travel and transportation industry asset managers who participated in the survey indicated that asset information management, performance management and skills optimization were the top areas of investment for the next year. Strategic planners realize that investing wisely in these areas reduces risk and maximizes the value of assets. However, only 17 percent of strategic planners said that their existing information management systems fully support effective asset management. Information management systems used by non-strategic planners are even less likely to meet their needs, with 14 percent saying that their existing systems provide absolutely zero support for their asset management plans.

The surveyed asset managers expect improvements to their analytics and information management systems to reduce risk, optimize maintenance and improve capital planning. Although the timing and costs of capital investments were currently not optimal—many investments tend to be based on asset failure and criticality, analysis of historical maintenance budgets, or even on simple assumptions—more than 40 percent of the respondents indicated that improvements were difficult to achieve, mainly because of organizational culture.

To attain the ability to invest in the technologies they need in order to meet their asset management goals, asset managers require the support of top managers and stakeholders. When solid data and intelligent analytics are available, it's easier to obtain organizational buy-in and support. Investments in technologies that provide data analytics and enable strategic processes such as benchmarking deliver more value and take priority over tools that provide only tactical aid.

ISO 55000 provides a framework for optimizing asset management

In January 2014, the ISO 55000 series of asset management standards became available from the International Organization for Standardization (ISO). Companies can use ISO 55000 standards as a guideline to formalize asset management policies, incorporating tools and processes such as risk exposure, asset service level agreements and asset benchmarking. These new standards create the opportunity for asset managers to achieve best practices in support of company mission, targeting long-range strategies, investments and increased value to stakeholders, employees and customers.

Meanwhile, the IBM analysis revealed that strategic planners in the travel and transportation industry understand the value of the new system of standards to their operations and are four times more likely to implement ISO 55000 in the near future than their peers.

Developing a strategic asset management plan

Based on actions being taken by the surveyed strategic planners, all travel and transportation industry asset managers should consider taking the following steps over the next few years to put in place an optimal asset management plan:

- Assess the cost of unreliability and how it affects operation schedules
- Conduct a gap analysis between the policies, practices and investments of your organization and those of strategic planners
- Develop "best practice" based processes, mapping to ISO 55000 framework where applicable
- Invest in new technologies to support new processes that address gaps and positions for a culture of continuous improvement
- Establish and utilize asset performance benchmarking and failure metrics

Conclusion

As travel and transportation asset managers look to become more strategic in their asset management planning and operations, they are discovering that using the right information and asset management technologies can help them shift to a more effective analytics-based approach to management and budgeting. As a result, IBM is increasing its already strong understanding of the challenges, opportunities and system requirements that travel and transportation organizations face today in enterprise asset management.

For more information

To learn more about IBM asset performance management solutions, please contact your IBM representative or IBM Business Partner, or visit: **ibm.biz**/eam-software

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IBM Analytics
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Produced in the United States of America
August 2015

[1] All statistics cited in this white paper are from "Research Report on Asset Management Practices, Investments and Challenges, 2104-2019," *Reliabilityweb.com*, 2014. www.reliabilityweb.com

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