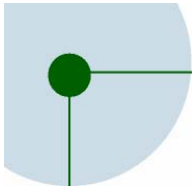




Effective Asset Management in an Uncertain Economy

by David Berger, Director
Western Management Consultants





INTRODUCTION

There is no time like a global economic slowdown to test the true capability of a senior management team. When times are good, it doesn't take much for the senior team to ride the wave and steer the company to some reasonable level of success. But in an uncertain economy, many senior teams panic. In the name of cost reduction, the 'C' office may begin a downward spiral where hatchets begin cutting into bone or muscle instead of simply trimming the fat. Excessive or poorly targeted cost cutting can lead quickly to poor morale, a mass exodus of the better resources, tightening of credit, and even reduction or elimination of key customer accounts.

One of the more prevalent victims of misguided cost-cutting initiatives is the physical assets of the company. Poorly planned or executed reduction in spending on the management of assets may lead to accelerated deterioration of assets, product quality problems, and the inability to meet delivery commitments due to excessive downtime. The ever-growing swath of damage that results may take many years and dollars to undo, if at all salvageable. This white paper describes 10 ways senior executives can more effectively manage their assets in an uncertain economy in order to not only avoid any damage, but more importantly, enjoy substantial improvements in productivity and profitability.

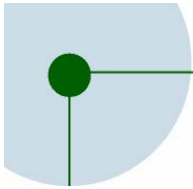
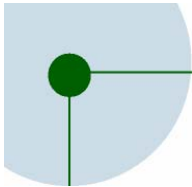


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MOTIVATION

A lack of motivation leads to a decline in productivity, as well as negative or even destructive behaviour. Most people assume that motivation decreases during an economic downturn, reflecting the level of uncertainty over meeting personal and company goals. But surprisingly, as demonstrated in previous recessions, a poor economy can actually be an effective motivator with the right leadership. A good leader can rally support at all levels within the organization in dealing with the common goal – remaining viable and profitable despite economic hardship.

For senior management, buy-in can be maximized using profit as a motivator. The difficulty lies in clearly linking profit with asset management, especially in quantifiable terms. However, this can be explained successfully as follows:

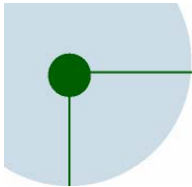
$$\begin{aligned}\text{Profitability} &= \text{profit} / \text{net assets} \\ &= \frac{\text{profit} \times \text{sales}}{\text{sales} \times \text{net assets}} \\ &= \text{profit margin} \times \text{capital turnover}\end{aligned}$$

Thus, profit can be linked directly to assets by showing how getting more sales output from your assets with less input can be highly profitable.

For obtaining the buy-in of the front line, good leadership is critical. This is especially true in tough times. Leadership consists of the following key attributes:

- A clear vision and plan for asset management
- Consistency over the long term
- Support through action
- Realistic performance measures & targets that define success
- Recognition, rewards & consequences aligned with success
- Managed expectations for each stakeholder that answer the question “what’s in it for me?”
- Clarity of roles and responsibilities at all levels in the organization
- Constant and meaningful two-way communication
- Flexibility to handle the inevitable changes that will occur

Without the buy-in of the front line, there is no hope of effective asset management. Moreover, the front line supervisors, who are sandwiched between senior management and the front line, have enormous influence over whether the front line is motivated to change their behaviour, such as adopting new processes or asset management systems. Any changes contemplated for improving productivity should be planned and implemented using a participatory approach to maximize buy-in from all stakeholders.



THE PLAN

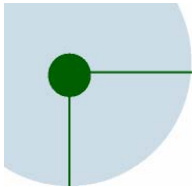
When the economy is ailing, it is tempting to slash costs or defer whatever is perceived as non-essential expenses, such as the cost of maintaining assets. However, this is not a plan. Proper planning starts with the customer, and the customer's definition of value-added service, cost and quality.

If the customer would not realize value from a given service, then trim that cost. For example, a customer would not see value in having a multitude of inefficient, non-standard processes across your company, multiple asset management systems that support them, and unreliable or incomplete asset-related data. But they may see value in replacing or repairing an asset this year that would cost substantially more to replace or repair in future years if the expense were deferred.

In developing an asset management plan, understand what drives your business. If your key assets are buildings and facilities, for example, then a key driver of the business might be energy cost per square foot of usable space. If your business is a 7/24 mining operation, then perhaps it is asset availability and reliability to optimize maintenance dollars spent per ton of ore produced. For a meat packing company, the key driver might be asset performance and quality of output, where assets must maximize product yield.

The asset management plan is a tool that should help move from a reactive, "fire-fighting" mentality to a more planned environment. This alone will result in a reduction in costs, as there is greater efficiency and less waste in a planned environment. The plan should include goals, objectives, performance measures and targets, and action items required to meet those targets. During a declining economy, one of the targets might be a percent reduction in costs. In order to achieve that reduction, the plan might provide action items such as

- Determine the most cost-effective policy of fail-based, use-based or condition-based maintenance for at least the critical assets, that optimizes the key drivers for your business (eg, maximize asset availability and reliability for a 7/24 electric utility)
- Examine frequencies, triggers, performance standards, quality standards, skills required, and so on, to determine if there is any improvement potential
- Evaluate asset history to identify costly problems, eg, conduct Pareto analysis and address root causes
- Look for standardization and consolidation opportunities across the enterprise (eg, single asset registry, standard processes, consolidated system)



METRICS

Once an asset management plan is in place, conduct a benchmarking exercise for at least the high-priority measures, and compare them to baseline. Typical measures and sample benchmarks relevant to asset management are provided in Table 1 below, including those for the assets themselves, MRO parts inventory, labour, and financial measures. Note that benchmarks may vary by industry.

In a poor economy, it is absolutely essential to focus on a small set of priority measures that trade off. This is to ensure that overall performance does not suffer. For example, if senior management simply focused on minimizing the total cost of ownership for assets, it may be to the detriment of other priority measures such as asset availability or performance. Therefore, it is important to seek a balance of measures, especially for critical assets and components. Similarly, measures for labour, material, and other groupings should be carefully selected and rigorously managed.

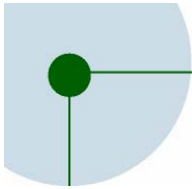
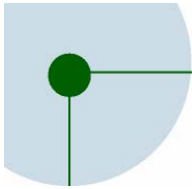


TABLE 1: KEY ASSET MANAGEMENT MEASURES & BENCHMARKS

<i>Measures</i>	<i>Sample Benchmarks</i>
Assets	
• Availability (vs machine downtime)	>95%
• Utilization (vs available but not used)	>95%
• Reliability (eg. MTBF, MTTR)	0% variance to engineered spec
• Performance (ie, efficiency)	>97% of engineered spec
• Quality of output (eg, scrap)	<3%
• Total Cost of Ownership (ie, lifecycle cost)	<replacement Present Value <industry or engineered norm
Spare Parts Inventory Management	
• Vendor performance	<1% variance
• Supplier pricing	3 quotes for the top 20% of suppliers
• For ABC classifications: Service level vs Inventory level/turns	A class items = 93% service level; all classes combined = 75% service level; inventory turns > 3
• Obsolescence	<5%
• Rush orders	<cost of inventorying
• Procurement cost (per order/unit): blanket PO's, e-procurement	
Labour	
• Utilization (ie, % productive vs non-value-added like wait time)	>75% wrench time
• Performance (ie, % of standard/plan)	100%
• Effectiveness (eg, % contracted, overtime, training, innovation, quality)	<5% overtime
• Safety	injuries < 2 per 200,000 maint hrs
Financial / Overall	
• Cost/Unit for inventory, equipment/facility, people	Maintenance cost < 10% of operating cost
• Planned vs Budget vs Actual Costs	<5% variance
• Performance to Schedule	>90%
• Cycle time	<3% variance
• Customer Satisfaction (eg, response time, backlog, compliance, satisfaction survey results)	>95% average rating
• Service Levels	<1% variance from SLA targets
• Cash conversion cycle (Inv+AR-AP days)	<0



TRANSPARENCY

With a plan and metrics in place, a tracking system is required in order to provide a window into operations. This transparency is critical to ensure the objectives of the asset management plan are being met, and thus, motivation remains high, from senior management to the front line. Each stakeholder requires different information in order to achieve this visibility, especially in real time. Modern Enterprise Asset Management (EAM) systems can integrate, consolidate and help prioritize data for transparency throughout the organization.

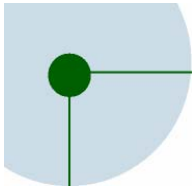
One of the more sophisticated tools available through today's EAM systems is business intelligence. This includes such features as real-time data collection, diagnostic and analysis tools such as Root Cause Analysis, queries and reports with comprehensive filter and sort capability, and performance dashboards that help each stakeholder prioritize and keep track of only information relevant to them. In some cases, an automated control loop can be incorporated to avoid the necessity for human intervention, such as shutting down an asset when the pressure, temperature, or energy consumption hits a predefined set point. The better EAM software packages have advanced workflow engines, as well as notification and alarming capability that facilitate some sort of automated follow-up to a user-defined trigger.

These features are most appreciated in tough economic times, as problems can be quickly discovered, analyzed, and dealt with at the appropriate levels in the organization, or even automatically. In turn, this transparency will prevent quality, customer service and cost impact when negative variances to plan are detected.

STRATEGIC ASSET MANAGEMENT

One of the greatest savings potential for especially large multi-national companies is to think more strategically about asset management. Throughout a tough economic period, people are far more likely to rally around common goals and objectives articulated in your asset management plan, so take advantage of the momentum. It serves as a great incentive for people across the enterprise to develop common processes, including quality and performance standards. The focus should be on managing assets to maximize customer service, minimize handoffs, reduce cycle time, and so on. Key Performance Indicators (KPI's) should be developed to ensure the new processes are adhered to and asset management plan objectives are met.

Once common processes are developed that go contrary to the typical silo mentality of most corporations, the next step is to streamline the number of information systems that support the new processes. There is a substantial cost associated with supporting so many software solutions across the enterprise, including the tendering process repeated multiple times, hardware/software support both internally and externally, upgrade and version control, integration, training, and many more inefficiencies. Economic woes make it that much more attractive to implement a single modern EAM solution that optimizes flexibility, agility & scalability. To achieve this, look for a software package that, for example, is web-architected, is easily configurable to user needs, and that has a comprehensive workflow engine.



ASSET INTEGRATION

Every company has a variety of assets that all need to be managed. These assets can be grouped into five main asset classes as follows:

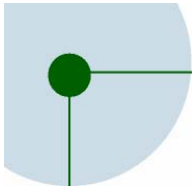
1. Plant equipment
2. Facilities
3. Fleet or mobile equipment
4. Infrastructure (eg, roads, pipelines, bridges)
5. IT assets

For many years, it was deemed necessary to have separate and distinct processes, systems, and organizational structures that managed these assets. This is no longer the case for two key reasons. First of all, assets are much “smarter” and require a more strategic, integrated approach to managing them. For example, buildings have sophisticated control systems that monitor security, energy consumption, health systems, and comfort levels throughout the building as the sun, wind, and outside temperature varies. Mobile equipment may have the ability to centrally monitor fuel efficiency, security, location, asset health, and so on. The second reason is that modern EAM systems are far more capable than ever to accommodate the broad spectrum of features needed to effectively integrate and manage the different asset classes, spread throughout the enterprise.

So economic conditions aside, by integrating the islands of automation that service the various asset classes, and by developing a single enterprise-wide solution, you will

- Increase asset reliability, availability, utilization, quality of product/service, performance, and total cost of ownership,
- Extend asset life and maximize return on investment,
- Enhance regulatory compliance and risk management,
- Improve labour efficiency,
- Optimize inventory of spare parts, and
- Significantly reduce software costs.

Some companies that have successfully introduced a single, integrated solution have experienced a significant bottom-line impact in the order of 5 - 15%.



TOTAL LIFECYCLE ASSET MANAGEMENT

Another significant dimension to consider when developing your asset management plan is the asset lifecycle. Every asset goes through some combination of the steps shown in Figure 1 below, from capital planning and design, to the eventual modification or disposal of the asset. Each stage in the asset lifecycle is managed by a separate set of processes, information systems, and organizational structure.

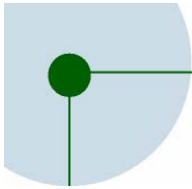
Figure 1: Asset Lifecycle



For example, capital planning is typically done by the CFO, in conjunction with the CEO and COO. There is specialized software that can be used to develop say, a 25-year capital plan. Asset design is done typically by the Engineering group, either internally and/or externally using separate software tools to create drawings and a bill of materials. Similarly, there are other groups within the organization that have separate processes/systems for procurement, maintenance, modification, and disposal of the assets. As well, the Finance group typically manages the asset lifecycle from an accounting perspective using Fixed Asset Accounting software.

There is therefore a huge opportunity to track and optimize the total cost of ownership for especially critical assets. Many asset-intensive companies have saved millions of dollars by simply integrating only three of the stages, ie, engineering design, operations, and maintenance. This was achieved by simply involving Maintenance and Operations throughout the design/build stage resulting in a more pragmatic design, as well as integrating the engineering design systems with the EAM system, for a smooth handover of accurate and complete asset information without the need for recreating data.

During hard economic times, one technique that some companies use to save money is to defer capital replacement by maintaining the assets longer. This may have a far superior return on investment than simply delaying expensive but critical capital expenditures, such as major repairs to the roof.



RISK MANAGEMENT

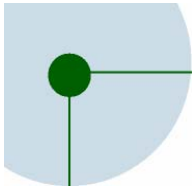
Greater economic uncertainty means greater risk and potentially greater costs. This coupled with the rising complexity and cost of a growing number of smart assets, has fomented unprecedented regulatory pressures. It is imperative that your asset management plan anticipate and mitigate these increasing risks. Some EAM vendors have developed advanced functionality that assists in identifying, monitoring and controlling of risks, such as comprehensive condition-based monitoring capability, electronic signature functionality, and sophisticated security features.

From an overall enterprise perspective, you need to enforce controls over the products/services, processes, environment, and all assets. At the very least, you need to gain greater control over your priority assets, regardless of location, type, age, use, etc. Doing so will drive savings, for example, using your EAM system and say, mobile devices to collect data in real-time allowing faster decision-making & improved resource deployment. This dramatically helps mitigate risk, especially if asset failure would result in catastrophic consequences.

SUPPLY CHAIN OPTIMIZATION

All parties along the supply chain are affected by an economic downturn. That is why it is better to work together – the potential benefits to everyone as a whole is usually greater than the sum of the benefits to individual component companies. The first step is to find customers and suppliers that share your pain, and then develop a common vision, strategy, metrics, etc. for making things better. Work with them as partners to build optimal processes that eliminate quality and service problems at the source (eg, poor quality parts, excessive lead time).

Identify opportunities for greater knowledge fully shared using EAM systems that are integrated throughout the supply chain (eg, planning and scheduling spare parts delivery for the overhaul of a major piece of equipment). Finally, investigate the cost/benefit of outsourcing or co-sourcing non-core functions, such as allowing a supplier to carry your spare parts inventory, or take on the maintenance of your facilities. The typical target savings from supply chain optimization initiatives are 10-20%.



LEAN GREEN

The last area to consider for more effective asset management in a depressed economy is by no means the least. On the contrary, for some companies, it holds the greatest savings potential. US companies spend about \$100 billion annually on MRO, ie, capital equipment and services. However, US companies spend about \$400 billion annually on energy, and that number is climbing. Next to personnel, the single highest cost for a typical manufacturing facility is energy.

So when it comes to asset management are we really focused on the right things? What about

- Tracking & optimizing energy usage, especially for energy hogs,
- Purchasing green products/services including green energy,
- Implementing intelligent chargebacks,
- Tracking and controlling emissions, and
- Getting involved in industry/government initiatives to reduce costs and avoid costly surprises.

Your EAM software should provide these features and more, as part of a fully-integrated, enterprise-wide system. And despite rumors to the contrary, “Green” can be “Lean”, ie, it does not have to cost you more to be “Green”. It can actually save you money.

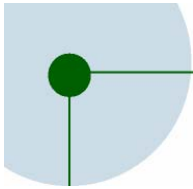
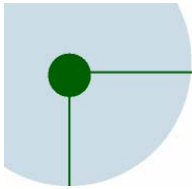


TABLE 2: ACHIEVING EFFECTIVE ASSET MANAGEMENT

<i>Poor Asset Management in an Uncertain Economy</i>	<i>Effective Asset Management in an Uncertain Economy</i>
1. Low morale	Buy-in from senior mgt & frontline
2. Needed expenses are deferred such as key asset repairs; the fat is cut, but so is muscle and bone	Create an asset management plan to ensure you cut the fat only
3. Too many or too few measures with no clear priority	Focus on a shortlist of priority measures that trade off
4. No transparency into operations	Real-time data collection; sophisticated workflow engine; performance dashboards customizable for each user
5. Inefficient processes and systems	Standardized, efficient, enterprise-wide processes, database and systems
6. Silo thinking within asset classes	Integrated & enterprise-wide EAM for all asset classes
7. Silo thinking for each stage of asset lifecycle	Integrated & enterprise-wide EAM for all asset lifecycle stages
8. High risk and regulatory pressures	Reduced risk with greater controls in place for at least critical assets
9. Companies along the supply chain struggle to survive within their silos	Shared vision, processes, systems for mutual benefit along the supply chain
10. The focus is on MRO; “Green” is viewed as a passing fad & added cost	Energy is a focus; “Green” can be “Lean” and is long term

CONCLUSION

There is no question that effective asset management costs time and money. However, poor asset management costs even more, especially in an uncertain economy. Table 2 above summarizes how to manage your assets more effectively in tough economic times.



ABOUT THE AUTHOR

David Berger, P.Eng. (Alta), Director, Western Management Consultants, Toronto, is a Certified Management Consultant (C.M.C.) registered in Ontario, Canada and an adjunct professor at York University in Toronto, where he has taught operations management for the MBA program for 23 years. He has conducted numerous asset management audits; helped senior management develop asset management strategies involving maintenance, operations, and engineering; assisted companies in implementing process improvement initiatives with significant results; and led a variety of IT projects, from developing a detailed specification to package selection and implementation, for CMMS/EAM, PdM, RCM, and supply chain software. Mr. Berger has had significant industry experience, including senior positions in manufacturing, and as an executive responsible for operations and technology within a large, multi-national financial institution.

David Berger may be contacted at david@wmc.on.ca.

ABOUT WESTERN MANAGEMENT CONSULTANTS

Western Management Consultants (WMC), founded in 1975, has offices across Canada providing management consulting services around the world. Its senior, experienced consultants assist clients across the public and private sector spectrum, from multinational corporations to small family-owned businesses, in resolving problems and capitalizing on opportunities in seven main areas of expertise: strategic management, information technology, business process improvement, project management services, change management (including organizational development, executive coaching and human resource management), executive search, and marketing and sales.

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Western Management Consultants
Suite 400, 4 King Street West
Toronto, ON, Canada M5H 1B6
Phone: 416 362 6863
Website: www.wmc.ca