AN INTERVIEW WITH TBM

DIGITAL MANUFACTURING STRATEGIES, ANALYTICS, THE LABOR SHORTAGE AND THE LEADERSHIP GAP

Ahead of the American Manufacturing Summit 2019, Generis Group spoke with TBM Consulting to discuss emerging digital technologies in manufacturing and the industry's labor shortage. In this Q&A, we discuss how manufacturers can prepare for, evaluate and implement digital solutions, the digital collection issue, machine maintenance programs, and the manufacturing industry's labor shortage and leadership gap.

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Ken Koenemann is the Vice President of Technology and Supply Chain at TBM Consulting Group. Ken is responsible for driving TBM's technology strategy, creating value-added technologies and services for client business operations. He is widely recognized for his expertise in translating lean principles to supply chain and customer-facing processes in manufacturing and service organizations. During his career, Ken has consulted with leading companies including Pella Corporation, WIKA Instrument Corporation, Owens Corning, Dell, Saint-Gobain and Carlisle Companies. Ken has specific expertise in value chain visioning, rapid deployment of improvement initiatives and working capital management.

Brian Cromer is the Managing Director of the Global Supply Chain Practice at TBM Consulting Group. He has 20 years of experience in consulting and industry with comprehensive knowledge of general management, supply chain management, lean business systems, and cost accounting. One of his key areas of focus is to help our operations and supply chain clients to navigate the emerging technology landscape by working with them to leverage enabling technologies to improve operational performance and profitability. Brian has cross-disciplinary experience in accounting, business management, operations management, and supply chain process improvement. He has experience driving strategy deployment, conducting operational diagnostics, optimizing inventory, improving quality, managing a P&L, aligning performance improvements to financial metrics and implementing lean-based management systems.

Brian Tilley is the Managing Director of Technology at TBM Consulting Group. He has spent more than 25 years in manufacturing and technology leadership roles. During the first half of his career, Brian "wore a hardhat", with responsibility for designing and implementing technology solutions. He's since focused on delivering clear business outcomes as a sales, operations management and consulting leader. Throughout his career he has focused on "lighting up manufacturing," exposing what's happening inside plants using M2M, SCADA, IIoT, manufacturing intelligence, and other manufacturing IT systems.

Emerging digital technologies are upending production and supply chain practices and promising a range of new capabilities for manufacturers. How should manufacturers evaluate and implement such solutions?

The buzz in manufacturing today is all about digital transformation. Industry 4.0, the Industrial Internet of Things, cognitive computing, artificial intelligence, and so on. Digital transformation means big changes, major disruptions, lengthy implementations and expenses with lots of zeros, which is scary to a lot of business owners, especially for manufacturers who tend to be conservative.

The vast majority of manufacturers have revenues of less than $250 million. Most of these firms can't afford to test multi-million-dollar solutions. Large corporations can spend $1 million for a pilot project and then millions more dollars for a broader rollout. Smaller companies may only have $500,000 to invest in total over two to three years.

Thankfully, it's not necessary to write a seven-figure check and launch a multi-year transformation to extract significant value from these new technologies. You can start by looking at the costs and benefits, target those capabilities that will be most beneficial to your operations, then develop a technology roadmap that will help maintain the best ROI for your business.

What exactly is a technology roadmap and how is it developed and used?

First, company leaders need to think strategically about the capabilities they want to build into their organization. What are the business benefits of those capabilities? Someone may try to convince you to collect a bunch of line-level data, or launch an IoT initiative, but you always have to consider the purpose.

- What will you do with the data?

- What do you expect to learn?

- How much will it save?

- Can it create new services that will drive more revenue?

There's no shortage of opportunities to do things better. We help leadership teams narrow down their options by talking about where they want to be in the future. We discuss how they want to deliver more value and the current pain points in the organization. Digital manufacturing investments can then be made incrementally to address those needs.

After defining the capabilities that they want to have, we use those capabilities to prioritize the specific investments and use cases for achieving them. Here's where you have to be careful. We've seen companies spend millions of dollars and have no idea what the business benefit of their investments are going to be. If you digitize something and there's no business benefit, then you've spent a lot of money for nothing.

For example, one company we are working with built a platform for collecting machine data on one line in one factory. The business benefit, they admit, is fuzzy. It has already cost them over $2 million. They have more than 40 lines in that facility alone. That's a lot of potential spending when you don't know what it's going to do for you.

What kind of preparation is necessary to get the most out of these digital manufacturing solutions?

You have to get your analog house in order before going digital. This goes back to the old saying, if you automate a bad process, all you get is an automated bad process.

We're talking about the basic ways that a company organizes and runs its plants. Are managers following effectively daily management practices and running the plant by the numbers? That means measuring performance against your plans, understanding any misses, determining root causes, and taking corrective actions. If you're not doing that yet, you're not ready for digital.

Before digitizing anything operations managers have to consider the impact on current processes and responsibilities. For example, if you start leveraging machine data to issue alerts when the process deviates from the defined parameters, what's the alert process? Who needs to be alerted? What are they supposed to do?

What about the data collection issue?

Collecting data is honestly not as big of a challenge as it's often made out to be. There are some older plants with older equipment where the data is not flowing, but there are ways to get the critical data that are fairly cheap. Sometimes the data is being captured but it is not being extracted, from control systems, for example.

The bigger issue is that most manufacturers are not using the factory floor data they're already collecting. You can capture all the data that you want but if people don't know what to do with it, and you don't have processes or tools to manage it, the data won't be used. Some of this data is providing better visibility into operations for tactical decision making. But it is rarely being used for higher value analytics applications, such as asking what-if questions or scenario planning.

To get going on the right path, first understand what data is already being collected. What value could that data provide? What insights could it give to current business performance? Then consider what other data might provide business value if it was being collected. You have to start small and work your way up to bigger applications.

With regard to these analytical capabilities, what could machine maintenance programs look like in the future?

Someday most maintenance will be driven by the machines and the equipment itself. Beyond some scheduled preventative maintenance, the equipment on the factory floor will tell technicians what needs to be done and in what priority order. Maintenance work will be managed more by exception rather than a set schedule.

That machine intelligence and visibility will dictate activities more than the maintenance team. It will determine how companies buy spare parts and their MRO (daily consumables, spare parts, tools and maintenance equipment). It will also guide capital expenditure planning because the machines will signal when they're getting close to the end of their useful life.

Again, manufacturers have a lot of work to do before embarking on a technology-driven approach to maintenance. One of the key issues we're asked to look at during operational due diligence projects is the level of deferred maintenance. We typically find huge gaps in day-to-day machine maintenance activities as well as maintenance skillsets. Very few manufacturers are anywhere close to using advanced analytics to drive their maintenance practices.

Manufacturers were struggling with labor and skills availability long before today's record-low unemployment rates. What's driving the long-term talent shortage? Have you seen any innovative solutions?

Manufacturing is not an attractive job for young people. They don't want to work in a factory. It doesn't pay enough and there are other jobs out there that are less taxing and more lucrative.

One of our clients is struggling with 50% turnover. To make their welding shop a better place to work they improved the lighting and air quality. They updated the break rooms and the bathrooms. They improved their onboarding process and gave people more money. They did all of that and the employee turnover rate still has not gone down.

Many of the places where manufacturing plants are located, especially those in more rural areas, don't have many people looking for work. The people you generally want to hire already have jobs. Manufacturers are having to reach further and further away from their locations to find people.

Human resource managers need to think creatively to fill vacancies. For example, one company we talked to went to Puerto Rico after Hurricane Maria. They recruited people who needed work to support their families. They flew them back to the mainland U.S., trained them, gave them a job and a shared house to live in (because there is very little rental housing where the plant is located). That's a creative, win-win solution.

Still, there's only so much that manufacturers can do to recruit people. They really need to figure out how to automate more of the work. The labor shortage is a capacity problem. Capacity shortages are solved by leveraging operational excellence and automation to improve productivity. You have to automate more of the work, even in administrative areas, so you need fewer people.

Direct labor isn't the only people-related challenge for manufacturers. What's happening on the leadership front?

The leadership gap is an even bigger problem than direct labor. As we said, there has been a steadily declining number of people interested in entering the manufacturing sector. There are even fewer who want to lead or who are capable of leading.

For many of our clients it is now taking four to six months to find people to fill key management and technical roles. Again, the people you want aren't the people who are available; those people already have jobs.

To maintain performance levels and keep moving forward, we are providing interim leaders to fill critical roles for some of our clients. These are very experienced people who can fill step in quickly on a contractual, project basis until HR can find and hire someone on a more permanent basis.

That's one way to bridge the leadership gap. Another issue is that many companies haven't spent enough time teaching supervisors and managers how to be good leaders. They teach them how to be technical people, how to run a line, but they don't teach them how to interact effectively with their people.

If you look at exit interviews, you'll often find that people aren't leaving their jobs because of pay, they're leaving because they don't like their boss. The best way to instill good leadership practices is with consistent coaching and mentoring.

One overlooked issue around the digitization of manufacturing are the skills required to support it. Traditional maintenance groups don't have the skills to service the new technology, and the IT organizations doesn't have the desire or ability to work with the new factory-level technology being installed. This talent gap could slow down future technology implementations and return on investment.

TBM Consulting specializes in operations consulting and supply chain consulting for manufacturers and distributors. We push the pedal down in your operations to make you more agile. And we help you accelerate business performance three to five times faster than your peers.

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919.471.5535