Manufacturing on the Move

From the rearview mirror to heads-up display: retrospective habits of manufacturing management

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Executive Summary

Manufacturing has historically been a retrospective proposition. It’s been a process of analyzing past customer demand, past supply availability, past production efficiency, past economic conditions, past sales performance and so on. Then, attempting to interpolate from all this historical data some reasonable semblance as to what the future might hold and then building to that future.

There are few controls on one’s memory. A purchasing agent charged with acquiring raw materials may remember with exaggerated acuity the wrath he or she bore from the plant manager when customer demand was missed due to insufficient supply. To compensate, the purchasing agent overstocks material, unnecessarily tying up resources.

The materials handler recalls the “counseling session” with the foreman when the line went down as a result of an empty material bin. To compensate, the materials handler maintains his or her own “safety” stock to hedge against future short stock situations.

The production worker knows too well the price paid when the line shuts down. To compensate, he or she keeps the line going whether or not the output meets company quality specs.

The frontline salesperson remembers the lost commission when he or she couldn’t deliver what the customer wanted. Resolved to protect future earnings, the salesperson pads his or her forecasts to ensure an adequate level of production and to avoid the ire of both customer and manager.

All along the way, predicting the future based on the past encourages waste, ties up resources and obscures the present – which will soon be the past from which the next future is interpolated.

In simpler times business cycles were measured in years rather than months, production was for the masses, customers didn’t expect so much and what expectations they had were relatively static. Though far from efficient, manufacturers could manage and survive driving by the rearview mirror.

Transformation of an Industry

Everything has changed and everything continues changing. Customers are not satisfied. At least, not for very long. Increasingly, the only thing satisfying customers is a steady stream of new products, lower prices and faster service. Customers no longer want something for nothing; they want everything for nothing or as close to it as they can possibly get.

With burgeoning competition coming from every industry and every region, they can get pretty close. As customer attention spans and product lifecycles continue to shrink there is little customer loyalty left and what loyalty there is can be bought.

In a time of unprecedented transparency and access to information – where your competition is literally a mouse-click away – manufacturers can ill-afford managing in retrospect. There is little safety in safety stock. The past tells us precious little about the present and much less about the future. Indeed, past experience has become a less accurate predictor of current and future conditions. There is no room for excess – excess drains what little margin may be left in manufactured goods themselves.

A Single Version of the Truth

For the past twenty years or so, technology has come to the manufacturer’s aid to better manage the discrete resources that must be amalgamated in the eventual production of a finished good. Automation has seen a steady migration from manual calculations of economic order quantity for raw materials and materials requirements planning (MRP I) to such things as manufacturing resource planning (MRP II), enterprise resource planning (ERP), supply chain management (SCM), product lifecycle management (PLM) and customer relationship management (CRM). Each successive wave promised to fulfill the missed promises of the previous and yet each “next big thing” has largely left managers underwhelmed.
The intention of this progression of technology solutions has been good and appropriate. The notion is to provide the organization with a single version of the truth from which everyone in the organization who makes decisions can make them. In theory, managers making decisions from the same set of data will make complementary decisions leading to a more effective, efficient and profitable enterprise.

Promises, Promises

In many cases, enterprise automation has fallen short of its promise. While providers of such applications and the legions of systems integrators they’ve spawned have set expectations unrealistically high, the reality is that implementing anything across a large, complex and increasing gelatinous organization is much more difficult than anyone imagined. And, despite mounting evidence to the contrary, many managers still want to believe it’s easier than it is. Organizational deployments require a granular analysis, documentation and assessment of business processes; the difficulty of which is seldom fathomed.

Enterprise software must be customized to support legitimate differences in business processes and workflow between business units, plant locations and product lines. Once implementation is complete, engendering adoption and ensuring compliance can be extraordinarily difficult.

Finally, assume the best of all circumstances: compliance is near universal and the organization enjoys a single version of truth. Unfortunately, the truth changes. Business activities – orders, production, shipments – change the truth. Generally, such changes are not reflected in real time nor are they communicated to those with a need to know in an expedient manner.

Management is done by printout which represents a single, historical version of the truth which is neither accurate nor shared. Anything in writing is either a draft or obsolete. Management by printout erodes much of the promised value of enterprise systems. Frontline personnel make less informed decisions and often suffer the productivity drain of calling in to some central information center – formal or informal – which has a more recent, though likely not current, version of the truth. In short, the inability to update and access information in real time represents substantial cost to the manufacturer. It is lost business, lost margin and, not infrequently, lost customers.

Manufacturing on the Move

Manufacturing, business and life are constantly on the move. We live in a world that is indisputably 24/7. We’re always on. People shop at all hours, work at all hours and play at all hours. Anything that attempts to limit us in time and space is not well-suffered. Companies must be possessed by a real-time/anytime agility enabling them to meet the unpredictable demands of a finicky market.

What does mobility mean to manufacturing? It’s more than wireless – it’s the structuring of the organization, the reengineering of business processes – it’s an organizational paradigm shift. Wireless technology is simply an enabler.

Applications

Wireless technology is making its mark inside the plant walls. As personal computers gradually replace programmable logic controllers and industrial Ethernet replaces proprietary protocols, wireless local area networks are finding a place in production. Such technologies offer to reduce maintenance, affording a high degree of reconfigurability and, as wireless technologies eventually converge, an unprecedented degree of integration.

In the warehouse and distribution center, mobile technologies provide a degree of accuracy and transparency previously unknown. Through location-based services, RFID and the like, warehouse managers will know precisely what they have and where it is. The need for “safety stock” is all but eliminated.

From an applications perspective, the ability to talk with people at virtually any time in virtually any area of the globe has dramatically changed the way we live and work. It’s changed our schedules and our expectations. With the relatively recent capability to access email wirelessly through any number of handheld devices, we have tapped the promise of improved productivity, previously unknown levels of responsiveness and, of course, teetered on the edge of potential imbalance.

While wireless voice and data offer the manufacturer extraordinary potential, their ubiquitous nature renders them table stakes rather than competitive distinction. The call for mobility has much greater things in store for manufacturing.

There is now, for the first time, the technology to share an accurate version of the truth across the organization. Mobile technologies enable real-time, remote access to enterprise systems and databases once locked stubbornly in the four walls of the enterprise.

Today’s service technician can receive trouble tickets, diagnose problems, order repair parts (with full knowledge of what’s in stock), and close trouble tickets all from a wireless device. He or she can be dynamically rerouted should specific expertise or a customer priority warrant it. The maintenance history of a given piece of equipment can be accessed at the customer’s premises with no need to call in and tie up not one but at least two precious – and expensive – resources.

Similarly, sales professionals have at their fingertips a customer’s complete history and up-to-the-minute information regarding inventory, pricing and promotions. Customers’ requirements may be immediately addressed and communicated across virtually every department of the company with a need to know.

Equally significant, what were once “back office systems” are now real-time enterprise information systems as current as the last remotely cleared trouble and the last remotely entered customer order. Decision-makers across the organization are empowered to make better
and faster decisions that are inherently more integrated with the customer-facing elements of the business.

Wireless mobility applications support the endless quest for innovative sources of customer value addressing the infinite variety of customer demands and expectations. Frontline personnel are able to offer real, significant and difficult-to-replicate differentiable value.

**Benefits**

Manufacturing on the move creates an agility, rendering the modern manufacturer reconfigurable with the ability to make and deliver products – and provide ancillary services – customers want. It’s the ability to sense and respond to market conditions and business cycles lasting weeks rather than months and years.

There is an inherent efficiency when everyone across the organization manages not by a shared version of history – management by printout – but rather by real-time, customer accurate information available at the point of decision. Improvements in productivity are realized, maximizing the return on investment on every unique bundle of assets: vehicles, machines, equipment, tools, inventory and people.

The end result is responsiveness – the ability to set, meet and exceed appropriate expectations. It is an ability to share customer demands across the organization, which of necessity makes the entire company more customer focused. Decisions can be made at appropriate levels throughout the organization since accurate information is available anywhere, anytime.

The manufacturer on the move has confidence in the integrity of its information systems enabling faster, better decisions. The voice of the customer is easily processed across the company rather than infrequently passed along by frontline personnel.

There is a mobility halo effect of sorts. Better, more timely information accelerates the organization and engenders a compelling sense of urgency. In the end, mobility is not a technology but an organizational transformation in response to a society and economy that refuse to hold still. It embodies responsiveness, agility, urgency, customer focus, organizational transparency and decisions made as close to the customer as possible – information at hand.

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