

Demand Driven Manufacturing

Synchronizing Demand with Production

November 2007



Executive Summary

Demand driven manufacturing involves a synchronized, closed loop between customer orders, production scheduling, and manufacturing execution; all while simultaneously coordinating the flow of materials across the supply chain. Creating such a network very often requires mature Lean initiatives, interoperating across disparate business processes and technologies, and, not surprisingly, the daring of visionary executives. To benchmark just how manufacturers are effectively achieving this, Aberdeen has surveyed over 300 manufacturing professionals, correlating operational performance to specific demand driven manufacturing initiatives.

Best-in-Class Performance

The value of demand driven manufacturing is tied to the results attributed to its use. In the following analysis, Aberdeen uses three Key Performance Indicators (KPIs) to distinguish the Best-in-Class. Across these metrics Best-in-Class manufacturers averaged the following performances:

- 97% On Time Delivery (OTD)
- Four days of safety stock in finished goods inventory
- Nine days of lead time

Which, when compared to Industry Average firms, accounts for a 10% increase in OTD, and over a 70% reduction in both safety stocks and lead times. Clearly, the Best-in-Class are achieving significantly better customer service with significantly lower levels of inventory and the key to this benchmark report is in determining just how the Best-in-Class are achieving these results.

Competitive Maturity Assessment

Survey results show that the firms enjoying Best-in-Class performance shared several common characteristics, which include:

- Standardize customer facing and inventory based processes across the enterprise; including capable to promise, production scheduling, and inventory replenishment processes.
- Establish executive ownership of demand driven manufacturing initiatives and establish cross-functional continuous improvement teams focused on demand driven manufacturing while aligning the objectives and metrics of both manufacturing and the supply chain.
- Transition traditional Lean initiatives from being completely cost reduction based to focusing on improving customer service and reacting to demand variability

Research Benchmark

Aberdeen's Research Benchmarks provide an in-depth and comprehensive look into process, procedure, methodologies, and technologies with best practice identification and actionable recommendations

"Quality and price are givens in today's electronics assembly market. The only differentiator we have over competition is if we can make and ship our products faster and the only way we can do this is by synchronizing customer orders with production and material flows."

~ George Semrad, Director
Strategic Operational Planning,
IMS Manufacturing

Required Actions

In addition to the specific recommendations in Chapter Three of this report, to achieve Best-in-Class performance, companies must:

- Aggregate automatically collected data from suppliers, customers, and the shop floor and utilize as actionable intelligence
- Leverage production planning and scheduling solutions that consider real-time constraints, including, bottlenecks, materials, and labor among others
- Integrate Enterprise Resource Planning (ERP), Manufacturing Execution Systems (MES), and the supply chain by layering Advanced Planning and Scheduling (APS) and Lean manufacturing to synchronize production with demand while stream-lining material-flow

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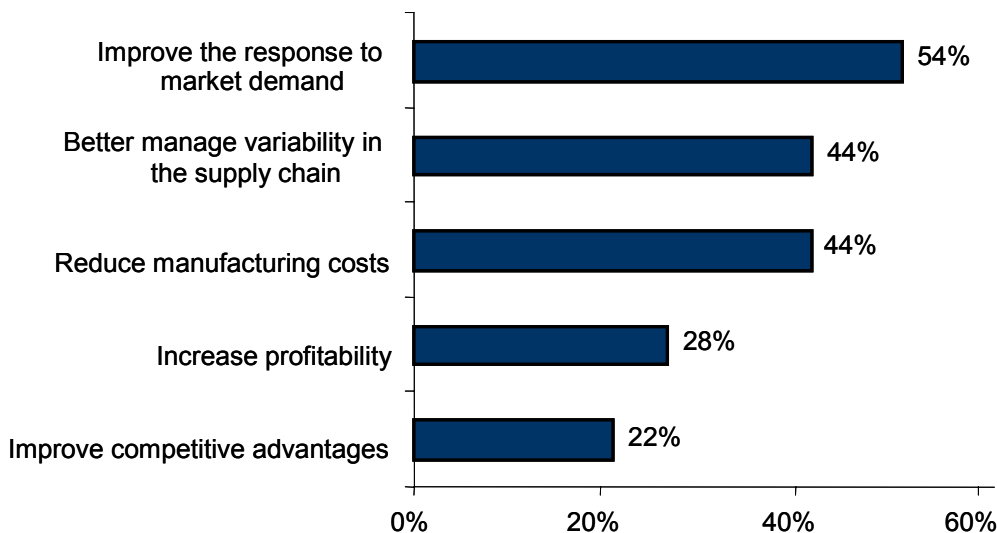
Chapter One: Benchmarking the Best-in-Class

In a world of increasing globalization, shrinking product lifecycles, and ever-present forecast inaccuracies, manufacturers must effectively balance lead time, Work in Progress (WIP), and capacity to both achieve and maintain competitive advantages. There is a sphere of thought gaining ground among global manufacturers that stresses the need to connect demand signals with manufacturing execution. In response, manufacturers have moved to establish interoperability between plant floor and enterprise technologies. This benchmark report specifically focuses on how manufacturers are synchronizing demand with production while managing WIP to reduce costs and improve operational performance. Demand Driven Manufacturing (DDM) stands out as not another Lean initiative, but one that transitions Lean from purely a bottom-line driver to a customer service initiative.

Flexible Manufacturing

Lean is generally thought of as a cost-saving program, in fact, Aberdeen has found that as many as 75% of manufacturers focus on Lean to reduce manufacturing costs. However, this new research has found that DDM stands out as an initiative undertaken to improve customer service and better respond to demand variability. Fifty-four percent (54%) of all survey respondents indicated that improving response to market demand was a top driver of DDM. Reducing manufacturing costs was actually the second most prevalent, with 41% of respondents indicating this pressure.

Figure 1: Top Five Pressures to Manage Performance Information



Source: Aberdeen Group, November 2007

Fast Facts

56% of manufacturers synchronize demand signal to manufacturing execution to improve the response to market demand and to better manage variability in the supply chain.

Best-in-Class enterprises significantly out perform their competition in all three KPIs. These manufacturers enjoy:

- ✓ 97% On Time Delivery (OTD)
- ✓ Four days Finished Goods Inventory (FGI)
- ✓ Nine days lead time

Achieving market responsiveness is a need that resonates across all industries and DDM is a response to this need applicable across discrete, batch, process, and mixed-mode manufacturers. However, this is often misunderstood by those that believe Lean is synonymous with the Toyota Production System and its storied legacy in the discrete industries.

When we consider the complex needs of batch and process manufacturers, these asset-intensive enterprises are often selling all they can produce. In such a situation the constraints may change, shifting the focus from sequencing and material flow to asset-utilization and product mix, but the end result remains the same, with this synchronization often having just as strong a role in customer service and profitability as has been traditionally seen in more discrete environments.

The Maturity Class Framework

Aberdeen used three key performance criteria to distinguish the Best-in-Class from Industry Average and Laggard organizations. These are:

- **On Time Delivery (OTD)** measured as a percentage (1 to 100) of products delivered on time as compared to total original commitment
- **Finished Goods Inventory (FGI)** measured as days of coverage: total FGI / average demand per day
- **Lead time** measured in days as the time from order receipt to the time of order delivery

Respondents were divided among three categories based on their performance in each of these metrics: the bottom 30% of performers (Laggards), the top 20% of performers (Best-in-Class), and the middle 50% (Industry Average). Table 2 displays the aggregated performance of Best-in-Class, Industry Average, and Laggard organizations.

“To synchronize material flow with production we use a replenishment methodology that sets buffers based on estimated usage and lead times. These are reviewed and adjusted based on actual pull from the market. We use a forecast to set a baseline, but the replenishment process allows us to react more quickly and respond faster to market shifts that were unpredicted. The philosophy is based on Eli Goldratt's Theory of Constraints. It is hard to describe completely in such a short time, but it is a strong method that allows us to meet demand with lower inventories and not be so dependent on an unreliable forecast - it really is difficult for anyone to predict the future, especially in shifting markets like ours.”

~ Jacky Williamson, Trade Administrator, Ditch Witch

Table 1: Top Performing Manufacturers Earn Best-in-Class Status

Definition of Maturity Class	Mean Class Performance
Best-in-Class: Top 20% of aggregate performance scorers	<ul style="list-style-type: none"> ▪ 97% OTD ▪ Four days FGI ▪ Nine days lead time
Industry Average: Middle 50% of aggregate performance scorers	<ul style="list-style-type: none"> ▪ 87% OTD ▪ 14 days FGI ▪ 33 days lead time
Laggard: Bottom 30% of aggregate performance scorers	<ul style="list-style-type: none"> ▪ 75% OTD ▪ 32 days FGI ▪ 75 days lead time

Source: Aberdeen Group, November 2007

Laggard organizations have an average lead time and FGI that are eight times longer than Best-in-Class performers. While the Industry Average fares better, with about half the lead time and FGI of Laggard organizations; they still indicate times that are 3.5-times longer than that reported by the Best-in-Class, on average. If nothing else, this should drive home the point that it is not so much what companies are doing to adopt demand driven manufacturing, but how they are doing it.

The Best-in-Class PACE Model

Effectively synchronizing demand with execution to achieve demand driven manufacturing necessitates the adoption of multiple strategic initiatives and leverage interoperable technologies and business processes to ensure the success of these initiatives.

Table 2: The Best-in-Class PACE Framework

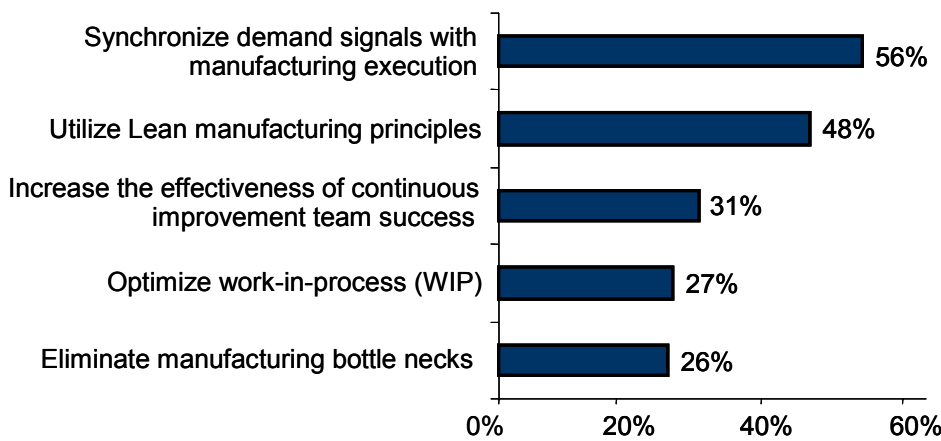
Pressures	Actions	Capabilities	Enablers
<ul style="list-style-type: none"> ▪ Improve the response to market demand 	<ul style="list-style-type: none"> ▪ Synchronize demand with manufacturing execution ▪ Utilize Lean manufacturing principles 	<ul style="list-style-type: none"> ▪ Capable to promise processes are standardized across the enterprise ▪ Inventory replenishment promises are standardized across the enterprise ▪ Executive sponsorship of demand driven manufacturing initiatives ▪ Management goals, objects, and metrics are coordinated to align manufacturing and supply chain operations ▪ Manufacturing performance and customer order data is integrated and used as actionable intelligence ▪ Throughput / production efficiency measured daily or in real time ▪ OTD measured daily or in real time 	<ul style="list-style-type: none"> ▪ Lean manufacturing software ▪ Advanced Planning and Scheduling (APS) ▪ Automated non-conformance alerting ▪ Automated WIP limiting tools ▪ Automated lot sizing (optimized based on Takt Time and Heijunka)

Source: Aberdeen Group, November 2007

Synchronizing Demand with Production

Synchronizing demand signals with manufacturing execution is the number one strategic action being taken by Best-in-Class manufacturers to better respond to variability in demand (Figure 2). Additionally, it is clear that the number one and two market pressures and number one and two strategic actions are very closely related. Naturally, manufacturers that wish to improve their response to demand should synchronize demand with manufacturing execution and those manufacturers wishing to reduce manufacturing costs should utilize tradition Lean manufacturing principles. However, it is not clear just how manufacturers are supposed to connect demand signals with manufacturing execution and what role traditional Lean principles play in this endeavor.

Figure 2: Strategic Actions



Source: Aberdeen Group, November 2007

To identify how this strategic action can become a reality using demand driven manufacturing, Aberdeen will correlate specific business capabilities and technology enablers being used by the Best-in-Class to create a closed loop between order entry, production scheduling, and execution, which simultaneously manages the flow of raw material across the supply chain.

Aberdeen Insights - Strategy

Many companies are taking steps to synchronize demand signals with manufacturing execution. It is not an action that sees particular differentiation in adoption of Best-in-Class performers. Adoption of this action was about on par for Laggards (55%), Industry Average (58%), and Best-in-Class (54%). This is not something that was limited to this action. Aberdeen found that companies were about on par on all actions. Companies are in relative agreement on what they need to do in order to implement DDM.

Synchronizing demand with production is not a well defined concept - and simply listing it as the number one strategic action does not mean that companies are clear on what it means to implement it.

Where we find this difference is not in what companies are doing. But how they are doing it. While companies across the competitive framework are trying to synchronize, but those that are successful are taking a different approach. In the next chapter, we will see what industry leaders are doing to achieve these gains.

Chapter Two: Benchmarking Requirements for Success

Manufacturers achieving optimal operational results utilize a specific combination of underlying business processes and enabling technologies. These include scheduling and execution processes that are standardized across the enterprise and based on best practices. These processes are coupled with automated exception alerting, automated work flows, and WIP limiting tools such as CONWIP and CONLOAD to ensure optimal decision making and efficient operations.

Aberdeen Insights - Case Study

Groschopp, Inc. was founded in 1930 and is now a multinational manufacturer of small motor drives and fractional horsepower motors with headquarters in Germany and manufacturing facilities in Germany, Ireland, Poland, and the United States. As is true with many multi-national manufacturers, Groschopp faced challenges around shop floor control, complex scheduling, and inventory management. In line with the findings of this report, improving these aspects of manufacturing operations and achieving Best-in-Class status is in part determined by the technology enablers adopted and the degree of interoperability achieved. To address these challenges, Groschopp adopted and integrated both advanced scheduling and inventory control systems, which resulted in demonstrable benefits to both on time delivery and operating costs. Groschopp associates both of these benefit to the more efficient use of inventories and more effectively balanced production scheduling.

Competitive Assessment

The aggregated performance of surveyed companies determined whether they ranked as Best-in-Class, Industry Average, or Laggard. In addition to having common performance levels, each class also shares characteristics in five key categories: (1) **process** (the management and automation of processes across the enterprise); (2) **organization** (executive ownership and enterprise coordination); (3) **knowledge management** (integration customer order data and performance data as actionable intelligence); (4) **technology** (the software and functionalities that support DDM); and (5) **performance management** (measuring the metrics that drive synchronization of demand with manufacturing processes). These characteristics (identified in the following tables) serve as a guideline for best practices, and correlate directly with Best-in-Class performance across the key metrics.

Standardization

A first step to achieving a synchronized organization is to standardize the processes that define operations. This is an enterprise-wide program that includes both customer facing processes such as those processes that define

Fast Facts

- √ 62% of Best-in-Class manufacturers have standardized Inventory replenishment processes across the enterprise
- √ 65% of Best-in-Class manufacturers have eliminated ad-hoc processes for managing FGI
- √ 68% of Best-in-Class manufacturers have established executive sponsorship of demand driven manufacturing initiatives
- √ 63% of Best-in-Class manufacturers have established cross-functional continuous improvement teams for demand driven manufacturing activities
- √ 51% of Best-in-Class manufacturers integrate manufacturing performance and customer order data and use as actionable intelligence

how capable and available to promise dates are calculated, as well as more internal processes such as those that define the ways manufacturers purchase and replenish inventories.

In conjunction with the standardization of processes, we also see a trend to eliminate ad hoc management practices. Specifically, the management of WIP and FGI are no longer ad hoc and has been coordinated by setting upper and lower control limits to optimize the flow of materials through the supply chain.

Table 3: Processes

	Best-in-Class	Industry Average	Laggards
Process	Inventory replenishment processes are standardized across the enterprise		
	62%	44%	31%
	Available to promise processes are standardized across the enterprise		
	48%	32%	25%
	Capable to promise processes are standardized across the enterprise		
	41%	21%	10%
	Advanced Planning and Scheduling (APS) processes are standardized across the enterprise		
	37%	23%	15%
	Order prioritization and customer tiering processes are standardized across the enterprise		
	42%	32%	26%
Elimination of finished goods inventories management based on an ad hoc basis			
65%	49%	30%	

Source: Aberdeen Group, November 2007

“We are now in the process of automating our systems across several of our plants and product lines. This integration connects the dots in a systematic method so we get a true picture of what customer demand is, what our scheduling issues are, identify capacity constraints and monitor the reliability of our production.”

~Cathy Stewart CPIM Planning Manager, Bulk APIs Covidien

Developing Actionable Intelligence

Automated customer order collection is not enough. A large number of companies across the performance framework are automatically collecting performance data and customer order data (Table 4). Best-in-Class performers differentiate themselves by integrating this data for use as actionable intelligence. This is actually very insightful when we combine the above finding with the differentiation between the standardization of available and capable to promise processes. There is a clear relationship between standardizing processes, automating collection, and leveraging this data as actionable intelligence. The Best-in-Class are twice as likely as the Industry Average to understand and act upon this relationship.

Table 4: Knowledge Management

	Best-in-Class	Industry Average	Laggards
Knowledge Management	Manufacturing performance data is collected with an automated technology		
	41%	35%	32%
	Manufacturing performance and customer order data is integrated and used as actionable intelligence		
	51%	51%	51%

Source: Aberdeen Group, November 2007

Best-in-Class manufacturers are also showed as more likely to utilize technology that is constraint-based and integrated with demand and material usage (Table 5). This compliments their use of performance and customer order data as actionable intelligence. Additionally, these firms have eliminated disparate Lean initiatives that Silo best practices. These are being replaced with enterprise-wide initiatives with a focus on developing the organizational flexibility to respond effectively to customer demand.

“We have a scheduling package that uses a relational database to link customer orders and scheduling. We first integrated scheduling and production in two of our manufacturing departments about five years ago using Lean manufacturing principles. This has allowed us to synchronize the flow of materials by linked departments and maintains very little WIP and small staging areas.”

~ Jeff Huber, Vice President Operations, Intercon Chemical Company

Table 5: Knowledge Management

	Best-in-Class	Industry Average	Laggards
Knowledge Management	Production schedules are generated using an automated technology and are based on production constraints, actual consumption, and market demand		
	43%	31%	19%
	Production planning and operations is based solely on standard MRP (material resource planning)		
	51%	30%	22%

Source: Aberdeen Group, November 2007

Coordination and Functionality

The majority of Best-in-Class manufacturers have executive sponsorship of demand driven manufacturing initiatives, while the minority of Industry Average and Laggards have executive sponsorship.

Interestingly this is a change from the May 2007 [Lean Scheduling and Execution](#) report, where Best-in-Class performers showed as no more likely to have executive sponsorship of Lean scheduling and execution. This could be associated with the change of strategic actions where Best-in-Class executives are now more concerned with synchronization than traditional Lean tools.

Executive investment in DDM teams manifests in the establishment of cross-functional continuous improvement teams focused on demand driven manufacturing initiatives. It also results in enterprise alignment of management goals, objectives and metrics across the supply chain.

Table 6: Organization

	Best-in-Class	Industry Average	Laggards
Organization	Executive sponsorship of demand driven manufacturing initiatives.		
	68%	49%	37%
	Establish cross-functional continuous improvement teams for demand driven manufacturing activities.		
	63%	35%	41%
	Management goals, objectives, and metrics are coordinated to align manufacturing and supply chain operations.		
	54%	41%	35%

Source: Aberdeen Group, November 2007

Performance Measurement

Best-in-Class organizations recognize the value of real time / event based monitoring. They are more likely to measure the KPIs that relate directly to the velocity of manufacturing processes - i.e. manufacturing cycle times and change over times (Table 7). These also play a significant role in Lean scheduling and constraint based scheduling.

Table 7: Top Three KPIs Measured by the Best-in-Class

KPIs	Best-in-Class	All Others
OTD	94%	88%
Manufacturing cycle times	58%	37%
Change over times	42%	25%

Source: Aberdeen Group, November 2007

Measuring customer facing metrics in real time (i.e. lead time and on time delivery) provides significant value to manufacturing organizations, which helps with the other end of synchronizing demand with execution.

The other set of metrics that are relevant to DDM are the traditional manufacturing metrics such as throughput and yield (Table 8). These relate to the customer facing metrics are one layer removed.

Table 8: Performance Management

	Best-in-Class	Industry Average	Laggards
Performance Measurement	OTD is measured in real time and event based		
	19%	10%	6%
	Lead time is measured in real time and event based		
	52%	28%	19%

Source: Aberdeen Group, November 2007

Technology

Interestingly, neither the use of ERP nor MES when considered alone significantly differentiates Best-in-Class performance. Both the use of Lean manufacturing solutions and advanced planning and scheduling solutions do differentiate Best-in-Class, but they are both still emerging technologies and are only being used by a minority of the Best-in-Class. Beyond using these technologies independently, the true differentiator for Best-in-Class performance is the specific way manufacturers interoperate between these disparate technologies.

Table 9: Technology Enablers

	Best-in-Class	Average	Laggards
Technology	Supporting technology currently automated		
	<ul style="list-style-type: none"> ▪ 28% Lean manufacturing software ▪ 27% APS software 	<ul style="list-style-type: none"> ▪ 9% Lean manufacturing software ▪ 20% APS software 	<ul style="list-style-type: none"> ▪ 9% Lean manufacturing software ▪ 17% APS software

Source: Aberdeen Group, November 2007

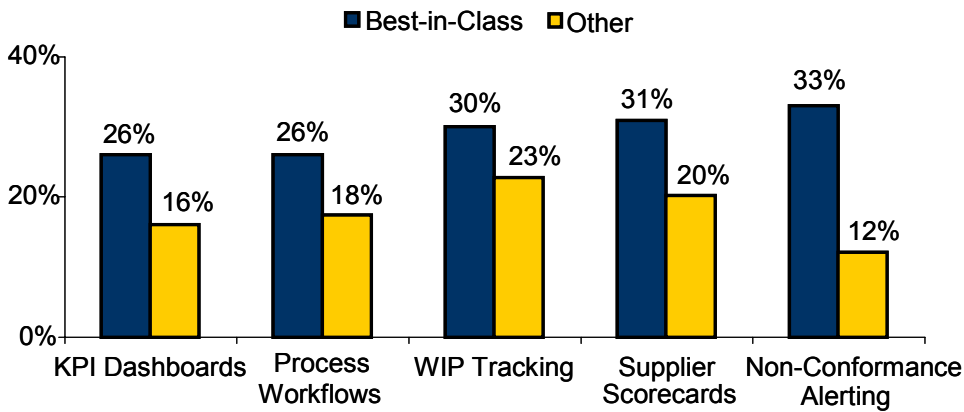
Beyond the use of broad technology categories such as ERP, MES, Lean manufacturing, or APS, there are specific features and functionalities that can be delivered by many of the solutions that are specifically correlated to Best-in-Class performance. When these enablers are considered, there are two broad categories: those that are traditionally associated with manufacturing intelligence and those that are associated with Lean manufacturing and controlling the flow of materials through the supply chain. Both are associated with Best-in-Class performance with a slight bias towards the use of manufacturing intelligence solutions. This is actually not surprising, especially when there is some context added to this finding. A lot has been previously said for creating actionable intelligence out of automated data collection; but how is this really achieved? By using automated workflows, non-conformance alerting, and KPI dashboards simultaneously, decision makers can receive the right data, at the right time, and in time to make informed decisions that improve operational

We utilize a number of technologies to measure our Lean initiatives. We're currently focusing on the integration of Lean to the Logistics portion of the business. This area pretty much operates autonomously from other disciplines with very little results vs. plan measures regarding cost, delivery, inventory levels, non transit logistics costs, equipment and driver utilization / efficiencies and discrete event simulation technology in support of flexible scheduling of materials. By integrating these areas we hope to gain demonstrable benefits to these metrics

~ Program Manager, Mid-Market Manufacturer, Automotive

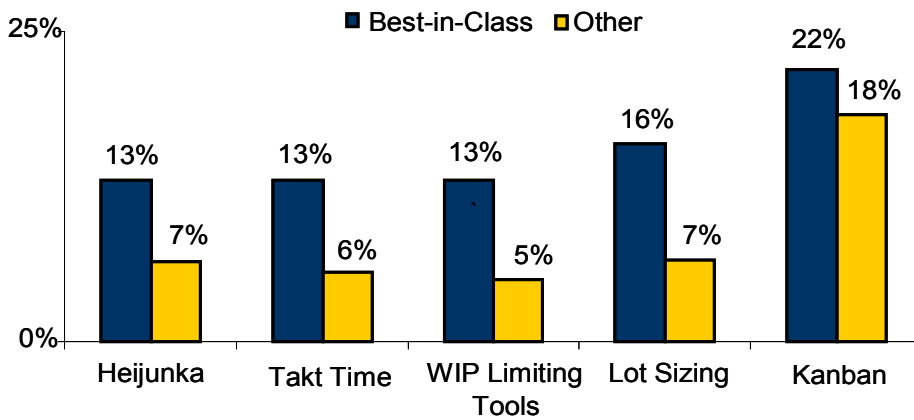
performance and allow manufacturers to reduce the inventories needed to maintain desired customer service levels.

Figure 3: MI and MES Based Technology Enablers



Source: Aberdeen Group, November 2007

Figure 4: Lean Manufacturing Based Technology Enablers

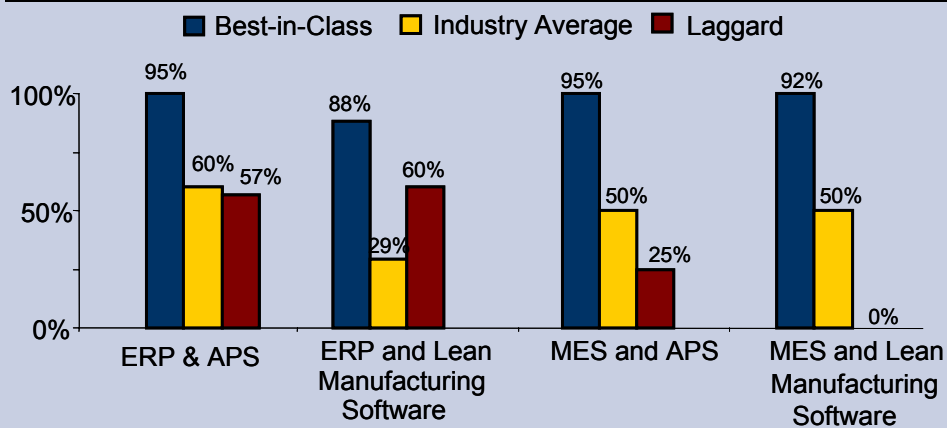


Source: Aberdeen Group, November 2007

Aberdeen Insights - Technology

The crucial touch-point for integrating technologies is utilizing APS and Lean as a layer between ERP and MES. Best-in-Class manufacturers are nearly two times more likely to utilize this architecture and this implies that the true value of interoperability, in regards to demand driven manufacturing, is in closing the loop between demand and production by integrating MES with ERP by leveraging the analytics provided by APS and Lean Manufacturing.

Figure 5: Share of Manufacturers with Real-Time Interoperability Between Disparate Technologies



Source: Aberdeen Group, November 2007

Chapter Three: Required Actions

Whether a company is trying to move its performance from Laggard to Industry Average, or Industry Average to Best-in-Class, the following actions will help spur the necessary performance improvements:

Laggard Steps to Success

- Transition traditional Lean initiatives from being completely cost based to focusing on improving customer service and reacting to demand variability. This will be the foundation for implementing an effective demand driven manufacturing Initiative.
- Establish executive ownership of demand driven manufacturing initiatives and establish cross-functional continuous improvement teams focused on demand driven manufacturing while aligning the objectives and metrics of both manufacturing and the supply chain departments.
- Standardize customer facing and inventory based processes across the enterprise; including capable to promise, production scheduling, and inventory replenishment processes.

Industry Average Steps to Success

- Aggregate automatically collected data from suppliers, customers, and the shop floor and utilize as actionable intelligence, this is best accomplished by simultaneously using automated work flows, non-conformance alerting and KPI dashboards.
- Leverage production planning and scheduling solutions that optimize across real-time constraints, including, manufacturing bottlenecks, materials, and labor among others.
- Implement an automated Lean manufacturing solution to stream-line material flow across the enterprise. Such a solution limits the amount of WIP in the system while simultaneously smoothing production.

Best-in-Class Steps to Success

- Begin to measure, as event-based or in real-time, customer facing metrics such as lead time and on time delivery. This will allow your organization to improve the effectiveness of production scheduling, material flow, and ultimately, decision making as a whole.
- Integrate ERP, MES, and the supply chain by layering APS and Lean manufacturing to synchronize production with demand while stream-lining material flows. This will truly allow your organization to achieve demand driven manufacturing.

Fast Facts

- √ Best-in-Class manufacturers enjoy 10% more OTD, 70% lower FGI, and 70% shorter lead times
- √ Best-in-Class manufacturers are over three-times more likely to use Lean manufacturing software and are over two-times more likely to use APS solutions
- √ Best-in-Class manufacturers are nearly twice as likely to integrate APS and Lean manufacturing software between MES and ERP

Aberdeen Insights – Summary

To achieve demand driven manufacturing, enterprises must focus on synchronizing demand with manufacturing execution. To accomplish this, two major sets of business processes must be improved: those defining the customer order process and those defining the material flow process.

To address the first, manufacturers must become customer centric by measuring against on time delivery metrics. To improve these metrics, manufacturers should be integrating available and capable to promise calculations with real time manufacturing data. Similarly, to address the second, manufacturers must focus on finished goods and work in process inventories all the way from manufacturing operations through to the customer. Again, focusing on the right metrics is important, and to improve these metrics production schedules should be generated using real-time manufacturing data, bottleneck constraints, and actual consumption. Additionally, these scheduling tools should be used in conjunction with WIP limiting Lean manufacturing tools such as kanban, conWIP, or conLOAD.

As the research has shown, manufacturers that have successfully optimized these key business processes have achieved demand driven manufacturing and are enjoying, on average: 10% more on time deliveries, 70% lower finished goods inventories, and 70% shorter lead times.

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Appendix A: Research Methodology

In September and October of 2007, Aberdeen examined the use, the experiences, and the intentions of more than 300 enterprises.

Aberdeen supplemented this online survey effort with telephone interviews with select survey respondents, gathering additional information on demand driven manufacturing strategies, experiences, and results.

Responding enterprises included the following:

- *Job title / function:* The research sample included respondents with the following job titles: manager (36%); director (15%); vice president (7%); senior management (15%).
- *Industry:* The research sample included respondents from the manufacturing industry. The largest vertical segments included: industrial equipment manufacturing (22%); aerospace and defense (16%); automotive (14%); and food and beverage (10%).
- *Geography:* The majority of respondents (60%) were from North America. Remaining respondents were from the Asia-Pacific region (14%) and Europe (19%).
- *Revenue:* 34% of respondents were from large enterprises (annual revenues above US\$1 billion); 36% were from midsize enterprises (annual revenues between \$50 million and \$1 billion); and 39% of respondents were from small businesses (annual revenues of \$50 million or less).

Solution providers recognized as sponsors of this report were solicited after the fact and had no substantive influence on the direction of the Demand Driven Manufacturing Benchmark Report. Their sponsorship has made it possible for Aberdeen Group to make these findings available to readers at no charge.

Study Focus

Responding manufacturing executives completed an online survey that included questions designed to determine the following:

- √ The degree to which DDM is deployed in their operations and the financial implications of the technology
- √ The structure and effectiveness of existing DDM implementations
- √ Current and planned use of DDM to improve operational performance
- √ The benefits, if any, that have been derived from DDM initiatives

Table 10: The PACE Framework Key

Overview
<p>Aberdeen applies a methodology to benchmark research that evaluates the business pressures, actions, capabilities, and enablers (PACE) that indicate corporate behavior in specific business processes. These terms are defined as follows:</p> <p>Pressures — external forces that impact an organization’s market position, competitiveness, or business operations (e.g., economic, political and regulatory, technology, changing customer preferences, competitive)</p> <p>Actions — the strategic approaches that an organization takes in response to industry pressures (e.g., align the corporate business model to leverage industry opportunities, such as product / service strategy, target markets, financial strategy, go-to-market, and sales strategy)</p> <p>Capabilities — the business process competencies required to execute corporate strategy (e.g., skilled people, brand, market positioning, viable products / services, ecosystem partners, financing)</p> <p>Enablers — the key functionality of technology solutions required to support the organization’s enabling business practices (e.g., development platform, applications, network connectivity, user interface, training and support, partner interfaces, data cleansing, and management)</p>

Source: Aberdeen Group, Month 2007

Table 11: The Competitive Framework Key

Overview	
<p>The Aberdeen Competitive Framework defines enterprises as falling into one of the following three levels of practices and performance:</p> <p>Best-in-Class (20%) — Practices that are the best currently being employed and are significantly superior to the Industry Average, and result in the top industry performance.</p> <p>Industry Average (50%) — Practices that represent the average or norm, and result in average industry performance.</p> <p>Laggards (30%) — Practices that are significantly behind the average of the industry, and result in below average performance.</p>	<p>In the following categories:</p> <p>Process — What is the scope of process standardization? What is the efficiency and effectiveness of this process?</p> <p>Organization — How is your company currently organized to manage and optimize this particular process?</p> <p>Knowledge — What visibility do you have into key data and intelligence required to manage this process?</p> <p>Technology — What level of automation have you used to support this process? How is this automation integrated and aligned?</p> <p>Performance — What do you measure? How frequently? What’s your actual performance?</p>

Source: Aberdeen Group, Month 2007

Table 12: The Relationship Between PACE and the Competitive Framework

PACE and the Competitive Framework – How They Interact
<p>Aberdeen research indicates that companies that identify the most impactful pressures and take the most transformational and effective actions are most likely to achieve superior performance. The level of competitive performance that a company achieves is strongly determined by the PACE choices that they make and how well they execute those decisions.</p>

Source: Aberdeen Group, Month 2007

Appendix B: Related Aberdeen Research

Related Aberdeen research that forms a companion or reference to this report include:

- [Lean Scheduling and Execution](#), May 2007
- [There is No Execution without Integration: MES Adoption Drives Performance](#), March 2007
- [Manufacturing Flexibility: Synchronizing the Shop Floor and Supply Chain](#), January 2007

Information on these and any other Aberdeen publications can be found at www.Aberdeen.com.

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