



SHOP FLOOR PRODUCTIVITY INVESTMENTS THAT DRIVE MANUFACTURING GROWTH

Survey Results



EXECUTIVE SUMMARY

- 76% of manufacturers say improving shop floor productivity is their leading growth strategy for 2019.
- 61% are prioritizing operational improvements in 2019. Increasing sales to existing customers and achieving greater cost optimization and reduction (both 53%) is a close 2nd and 3rd.
- 58% are unable to meet production demand due to a lack of skilled labor availability.
- Manufacturers' greatest investment priorities for 2019 include investing in machinery upgrades, acquiring smart, connected machinery (both 41%) and investing in real-time monitoring/Manufacturing Execution Systems (MES) (38%).

Gearing-up for greater growth by streamlining shop floor productivity dominates manufacturers' funding and operating strategies today. The fastest growing manufacturers are capable of quickly converting shop floor productivity into stronger customer relationships that lead to successful new products. They're excelling at meeting and exceeding customer expectations as measured by improved quoting and pricing accuracy, order cycle times, perfect order performance and more.

Decision Analyst's recent survey of 150 North American manufacturers completed in collaboration with DELMIAworks and Dassault Systèmes provides a timely glimpse into the top investment strategies, greatest barriers to growth, and the areas of greatest and least tech investment in manufacturing today. The survey takes a multifaceted view of manufacturing, triangulating their investment priorities and barriers to growth in 2019.

Manufacturers growing 10% a year or more are investing in machinery upgrades, next generation machines, real-time monitoring and MES to achieve greater speed, scale, visibility and to stay competitive by gaining greater shop floor productivity. For many manufacturers, 2018 was a year of record revenue and profit gains. The majority of respondents growing 10% or more a year excel at orchestrating their ERP, MES and Quality Management Systems to achieve continuous improvement and production goals. According to the survey, manufacturers growing 10% or more a year have one or more production shifts running autonomously, with all sharing the goal of achieving lights-out manufacturing.

METHODOLOGY

DELMIAworks and Dassault Systèmes created the survey and collaborated with Decision Analyst to have 150 DELMIAworks customers and prospects interviewed in February 2019. Respondents were offered \$20 Amazon Gift Cards as incentives to complete the survey. A second series of interviews were completed with manufacturers growing 10% or more per year to gain greater insights into this group's success. Statistical analysis of manufacturers growing 10% a year or more were completed following the second interviews.

EXPLORING MANUFACTURER'S GROWTH STRATEGIES FOR 2019

Manufacturers are prioritizing shop floor productivity above any other growth strategy by a wide margin today. Those growing 10% a year or faster have developed a unique series of process and production skills that enable them to translate their machinery & plant investments into greater production run flexibility and quality. They are translating machinery upgrades and new machinery purchases into faster time-to-market and new products quicker than competitors. They're capitalizing on these strengths by capturing more revenue from existing customers while winning new ones.

The following are the growth strategies manufacturers are concentrating on in 2019:

- **Improving shop floor productivity is the goal a majority of manufacturers are working to achieve in 2019, and they're relying on a broad base of approaches and technologies to get there.** 76% of all manufacturers prioritize improving shop floor productivity as their most valuable growth strategy, 1.4 times more important than marketing improvements to drive more leads (44%) or growing partnership-based revenue (31%). Manufacturers growing 10% a year or faster are investing in robotics to overcome skilled labor shortages, combined with investing more in Quality Management Systems to improve inconsistent supplier quality compared to their peers. All manufacturers interviewed are investing to increase shop floor productivity and operational improvements so they can offer short-notice production runs to their customers, improve product quality, and consistently meet on-time delivery dates. The lack of skilled labor available for meeting production demand continues to be the greatest barrier to growth. Manufacturers are turning to robotics and the series of labor strategies mentioned later in this report to meet production schedules. *Figure 1* compares top manufacturing priorities, growth strategies, and growth barriers.

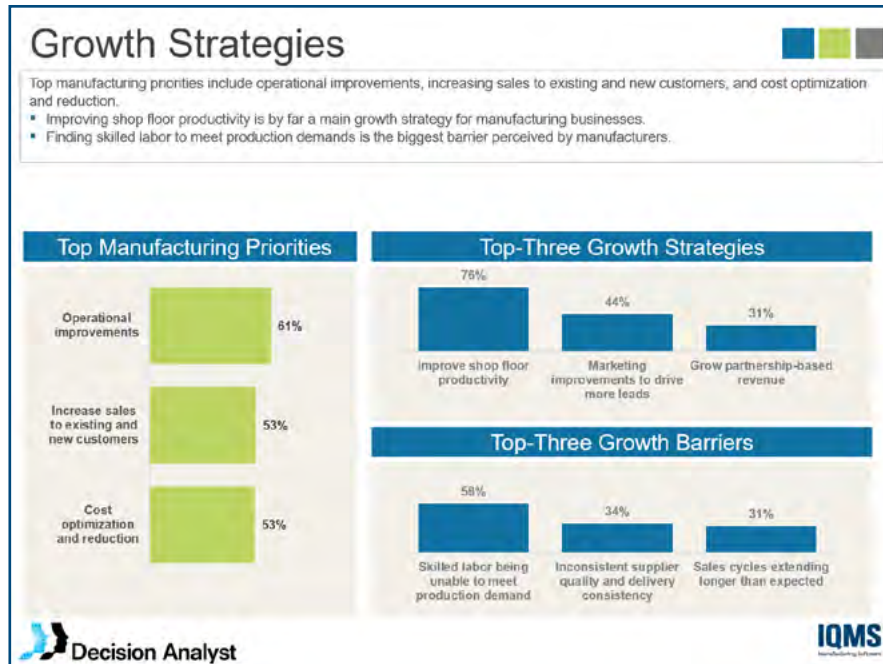


Figure 1

- Manufacturers' greatest investment priorities for 2019 are existing machinery upgrades and acquiring new smart, connected machines to drive greater shop floor productivity.** For many manufacturers, 2018 was a record year for revenue with the majority looking to reinvest in their shop floors to drive greater productivity. 41% of manufacturers are reinvesting the profits they earned in 2018 into existing machinery updates, including production and process monitoring software. An additional 41% are investing in new smart machinery that can directly interact with production software and robotics. 73% of manufacturers surveyed having fully depreciated their machinery. 29% of all manufacturers are investing in robotics to alleviate the skilled labor shortages that leave them unable to meet production demand. In addition, 42% of those manufacturers growing 10% or more are actively piloting and introducing robotics to meet existing production forecasts and take on new customers in response to the chronic labor shortage the industry is facing.

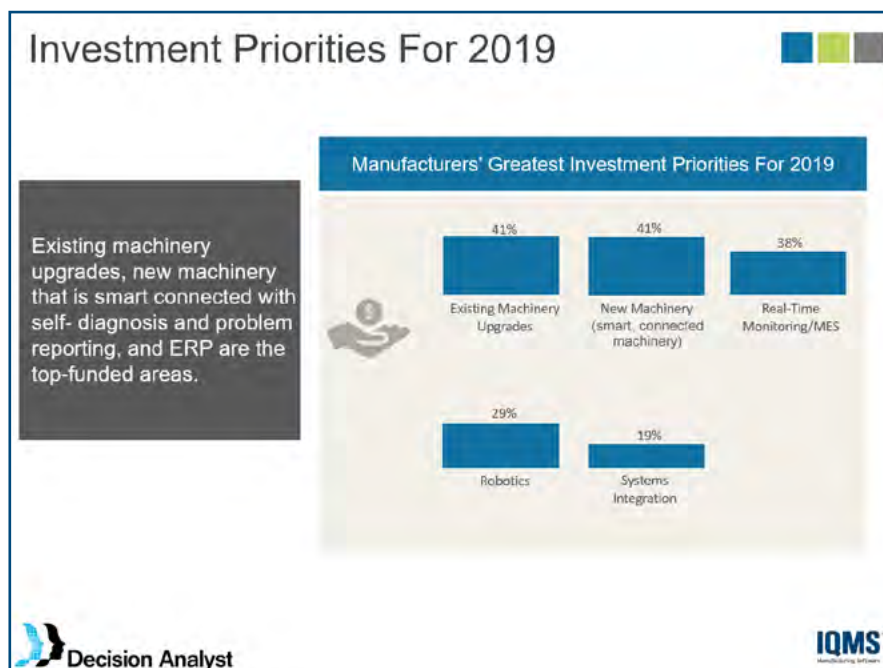


Figure 2

- Investing in improving product and service quality fuels growth, keeps customers for life and leads all technology spending in 2019. Manufacturers are most focused on how they can excel as suppliers in 2019 while also overcoming the growth barrier of inconsistent supplier quality and delivery consistency. These two factors are motivating them to increase their investments in Quality Management. Taken together, the top technologies manufacturers are adopting in 2019 defines their roadmap for this and future years' operations. The study found that Quality Management adoption is growing in Aerospace & Defense (A&D) this year with 73% of manufacturers surveyed saying this is a priority. 68% of plastics manufacturers are adopting Quality Management to streamline audits. 59% of fabricated metal manufacturers are adopting Quality Management this year to stay competitive. Manufacturers growing 10% or more a year are more likely to be combining Quality Management and real-time monitoring to reduce scrap rates, increase yield rates by machine and improve on-time delivery performance. For plastics manufacturers, real-time monitoring is helping to build the data, insight and knowledge foundation they need to transition to one or more lights-out manufacturing shifts. **Figure 3** compares the most popular technologies manufacturers are investing in this year.

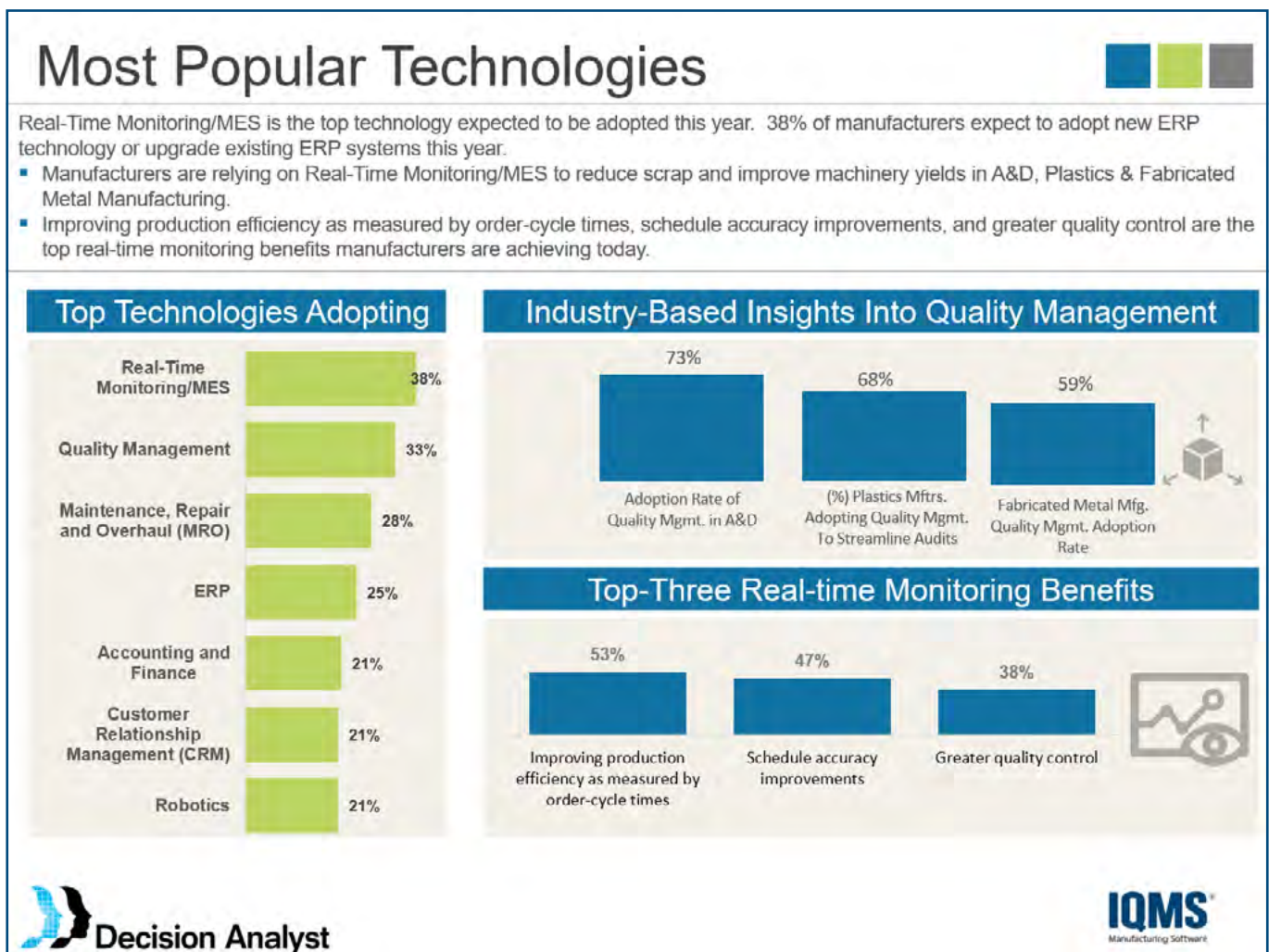


Figure 3

- **58% of manufacturers say their greatest growth barrier is not having enough skilled labor to meet production demand (Figure 4).** Lack of skilled labor continues to constrain manufacturers' ability to reach their full growth potential. This is one of the primary factors driving manufacturers to pilot robotics systems and eventually move them into production. 34% of manufacturers are also grappling with inconsistent supplier quality and delivery performance. 31% are seeing sales cycles take longer than expected. Overcoming these barriers is one of the main catalysts driving operational improvements, a core strategy of improving shop floor productivity.

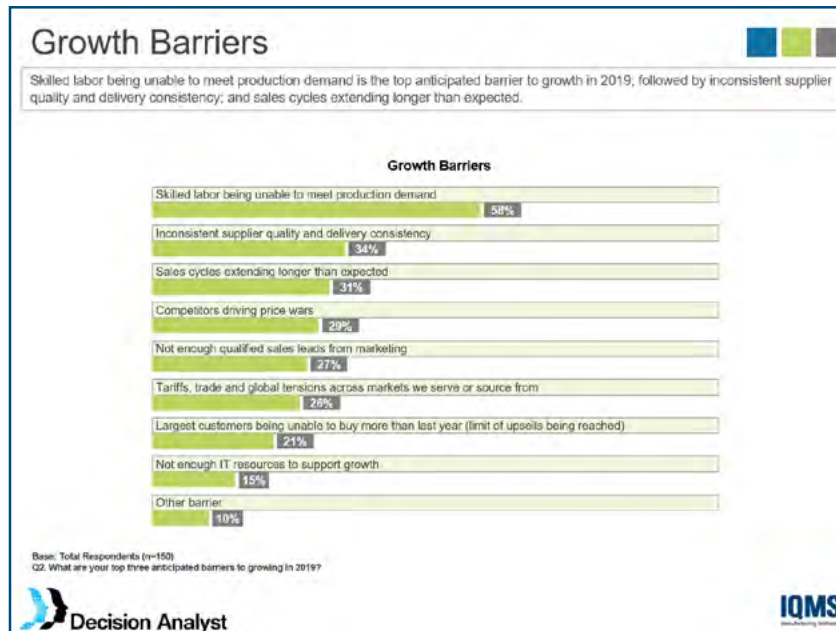


Figure 4

- **Manufacturers are taking a multifaceted strategy for finding skilled workers so they can meet production demand.** Quickly moving beyond relying on job postings and ads, manufacturers are working with placement services all while recruiting interns as well. The CEO of a plastics manufacturer remarked that a multifaceted strategy is the only way to keep the pipeline of new employees full enough to meet production schedules. His company offers a series of incentives ranging from 2,500 to \$5,000 to employees who recommend a new hire that passes a drug screen and reaches their 90 day review. Many manufacturers are finding that paying incentives for job applicants is a successful approach to finding skilled workers. Among the least effective is using LinkedIn for finding production associates. **Figure 5** compares skill shortage management strategies.



Figure 5

- **58% of manufacturers are using CAD software today as an integral part of their production process (Figure 6).** Of those manufacturers using CAD software today, the majority are using SOLIDWORKS. 39% are using AutoCAD and 14% utilize AutoDesk Inventor. The majority of manufacturers are using 2D CAD as part of their design and production workflows. 3D design is also being used for advanced plastics, metallurgy, and molding applications. One of the fascinating findings from the study is how pervasive the 3D CAD features of SOLIDWORKS are serving as a platform for advanced product configuration and Configure, Price and Quote (CPQ) visualization applications.

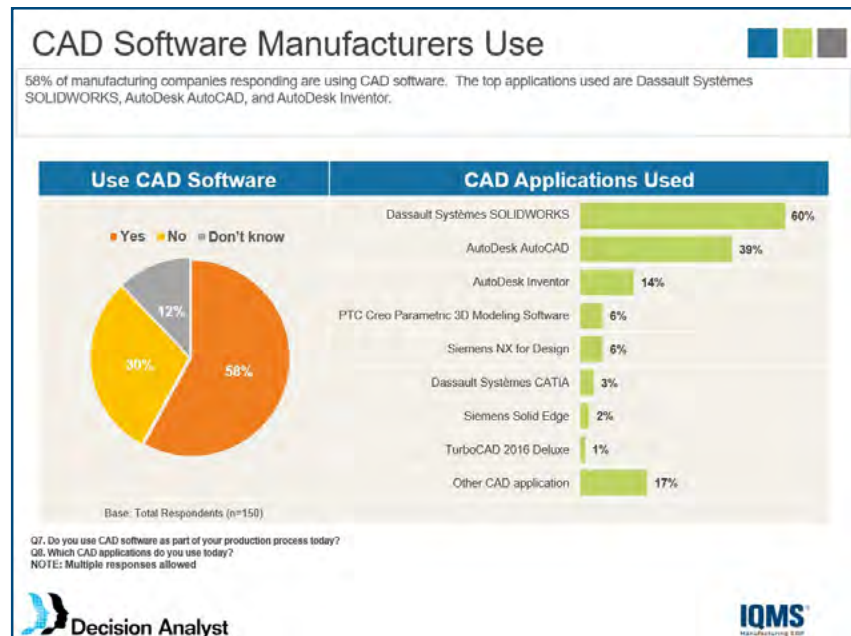


Figure 6

WHAT SETS HIGH GROWTH MANUFACTURERS APART FROM THEIR PEERS

The fastest growing manufacturers define shop floor productivity in terms of revenue growth first, cost savings second. They're also more likely to look for new ways to use their Quality Management, ERP and MES systems to achieve excellent product quality, improve scheduling accuracy and ensure customer delivery dates are met. The following are the characteristics that differentiate high growth manufacturers from their peers:

- **Manufacturers growing 10% a year or faster are capable of quickly converting shop floor productivity into greater order accuracy including perfect order performance, strengthening relationships with customers.** They're more focused on using dashboards to track how well shop floor operations make a direct contribution to order fulfillment and delivery date performance. Key metrics and KPIs they rely on include quoting accuracy, pricing accuracy, order cycle times, perfect order performance and more.
- **Integrating real-time monitoring, Quality Management and MES to gain greater accuracy, scale, and speed versus their competitors.** In the secondary set of interviews conducted of high-growth manufacturers, every one of them credited real-time monitoring combined with Quality Management and MES as essential for gaining insights to improve production yields and quality.
- **Selling short notice production runs, higher product quality levels, higher yields and greater visibility into production wins is a key strategy manufacturers growing faster than their peers rely on to win more business.** It's common for the fastest growing manufacturers to receive 25 to 50 audit requests from customers a year. Having an Enterprise Resource Planning (ERP) system, MES and Quality Management system (QMS) that can flex and support these is key to their growth.
- **Leaders of high-growth manufacturers reinforce a culture of continuous improvement based on measurable results with heavy reliance on analytics.** The fastest growing manufacturers define their success by how well they improve planning and scheduling, shop floor control, production monitoring, production reporting and quality. They're also more likely to have dashboards that provide real-time feedback on throughput, yield and quality levels, especially if they are a plastics manufacturer.

CONCLUSION

The most successful and fastest growing manufacturers in 2019 will be able to take on short notice production runs, fulfill customer and regulatory audits, and improve shop floor productivity with revenue being the guiding goal. Look for the best manufacturers in each segment of the industry to take an early lead in capturing greater upsells and cross-sells from their existing customer base. Manufacturers' funding priorities point to a concerted strategy of making every aspect of a shop floor, from the machinery to supplier quality levels to delivery accuracy all contribute to customer satisfaction and loyalty.

Shop Floor Productivity Investments that Drive Manufacturing Growth provides insights into how the fastest growing manufacturers have been able to achieve more revenue growth than their peers. It also provides insights into their funding priorities, how they plan to implement new real-time monitoring and MES, ERP and Quality Management systems, and how essential it is to compete on product quality and on-time deliveries.

While all manufacturers agree that improving shop floor productivity is the most important growth strategy by a wide margin, there are variations in how each plans to get there. For many, their focus is on upgrading existing machinery, acquiring new machinery that has designed-in integration and connectivity, and for others, the focus is on investing in a new real-time monitoring and MES. There's a wide variety of strategies that are being pursued right now to reach the goal of improved shop floor productivity. What galvanizes these diverse strategies are the business priorities they all share including making operational improvements (61%) closely followed by increasing sales to new and existing customers (53%).

With the goal being improving customer lifetime value, manufacturers are selectively acquiring new technologies to help them gain a greater share of their customers' spending now and in the future.

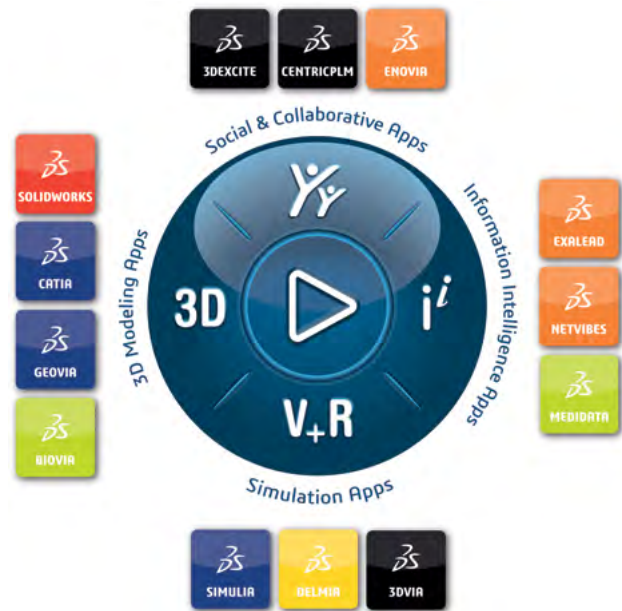
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