

2017 MANUFACTURING MONITOR

INSIGHTS INTO TRENDS
AND CHANGES IN
MANUFACTURING





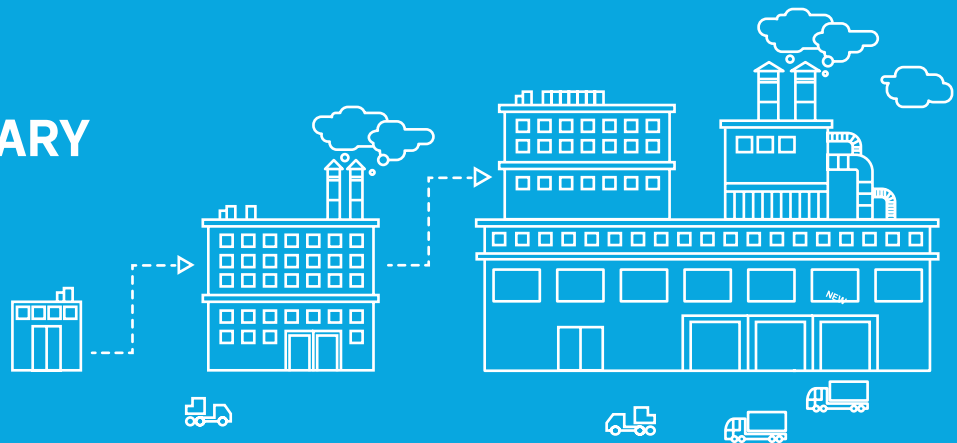
EXECUTIVE SUMMARY

Overall, the outlook for the manufacturing industry is largely positive, according to the 2017 RSM Manufacturing Monitor. Rising revenues and profits are fueling enthusiasm and driving investments in information technology, equipment, research and development, and training. In addition, industry hiring is on the rise, and production is seeing slow but steady gains.

Indices such as the Institute for Supply Management's Manufacturing Purchasing Managers' Index (PMI) and the J.P. Morgan Global Manufacturing PMI offer positive assessments of manufacturing in the United States and around the world. At the same time, however, the markets for some sectors have softened, leading to lower revenues and decreased client retention.

When making their strategic decisions, manufacturers will need a broad understanding of the issues at stake, which include the following:

- **GROWTH:** Overall, the global manufacturing industry appears strong, and some manufacturing sectors have fared quite well. With some growth in other worldwide markets, overall activity is increasing and having a positive impact on U.S. activities. Many manufacturers are offering new or improved products and expanding into other markets as strategies for growth, but mergers and acquisitions appear to be active as well.
- **TECHNOLOGY:** While two-thirds of manufacturers in the survey plan to increase their investments in technology, many executives perceive an insufficient return for efforts in internet of things technology. Data security is an ever-present concern, but efforts to address it appear to be limited, which has been the trend over the past few years.
- **PROFITABILITY:** Nearly half of manufacturers are reporting operating profits of 6 percent or more (before interest and taxes), but the costs of components and materials have increased in the past 12 months and manufacturers plan on passing these higher costs on to customers in a price-conscious environment. Investments in process improvements by almost half of the respondents continue to be a priority.



- **RISK:** Downturns in the global economy and fluctuations in currency and commodity pricing were of concern for a greater percentage of manufacturers than local or national domestic regulations. As the labor market tightens, attracting and retaining skilled workers continues to be an issue.

The perspectives of senior decision-makers offered in this report can help manufacturers compare their middle market organizations to industry peers across the country and around the world. The insights provided by RSM subject matter specialists will enable executives to make informed strategic and tactical decisions based on extensive, detailed data provided by the survey.

PROFILE OF PARTICIPANTS

660 Total survey participants

33% Respondents' titles are chairman, CEO, president, managing director, partner, principal or owner

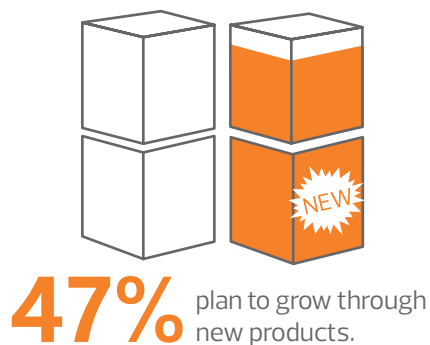
100% Respondents between \$10 million and \$1 billion in revenue

49% Respondent's company is a privately or closely held business

62% Companies with 1,000 or fewer full-time employees

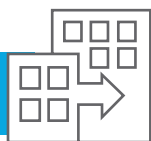
GROWTH

COMPANIES ARE PLANNING TO GROW THROUGH NEW PRODUCTS AND M&A.



37% plan to acquire a company or division.

13% are ready to sell.



which should **RAISE PRICES** and make it a **COMPETITIVE MARKET** for acquisitions.

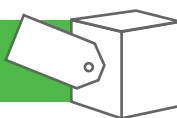
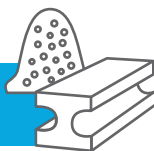


PROFITABILITY

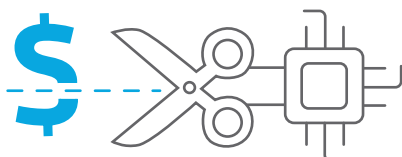
RIISING PRICES ARE FORCING COMPANIES TO TIGHTEN CONTROL OF THEIR MARGINS.

74% spend more to purchase components and materials.

74% are increasing product prices.



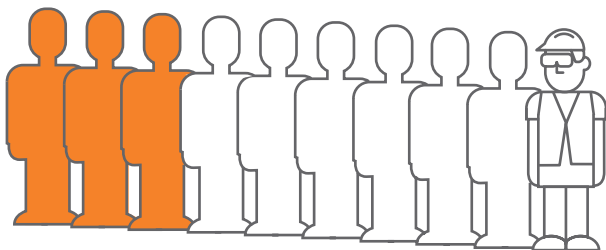
INVESTING IN TECHNOLOGY is the #1 operational activity planned.



41% will use technology to cut operational costs.

RISK

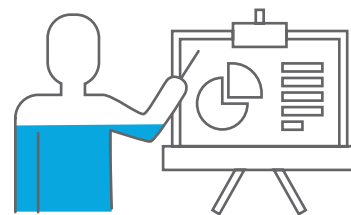
MOST MANUFACTURERS ARE ADDRESSING THEIR NEEDS FOR A SKILLED WORKFORCE.



31% cite the lack of skilled workers is a barrier to their business.



69% plan to increase their workforce.



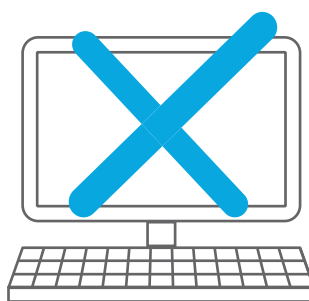
56% plan to increase their training and workforce development investments.

TECHNOLOGY

NEWER CHANNELS ARE TAKING SHAPE.



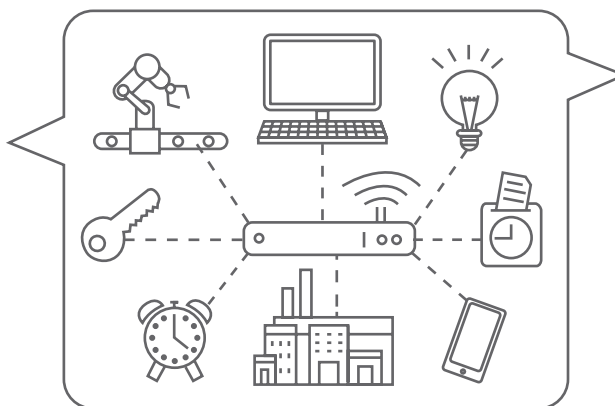
61% say direct sales via the company website is an effective sales channel.



26% have no plans to implement e-commerce technology.

INTERNET OF THINGS

48% have implemented an internet of things (IoT) strategy.



27% say IoT provides an insufficient return to make it worth the investment.

GROWTH

NEW ORDERS, INCREASED REVENUE AND AN EXPANDING WORKFORCE

According to the 2017 Monitor survey, the percentage of thriving companies (43 percent) represents a small increase over 2016. The industry has seen an increase in employment levels among 65 percent of manufacturers (by as much as 20 percent), with more hiring expected in the coming months.

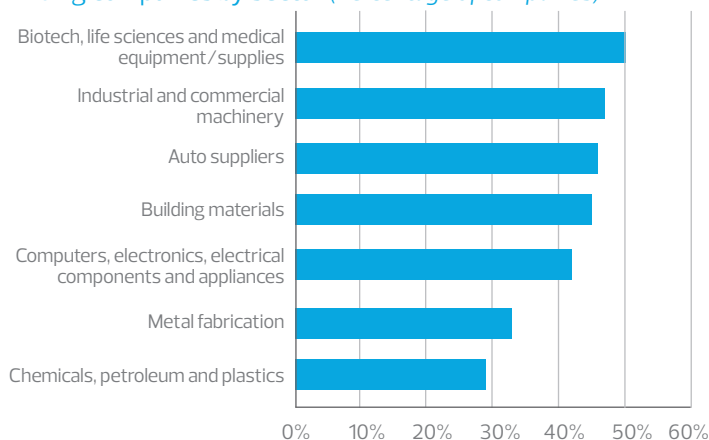
New orders and production have grown as well, with global and regional PMI indices noting several consecutive months of strong purchasing growth. Most Monitor survey participants expect to increase revenues in coming months, with 36 percent anticipating an increase of 11 percent or more.

This optimism is reflective of the middle market generally. The RSM US Middle Market Business Index (MMBI) posted a record high of 132.1 in the second quarter of 2017. This is the second consecutive record-high reading for the quarterly index and reflects underlying improvement in economic conditions during the past year, as well as strong corporate earnings and expectations for significant tax reform and regulatory relief this year.¹ Whether these expectations will be met is another matter.

In a sector-driven economy, some manufacturers will fare better than others: More than half of biotech and life sciences manufacturers describe themselves as thriving, a somewhat surprising outcome given the sectors' weak performance in the stock market in 2016.² Nearly half of building materials companies—45 percent—are thriving as well, but this is to be expected in a robust real estate environment: Even as costs are increasing, strong job gains, rising wages, changing demographics and historically low interest rates have offset inflationary, financial and policy headwinds and resulted in a strong real estate market. In addition, technologically advanced sectors are experiencing strong growth.

On the other hand, only one-third of metal fabricators registered as thriving in the Monitor. About 30 percent of chemicals, petroleum and plastics manufacturers are thriving, with the majority holding steady.

Thriving companies by sector (Percentage of companies)



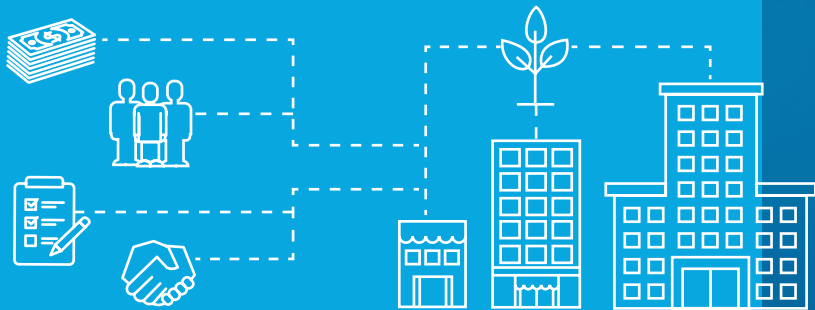
How are manufacturers growing?

When it comes to sales growth strategies, almost half of manufacturers are offering new or improved products. Many have also expanded—or are planning to expand—in new or existing markets. These markets are predominantly domestic, but there is activity crossing borders as well. Collaboration with customers and investments in innovations as well as research and development are accelerating new product introductions.

Mergers and acquisitions as well as joint ventures were relatively widespread growth strategies—and this trend is expected to continue in the coming months. Just over one-third of survey participants acquired one or more companies (or divisions or units of a company) in the past year, and a similar percentage plan to do the same in the coming year. This activity may be fueled in part by an increasing desire to procure technology and technical knowledge, particularly in Germany, Japan and China.³

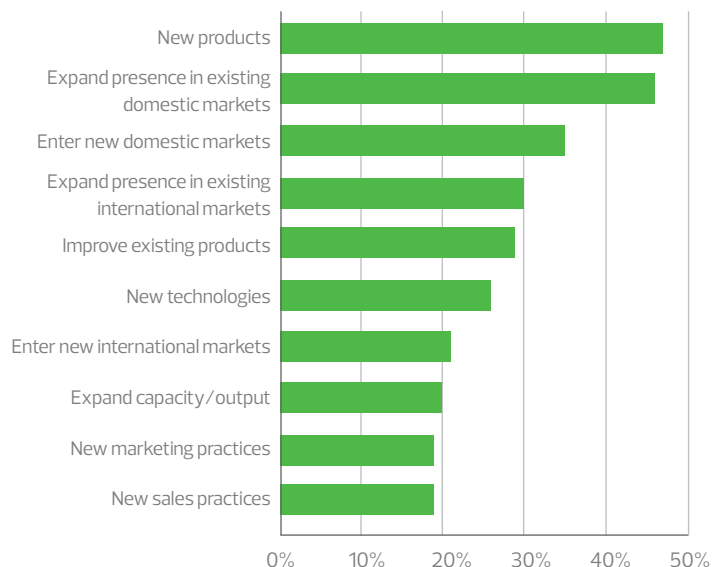
Sectors seeing the most acquisition activity (or planning it) include building materials, industrial and commercial machinery and auto suppliers. It's worth noting that these sectors have a slightly higher percentage of thriving companies than the aggregate. Yet only 13 percent of survey participants are planning activity on the sell side. This gap will likely drive M&A deal prices higher, especially for companies with sales and profitability growth.

¹ Learn more at rsmus.com/monitor

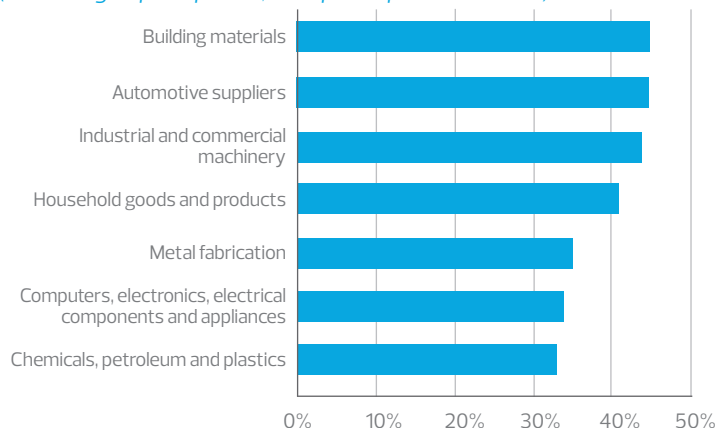


Foreign direct investment in manufacturing was only slightly higher for non-U.S. manufacturers compared to U.S.-based enterprises, reflecting confidence in worldwide growth plans. But a majority of survey participants plan to increase or sustain their level of international business.

How does your company plan to grow sales in the next 12 months? *(Percentage of companies; multiple responses allowed)*



Companies likely to acquire one or more companies or divisions in the next 12 months *(Percentage of companies; multiple responses allowed)*



WHAT THIS MEANS FOR MANUFACTURERS

Is M&A the right choice?

Deals are scarce and valuations are increasing, so businesses must be judicious about the deals they seek and conduct. Middle market companies can struggle to manage the priorities of growing a business, making it more difficult for buyers to implement a successful transaction strategy while avoiding delays.

Many executives extol the virtues of growth, but growth itself isn't a strategy. Management must perform comprehensive research in order to understand their companies, their competition and acquisition targets to justify increased investment designed to generate sustainable returns.

Many organizations underestimate the effort necessary to truly merge two organizations and don't spend enough time planning the integration. It pays to perform an effective due diligence and/or synergy analysis, then plan and manage integrations properly to optimize deal value and mitigate risk. Buyers need to plan transactions carefully, from identification of compatible candidates through due diligence to final integration.

TECHNOLOGY

STRATEGIES DIFFER, BUT TECHNOLOGY IS IMPROVING OPERATIONS AND PRODUCTS

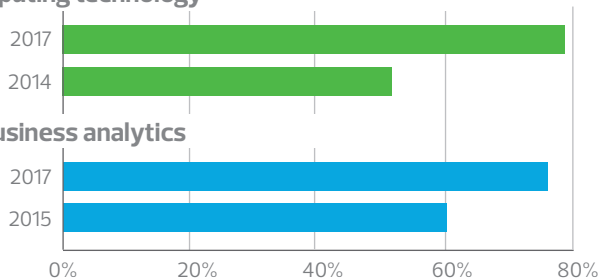
Manufacturers continue to look to technology to improve production processes and customer relationship management. Two-thirds of Monitor participants anticipate increasing their information technology (IT) investments in the coming months, with just over half planning to invest in IT to enhance operational activities.

The degree to which manufacturers are leveraging technology has changed quite a bit in the past few years. In 2014, nearly half the manufacturers surveyed did not leverage cloud technology. Only three years later, a majority of manufacturers—79 percent—already use some form of cloud computing as a part of everyday operations, or are planning to implement the technology. In 2015, 40 percent had no plans to invest in big data business analytics; two years later, more than three-quarters have invested in business analytics or are planning to do so. The key challenge in capturing data in the production process is how to synthesize the results and react in a timely manner to any negative trends.

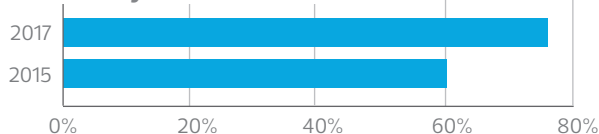
Leveraging technology, then and now

(Percentage of companies who have implemented or planning to implement)

Cloud computing technology



Big data business analytics



There are a number of reasons that could account for this strategic change in technology investments. Efforts to improve product quality, reduce costs and increase operations speed are cited in the Monitor as some of the drivers. Certainly, competition makes such investments necessary and the increasingly lower cost of technology makes them viable options for middle market companies.

Automation is often presented as a boon for manufacturers but a risk for workers. Yet it isn't entirely clear that middle

market businesses intend to substitute technology for labor to compensate for rising minimum wages and salaries or to boost productivity.⁴ In fact, increases in manufacturing productivity improvement have slowed, with some of the lowest overall growth since World War II,⁵ despite the use of automation.⁶ In addition, nearly 70 percent of manufacturers say they are likely to increase their workforce in the coming months. The continued need for skilled workers supports the idea that technology is not significantly changing headcounts in the near-term.

Strategies based on the IoT vary by sector, but overall, nearly three-quarters of manufacturers have either implemented these technologies (about 35 to 40 percent) or are planning to do so (about 30 percent) to improve operations and product quality. This may explain the concurrent rise in business analytics investments, which would be necessary to interpret the data collected by IoT technology and apply it to make process and other improvements.

Among sectors using IoT to improve products, household goods and products leads with the highest percentage (84 percent); metal fabricators having the lowest (60 percent). Overall, 16 percent have no IoT strategy or plans, a significant change from 2016, when more than one-third of U.S.-based survey participants were not planning to implement an IoT strategy. Nearly one-quarter say they gain an insufficient return on such an effort; nearly one-third cite a lack of leadership or IoT skills for not investing in the technology. Improvements in IoT technology and its applications, however, continue to make it easier for middle market companies to implement in some form.

Closing the technology gap

There are still companies that balk at spending increasing amounts on technology, despite the experience of many respondents showing a good return on investment. Approximately 40 percent of companies do not have technologies that could help them with production-related issues, mobile access or collaborative enterprise-wide content management. Management may fail to understand how to take full advantage of technology they have and underutilize their IT systems. As technology develops over time, the increasing value possibilities should become more apparent and influence its use. According to the Monitor, only about one-third of



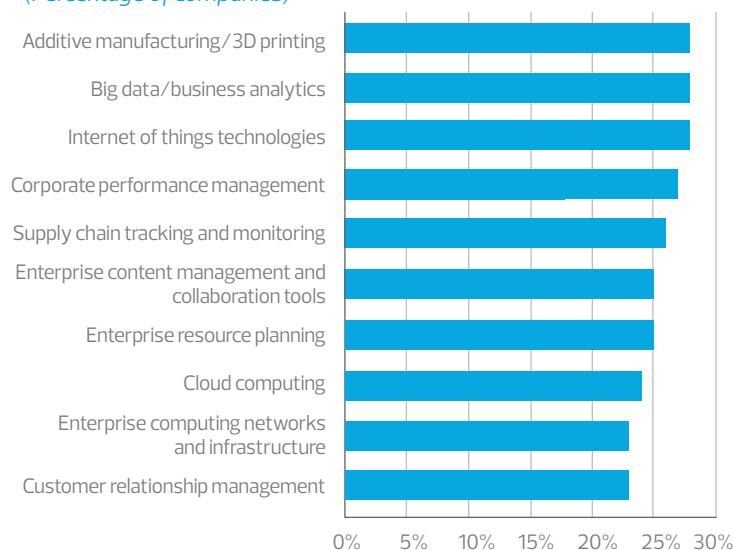
manufacturers will use technology to increase profitability; only a quarter plan to use new technologies to grow sales.

According to the survey, chief information officers appear to have more faith that technology can help increase profits than chief executives, suggesting the need for improved understanding of technology's potential impact in support of strategic goals.

Manufacturers who are not utilizing technology strategically—for operational efficiency, for customer relationship or risk management, supply chain data, just to name a few areas—may not be able to maintain an advantage over their competitors for long or will slip further behind. Customer expectations have changed, and companies must update their infrastructure and systems or risk declining results. As collaboration and innovation technologies become more widespread, they are eliminating barriers for organizations and changing how they go to market and interact with their customers.

With so much riding on how IT is utilized—providing products and services, increasing efficiencies, optimizing product usage, customizing client engagement—management must allow IT leaders to play a key role in executing the strategic direction of the company.

Technologies most planned for implementation (Percentage of companies)



WHAT THIS MEANS FOR MANUFACTURERS

The importance of strategy and data management

To realize the true value of information, effective strategy and data management must include certain criteria, such as a clear vision of the value that timely, accurate information can have as a strategic asset. Also, a company must plan to institutionalize the concept of enterprise data and weave it into the fabric of the organization. The right processes, best practices and enabling technology must also be integrated to continually support and manage the use of organizational data.

Achieving an enterprise view of trusted, validated data will allow for:

- Greater organizational consistency
- Improved enterprise collaboration and communication
- Increased productivity
- Improved ability to deliver better quality and stronger financial results

Assessing what technology your company needs

It is only after documenting a company's overall strategy, processes, functions and support structure that the plan for utilizing IT should be addressed. Management should determine if the underlying technologies that support all of the processes and the business itself are adequate. Areas to evaluate include current business systems, IT infrastructure, governance, risk and process management, budget and the overall technology organizational structure. Targeted investments in IT, based on a sound strategic road map, enable the IT function to become more efficient, improve service to the organization and its customers, and open the door to future cost reductions and efficiencies in IT and across the business.

PROFITABILITY

A FOCUS ON DOMESTIC SOURCES AND SALES

With nearly half of manufacturers reporting operating profits (before interest and taxes) of 6 percent or more—and most expecting increases to come in revenue—it would appear that manufacturers have some control over one of the industry's largest areas of concern: profitability, or margin management.

With so many manufacturers focused on the strong U.S. market as the primary source for revenue, it may be surprising to learn that, on average, nearly two-thirds of non-U.S. company products are sold in domestic markets. From sourcing to sales, most survey participants are focused domestically: A majority of supplier goods and materials are purchased domestically—the global median is 61 percent—and most production is located in-country (commonly referred to as "make it where you sell it"). This last point is notable for U.S. manufacturers in particular, where a median 79 percent of production capacity is domestic, a statistic supporting the trend towards onshoring.

Strategies for increasing profitability

By far the most popular strategy among manufacturers to increase profitability is to make operational improvements and thereby reduce costs. Yet only 46 percent of survey participants are implementing these improvements to increase profitability; only about one-quarter are using supply chain improvements to reduce costs.

Technology also is playing a role to increase profits, albeit a limited one. Emerging technologies such as artificial intelligence, machine learning and robotic process automation are reducing back-office operations and supply chain analytics costs, but only about one-third of manufacturers are leveraging technology in this way.

Pricing for components and materials purchased in the past 12 months have increased for three-quarters of manufacturers. With expectations of rising costs associated with employees, IT and commodities, product pricing has increased in turn. Metal fabrication, building materials and life sciences lead with the highest percentage of product price increases among

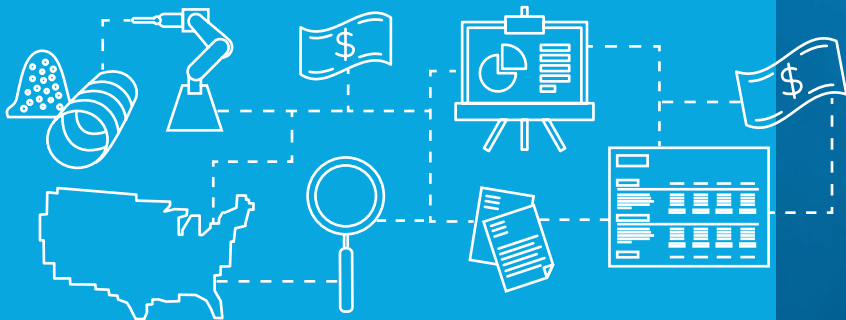
the manufacturing sectors. Yet some sectors have not seen a direct correlation between these price increases and similar increases in profits. The building materials and metal fabrications sectors, for example, registered among the lowest in terms of operating profitability increases, despite a high percentage of price increases.

In the midst of the recession, manufacturers knew raising the price of their products meant the risk of losing market share. It remains to be seen just how long manufacturers can offset rising costs with increased prices and still maintain sales. The supply chain is now worldwide, so global economic conditions may affect domestic pricing. There has been a shift in pricing power to the customer, therefore a focus on reducing costs will be a key priority for all companies for the foreseeable future.

It can be difficult to maintain a stable level of profitability when a company needs to find 40 or 50 percent of its customer base each year. While new customer development is the same on a global basis (about 40 percent of total sales dollar volume for the previous year), there is a wide disparity between countries when it comes to customer retention. Japan leads in this area at 79 percent retention, closely followed by the United States at 75 percent. But China and Australia trail far behind at 57 percent each, and Mexico retains only about half of their customer base year to year.

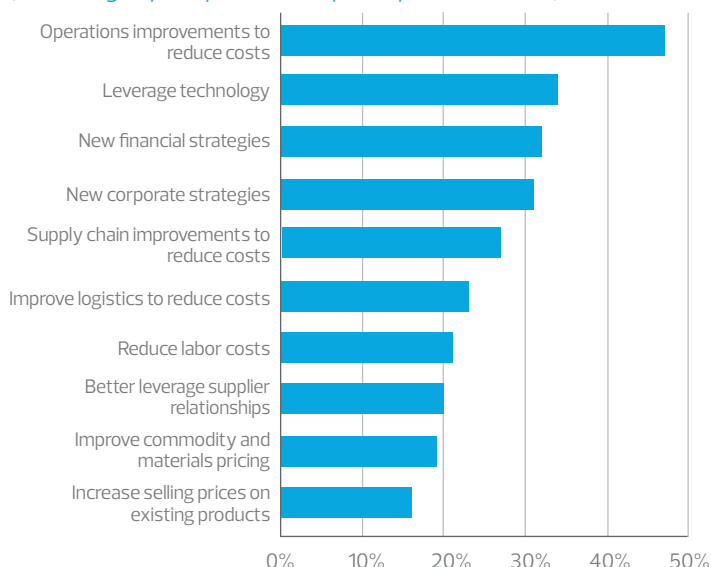
Economic headwinds

The U.S. economy is experiencing growth hovering around 2 percent. Manufacturers may, however, find themselves in a holding pattern before moving forward with some investments, as they await policy changes and other reforms to come out of Washington. Until then, manufacturers should not plan on infrastructure spending or other projected reforms by the government to help their businesses. The focus should be on making decisions for the business based on conditions that exist today, with a contingency plan for opportunities that federal and state spending may create tomorrow.



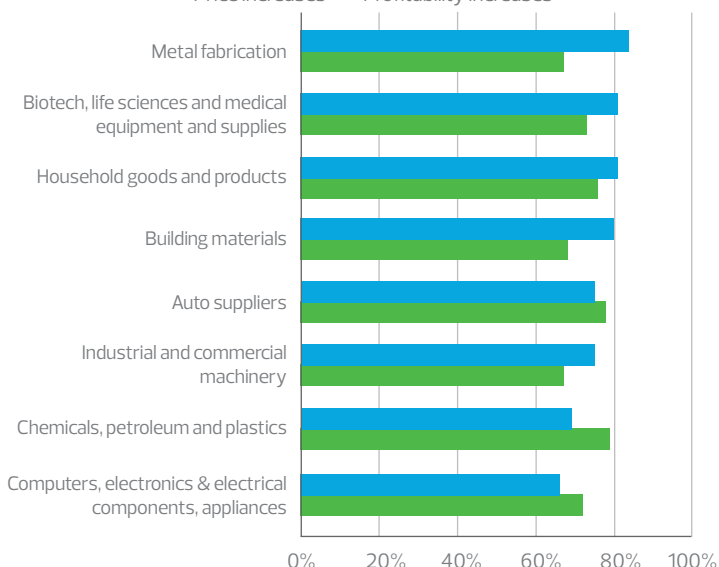
Strategies for increasing profits

(Percentage of companies; multiple responses allowed)



Price increases and profitability (Percentage of sector)

■ Price increases ■ Profitability increases



WHAT THIS MEANS FOR MANUFACTURERS

Managing the margins

Too often the first margin improvement strategy is simply to increase prices. A refined margin improvement plan will also recognize that some products may require lower prices, whether for new sales channels or to differentiate them as "economy" versions of competitor offerings. Focusing on higher-margin products and reducing lower-margin products will drive overall profitability.

Most manufacturers are also improving margins by addressing operational efficiency in offices, plants and supply chains via methods such as Lean and Six Sigma. It's important to note that high-performing processes may require highly skilled individuals, but this is not a

given; good process design can often offset issues with the skill level of the workforce. Indeed, many middle market companies plateau because they outgrow their internal talent. Executives must make sure that employee recruitment and development practices keep pace with new growth in capabilities and sales, or risk losing profits.

Operational improvements should also enhance agility so an organization can rapidly respond to new competitors, changing economic conditions and emerging opportunities. Similarly, machinery manufacturers are expanding their profit potential via maintenance services. These fundamental changes in business models also require new talent—and new technologies.



RISK

DOMESTIC REGULATIONS NOT SEEN AS THE BIGGEST CHALLENGE

Regulatory reform dominates the news cycles, and no wonder: A 2014 report sponsored by the National Association of Manufacturers claims that federal regulations are costing manufacturers an average of nearly \$20,000 per employee.⁷

Yet among the factors affecting the industry, manufacturers in the Monitor survey say that domestic regulations are not their most pressing concern. In fact, nearly half (46 percent) say domestic national policy regulations are neither barrier nor benefit, and nearly one-quarter see them as a modest or significant benefit. With little variation, this perspective held true for both U.S. and non-U.S. manufacturers.

External risks

Among the biggest barriers that were cited by survey participants, many were notably out of their control. Downturns in the broader economy, fluctuations in currency and commodity pricing were of concern for a greater percentage of manufacturers than local or national domestic regulations.

Nevertheless, a more reasonable tax and regulatory environment, particularly for middle market manufacturers who make up approximately 40 percent of the GDP, would be welcome. But the likelihood of substantive regulatory changes actually occurring may vary, depending on the sector and the issue. According to the RSM US MMBI, many executives believe policy changes on a range of issues—including trade agreements, federal regulations, immigration, infrastructure and tax reform—are likely.⁸ Manufacturers should follow proposed regulatory changes closely in order to be able to make effective, timely changes to their strategic goals, objectives and plans.

Enterprise risk

Nearly half of manufacturers in the survey (48 percent) are using enterprise risk management (ERM) processes to address operational risks, followed by strategic (36 percent) and regulatory or compliance risks (34 percent). An effective ERM program can address a wide spectrum of risks beyond these areas, so it is somewhat surprising that two-thirds or more survey participants are not using ERM to address risks related to finance and accounting, legal matters and their supply chain. A more holistic strategy can leverage ERM to drive additional business value. Manufacturers may not fully

appreciate that ERM is an actionable framework that, when sufficiently leveraged, can provide management with a holistic view of key risks, allowing them to consider risk interactions, develop a risk culture and make business decisions based on a clear understanding of risks.

Workforce

As the labor market tightens, and the number of unfilled manufacturing job openings continues to rise, training and workforce development investments are increasing among more than half of manufacturers in the survey. Attracting and retaining skilled workers continues to be a concern, and that concern is widespread. More than two-thirds of participants in the RSM US MMBI survey—representing a wide spectrum of industries, including manufacturing—indicated that it is difficult to find individuals who want to work in their industry; most reported that the cost of training for workers remains a challenge.⁹

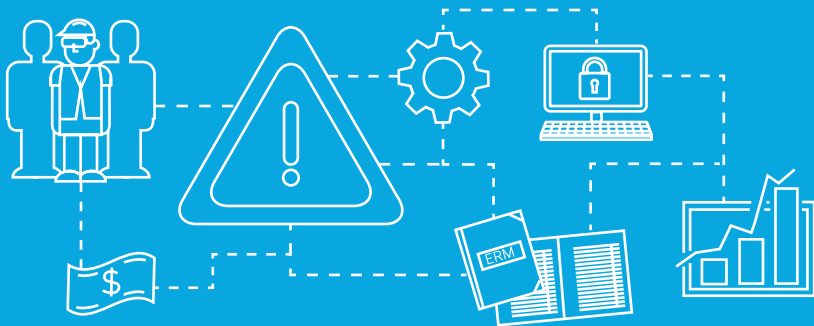
There are a number of culprits in the current environment that make it hard to attract and retain a skilled workforce. While the average, fully burdened hourly compensation in manufacturing for U.S. companies (\$37.71 as of 2015) is second only to Germany, growth in U.S. manufacturing wages has been anemic, particularly when compared to other industries such as leisure and hospitality, information, and financial services.¹⁰ Compounding the problem, a number of manufacturing sectors in the United States have had to shed employees, some by a significant percentage, over the last decade or so.

In 2013, the average U.S. manufacturing industry turnover rate* was 13 percent; the rate in 2016 was slightly higher at 16 percent.¹¹ Monitor participants report a 20 percent average turnover rate. With unemployment in the United States at 4.3 percent by the end of the second quarter in 2017, hiring and compensation are going to be major challenges for middle market, with automation, training, IT, process improvement and external sourcing as options to increase or supplement productivity.¹²

Data security

By now manufacturers should be well aware of the likelihood of hackers gaining unauthorized access to their information systems. Historically, the Monitor survey has consistently

*Voluntary and involuntary separations as percentage of typical staffing level



identified a small cohort (about 11 percent) of company leaders unaware whether or not their system has ever been hacked. But the majority usually say that they have not been hacked to date and that they have taken steps to prevent system breaches in the future.

Yet the security procedures taken by most survey participants are primarily the minimum required to maintain a semblance of data security. While about one-third hired data security consultants or data security staff, a plurality of these companies enhanced their employee security protocols—such as updating passwords—as a primary form of data security. Few did any due diligence for vendor data-security; engaged in any system penetration testing; or created a post-breach response plan. According to the Monitor survey, only 28 percent of manufacturers have ERM guidelines that address IT and data security issues.

Which of the following risks do your company's ERM guidelines address? (Percentage of companies; multiple responses allowed)



WHAT THIS MEANS FOR MANUFACTURERS

Prioritizing and managing risks

Risks are an integral part of business growth, but not all risks are created equal. Management and mitigation efforts must be calibrated according to the likelihood of exposure and the potential downside from an incident. A comprehensive ERM approach can help manufacturers shift their risk focus from strict compliance to a more strategic and operational perspective.

Manufacturers should establish a company-wide taxonomy of risk definitions and measurements, enabling risk to be identified and discussed in an objective manner.

ERM encourages:

- Proactive risk management throughout an organization
- A compass for proper resource allocation
- Effective employee awareness of threats and opportunities

Attracting and retaining a skilled workforce

As baby boomers retire and younger employees change jobs more frequently, manufacturers face a challenge

of ensuring the workforce is skilled, motivated and productive. So it's important to understand the priorities of each demographic. When asked to define the next most important tools for attracting and retaining talent:

- Leaders in one industry sector identified an enjoyable work environment, training opportunities and challenging job assignments immediately behind pay.
- Millennials pointed to work-life balance, personal development and organizational culture as their priorities for selecting one employer over another.¹³

Establishing a substantive and sustainable work environment that meets the priorities of the company as well as its workforce will be the key to retaining talented employees. Incentives that could benefit both may include:

- Launching in-house training and apprenticeship programs designed to develop skills that support employee career aspirations
- Providing workers with attractive project and leadership opportunities
- Training existing employees to step up to more highly skilled jobs through internal apprenticeships
- Offering coaching and mentoring programs
- Setting up networks of peers¹⁴



INSIGHTS

A summary of key takeaways from the 2017 RSM Manufacturing Monitor:

GROWTH

- Is M&A the right choice? Deals are scarce and valuations are increasing, so businesses must be judicious about the deals they seek and conduct.
- Investments to drive new product development are critical, including collaboration with key customers.
- Leverage data to identify and focus sales on the right products.

TECHNOLOGY

- To realize the true value of information, effective strategy and data management must include certain criteria, such as a clear vision of the value that timely, accurate information can have as a strategic asset.
- Management should determine if the underlying technologies that support all of the processes and the business itself are adequate. Now is the time to evaluate the risks and opportunities associated with current business systems and develop a plan to upgrade.

PROFITABILITY

- Leveraging data to reduce operating costs is a critical approach to improving the production process.
- Implementing continuous improvement processes is critical as margin pressure will remain intense.
- It's important to note that high-performing processes require highly skilled individuals. Executives must make sure that employee recruitment and development practices keep pace with new growth.

RISK

- Management and mitigation efforts must be calibrated according to the likelihood of exposure and the potential downside from an incident. A complete ERM approach can help manufacturers shift their risk focus from strict compliance to a more strategic and operational perspective.
- As baby boomers retire and younger employees change jobs more frequently, manufacturers face a challenge of ensuring the workforce is skilled, motivated and productive. Establishing a substantive and sustainable work environment that meets the priorities of the company as well as its workforce will be the key to retaining talented employees.

ACKNOWLEDGEMENTS

Subject matter contributors

Name	Title	Phone number	Email
Gary Horsfall	Manager, Technology and Management Consulting	+1 206 676 1115	gary.horsfall@rsmus.com
Chris Jones	Principal, Technology and Management Consulting	+1 314 835 4425	chris.jones@rsmus.com
Steve Menaker	Partner, National Industrial Products Practice Leader	+1 704 442 3851	steve.menaker@rsmus.com
Scott Vanlandingham	Principal, Technology and Management Consulting	+1 703 336 6548	scott.vanlandingham@rsmus.com

Survey methodology

The Monitor was fielded to a tightly scoped panel of business executives who completed the questionnaire in April 2017. For most questions there were 660 responses (all questions were mandatory), but responses to some open-ended metric questions were cleansed, thus changing the count for each question. The Monitor also could be completed by industry executives; two participants were not panelists. For some questions, answers will not sum to 100 percent due to rounding of decimals or because multiple responses were allowed.

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