

JUNE 2017

2017 MANUFACTURING REPORT

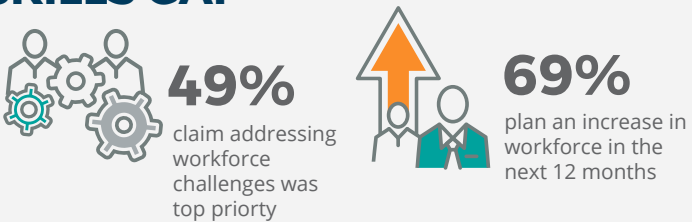
Trends and strategies to help manufacturers understand growth challenges and capture opportunities.

TABLE OF CONTENTS

Findings Summary.....	3
Executive Summary.....	4
Addressing the Workforce Skills Gap Remains a Top Priority	5
Automation Can Improve Supply Chain Flexibility and Ease Labor Constraints.....	6
Manufacturers Push for New Products but Underuse R&D Tax Credits	7
Cyber Risks Persist for Manufacturers as Technology Adoption Grows.....	8
Succession Planning: Most Manufacturers Lack an Exit Plan.....	10
Looking Ahead.....	11
Methodology.....	11

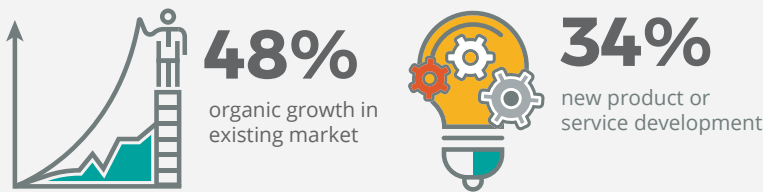
FINDINGS SUMMARY

ADDRESSING THE WORKFORCE SKILLS GAP



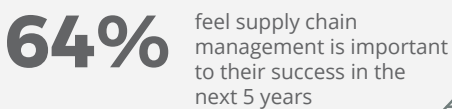
OPPORTUNITIES FOR GROWTH

Companies anticipate

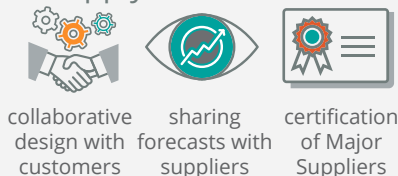


BENEFITS OF AUTOMATION

Automation can improve supply chain flexibility and ease labor constraints

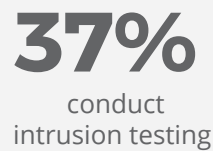


Top programs and practices in supply chain

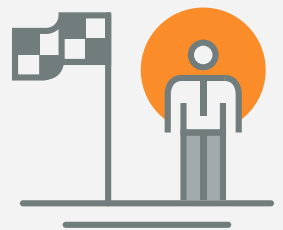


CYBER SECURITY

Companies taking action



SUCCESSION PLANNING



EXECUTIVE SUMMARY

Optimism Significantly Increased for the U.S. Economic Outlook, But Challenges Remain

Manufacturers have reason for optimism. Technologies and markets are advancing at a rapid pace, presenting new growth opportunities. Global economic activity is expected to increase through 2018¹, especially in emerging markets, which account for more than 75 percent of global growth in output and consumption². High-tech advancements, such as the Industrial Internet of Things (IIoT), automation and 3-D printing, are revolutionizing the way manufacturers develop products, operate their plants and serve customers.

Manufacturers and distributors responding to the third-annual Sikich Manufacturing Survey indicate they are significantly more optimistic about the state of manufacturing and the overall economy than they were in 2016. Nearly 80 percent of respondents said they were more optimistic about the U.S. economy compared to the previous year. That's up from only 29 percent in 2016. Meanwhile, nearly 70 percent of manufacturers said they were more optimistic about manufacturing compared to the past 12 months.

Still, manufacturers and distributors must address several challenges that could impact their ability to compete in the years ahead. [Respondents cited hiring and retaining talent as their top priority in 2017](#). It impacts other key areas highlighted in this report, including product development, technological capabilities and order fulfillment.



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Other key findings from the 2017 Sikich Manufacturing survey:

- Only half of manufacturers are taking advantage of R&D tax credits
- Cost-cutting across the supply chain remains a major priority
- Manufacturers remain vulnerable to cyber-security threats
- IIoT adoption is slower than expected
- Robotics can increase efficiencies and productivity but are underused
- The vast majority surveyed do not have a business succession plan in place

This report takes an in-depth look at each critical area, including insights from Sikich experts who offer key strategies to address each competitive challenge.

¹International Monetary Fund, [World Economic Outlook Update: January 2017](#)

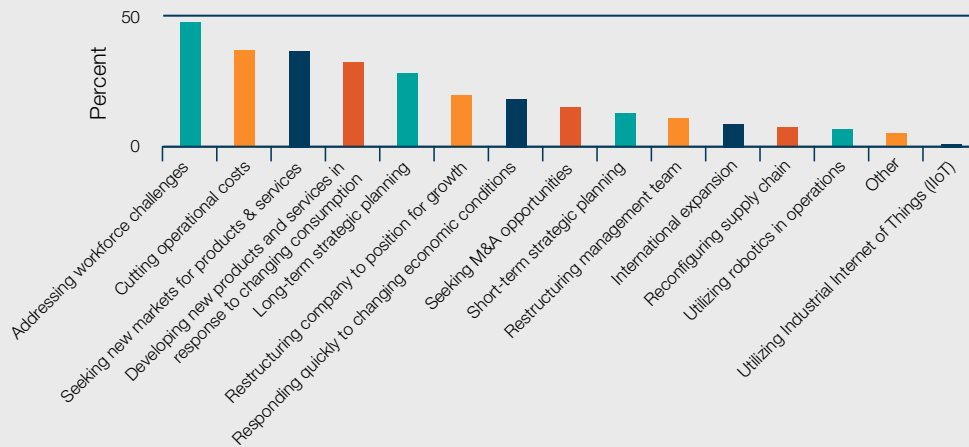
²International Monetary Fund: [World Economic Outlook: April 2017](#)

ADDRESSING THE WORKFORCE SKILLS GAP REMAINS A TOP PRIORITY

The skilled labor shortage continues to confound manufacturers. Nearly 60 percent of respondents said a lack of qualified workers will be a barrier to business growth in 2017 vs. 51 percent last year. Respondents also cited the need to address workforce challenges as their top priority in 2017 (see Figure 1). The lack of qualified talent is even more concerning when you consider 69 percent of respondents said they plan to increase headcount in the next year. Yet, 81.2 percent of respondents said they provide 40 hours or less of annual training per employee, with nearly one-fourth saying they provide less than eight hours of training per employee each year.

FIGURE 1

When asked which action is among their top-three priorities in 2017, the need to address workforce challenges received the highest number of responses followed by cutting costs.



Manufacturers need to take a more creative approach toward talent development and acquisition if they expect to compete. They must overcome the negative image of manufacturing as a dirty, dangerous, dead-end occupation and improve their outreach to high schools to accurately educate and build their talent base early, says Joy Duce, partner-in-charge of Sikich’s Human Resource Consulting Services.

“Too few young people are considering the possibility of a career in manufacturing, and they don’t understand the necessary skill set needed to be successful in this industry,” Duce says. “Likewise, the traditional K-12 school system doesn’t adequately educate students on what opportunities are available to them in manufacturing.”

Most manufacturers are not taking advantage of opportunities to partner with educational institutions. Two-thirds of survey respondents said they have no involvement with universities, while more than half of respondents also said they are not working with vocational schools, high schools or community colleges. *Manufacturers can address the skills shortage by forming partnerships with schools, associations and even competitors to train and recruit talent at an early age.*

³Waukesha County Business Alliance, [Manufacturing Alliance homepage](#).

CASE STUDY: MEETING THE SKILLS CHALLENGE IN WISCONSIN

Manufacturers in one Wisconsin county decided to take a more proactive approach addressing the skills gap. In Waukesha County, WI., manufacturers formed The Waukesha County Business Alliance Manufacturing Alliance to improve the image of manufacturing and identify new talent. Part of the organization's stated mission is to "dispel the myth that American manufacturing is dead." Manufacturing is critical in the region, where it accounts for 20 percent of jobs³.

The organization holds CEO and HR listening sessions, programs and manufacturing tours designed to demonstrate that manufacturing is still strong in the region. The tours include opportunities for high school students to visit local manufacturers so they can see firsthand that careers in innovative, advanced manufacturing are available in their area.

Manufacturers also should consider recruiting workers from various backgrounds, including immigrants, says Joy Duce, partner-in-charge of Sikich's Human Resource Consulting Services. But this presents another challenge for manufacturers. "Oftentimes, English language skills are not their primary way of communication," Duce explains. "Employers often have a difficult time reaching these viable candidates due to hurdles in conveying job advertisements and work opportunities."

Manufacturers can overcome language or cultural barriers by utilizing bilingual handbooks and job postings or hiring translators. "This way, you're casting a wider net for talent while simultaneously meeting their needs from a cultural and communication standpoint," Duce says.

AUTOMATION CAN IMPROVE SUPPLY CHAIN FLEXIBILITY AND EASE LABOR CONSTRAINTS

Manufacturers need to build agility and flexibility into their supply chains to keep pace with new customer demands. "In the marketplace, the e-commerce world is taking over," says Michael Fenske, Sikich's director of supply chain and business process transformation. "It is driving businesses to do things and perform at levels they never had to contemplate before."

Survey results indicate that manufacturers are trying to improve supply chain efficiencies by increasing visibility and collaboration with suppliers. For instance, nearly half of respondents are sharing forecasts with their suppliers, and 42 percent are engaging in collaborative design with suppliers.

But shorter order-fulfillment and cycle times will be more difficult to achieve if manufacturers cannot address the labor shortage. Finding employees who can perform repetitive tasks quickly can be challenging, particularly during seasonal peaks. Robotics and automation solutions can help manufacturers and distributors perform manual tasks more efficiently without adding headcount (See Figure 2).

"Companies are definitely investing in automation to handle the seasonal peak rather than relying on or struggling with finding temp labor," says Gregg Hague, partner, Sikich Supply Chain.

Traditionally, manufacturers shipped pallets or cases to customers or distributors. But in today's world of e-commerce, customers are requesting smaller, more frequent orders. That creates a new set of challenges for manufacturers, who now have to pick and pack individual items prior to shipping.

"That's a whole different model for them, and it puts a lot of pressure on their existing systems infrastructure," Fenske says. "If their existing order management and shipping systems weren't designed for high-volume parcel, that's an investment they will have to make."

FIGURE 2

More than half of survey respondents said the ability to improve customer service and response time was a top business driver impacting their technology investment decisions. Below are the top five responses from survey participants.

What are the top business drivers impacting your technology strategies?

-  **53%** Improve customer service and response time
-  **49%** Reduce costs
-  **38%** Issues with customers
-  **41%** Our own growth expectations
-  **24%** Issues between multiple business systems

Some companies are addressing these pressures by implementing advanced supply chain execution technologies, such as, manufacturing execution systems, warehouse management systems, warehouse control systems and transportation management systems. In addition to these enabling software systems, automated equipment is being deployed on the shop floor and in the warehouse. The lifecycle of automation is increasingly stable from a performance and cost to own perspective. Companies are investing in robots in manufacturing, product-to-man picking systems, automated packaging equipment, and print-and-apply labeling solutions.

CASE STUDY: HANDLING THE BLACK FRIDAY SURGE

The workforce shortage can wreak havoc on manufacturers and distributors planning for the holiday season. For example, a third-party logistics (3PL) provider forecasted that it would need to ship 12,000 cases per day to consumers for several large retailers on behalf of a bedding products manufacturer.

The 3PL estimated that it needed more than 50 seasonal employees over two shifts to handle the workload. The company designed its existing processes to be manual and basic so it could add temporary labor without much training. The process entailed classical paper pick by order and other manual processes, such as applying the pack list by hand and sort finished cases by service level pallet.

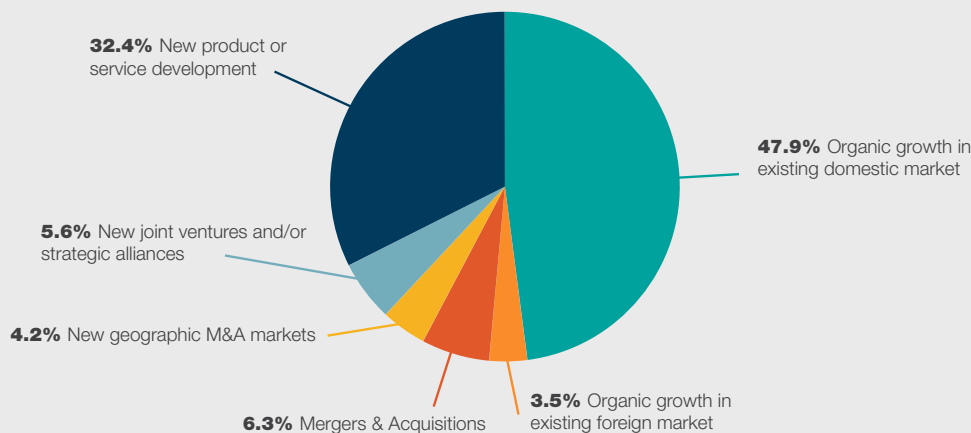
The 3PL implemented technologies that allowed it to accomplish the same volume with five employees on a single shift. Some of the key changes included batch picking by common SKU and conveying of cases through a scanner for item recognition, case dimensions and in-line weighing. The company also implemented a new warehouse control system to control open order association and auto manifest from a multi-carrier shipping system. Further down the conveyor, the 3PL installed print and apply machines that tamped on the correct ship/packing list label. Once the label was verified, cases were sorted by carrier and conveyed in trailer for loading.

MANUFACTURERS PUSH FOR NEW PRODUCTS BUT UNDERUSE R&D TAX CREDITS

Among the top three priorities in 2017, “seeking new markets for products and services” received the third-highest number of responses. In addition, 33 percent of respondents cited new product service or development as the biggest opportunity to grow their business in the next 12 to 18 months (see Figure 3).

FIGURE 3

Offering a new product or service ranked second to organic growth in existing domestic market as the biggest opportunity for growth in the next 12 to 18 months.



But manufacturers indicate they're still investing a small portion of their sales into research and development. In 2017, 77.9 percent said they invested 5 percent or less in R&D vs. 82 percent in 2016. In addition, half of the survey respondents said they are not taking advantage of R&D tax credits. R&D tax credits typically equal 5 percent to 7 percent of manufacturers' R&D expenses. That means a manufacturer spending \$1 million on R&D could save approximately \$50,000 by applying for the tax credit. This does not include R&D tax credits offered by over two-thirds of the states.

"Many firms may think they don't qualify for R&D incentives or fear they will increase their audit risk by using the tax credit," says Tom Perez, CPA and partner on Sikich's accounting and tax team. However, manufacturers are constantly innovating whether they realize it or not. "A manufacturer can produce or improve a product that is very similar to a product on the market," Perez says. "That counts as innovation for the federal tax credit. **As a result, most, if not all, manufacturers should qualify for the R&D credit because they're all doing some level of product or process improvements.**"

Also, the R&D credit typically has a nominal impact on the likelihood of an audit. Perez recommends that manufacturers hire R&D tax study firms that can assess whether they qualify for the credit and can ensure manufacturers are meeting audit requirements. Third-party experts should have engineers and other experts on their staff who understand manufacturing processes. "These firms will understand what the company is doing, what type of potential expenditures and projects they have, and they typically provide a free estimate of what they believe your credit might be," Perez says.

In addition, manufacturers have three years to claim the federal credit, so they can amend their returns from previous years if they fall within the statute of limitations and still gain the benefit, Perez explains.

Perez also notes that recent tax law changes have enabled more taxpayers to benefit from the federal R&D tax credit by allowing the credit to offset not only regular tax liabilities, but also the Alternative Minimum Tax.

CYBER RISKS PERSIST FOR MANUFACTURERS AS TECHNOLOGY ADOPTION GROWS

Technology is revolutionizing manufacturing, and the adoption of these systems continues to grow. But the increasing use of high-tech advancements, including IIoT-enabled devices, is leaving manufacturers vulnerable to more IT security risks. "A lot of our clients don't realize they have any real risks," says Steve Connors, Sikich managing consultant, technology. "But they have wireless devices that access warehouse management systems through the Internet, which opens them up to cyber-security risks."

Manufacturers may be more at risk than other industries due to the systems in industrial environments being perceived as weak by attackers because they're not held to compliance standards, according to an IBM report⁴.

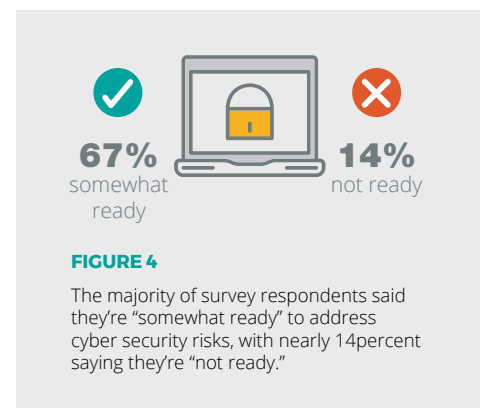
"It's one of the most unregulated industries," says Brad Lutgen, a Sikich partner in the security and compliance practice. "There hasn't been as much adoption in manufacturing simply because there isn't anyone beating them with a stick to say you have to be taking specific security measures."

In fact, only 8.5 percent of Sikich survey respondents said they were "very ready" to address cyber security. Also, more than one-fourth of respondents said they had a cyber security incident in the past 12 months (see Figure 4).

The findings indicate that manufacturers need to take preventive measures to reduce their risk potential. Some of key security strategies include:

- Penetration testing
- Ongoing system optimization/security patches
- Employee training and testing on safe Internet and system use
- Knowing who has access to internal systems and critical information
- Monitoring activity logs to identify patterns of abuse
- Having a clear plan and process for dealing with cyber security breaches, such as "what-if" scenarios to determine how you'll address potential issues

⁴IBM X-Force Threat Intelligence Index 2017: The Year of the Megabreach



Manufacturers may also want to consider hiring a third-party organization to educate employees on security procedures. These firms also can conduct penetration, or intrusion, tests to simulate an attack on an organization's network infrastructure or applications. However, nearly half of survey respondents said they don't conduct annual intrusion tests, which puts their organizations at risk. The focus of penetration testing is to determine what attackers can access and what trouble they can cause.

During these controlled tests, a trained, experienced consultant reviews the security of a company's network infrastructure and applications using the same tools and techniques that an attacker would use. Testing can be performed either with or without the knowledge of the people who manage and operate the systems depending on the goal of the test.

THE INDUSTRIAL INTERNET OF THINGS HAS ARRIVED; ARE MANUFACTURERS READY?

Imagine knowing when a machine is about to fail before it actually occurs. Or, what if it were possible to monitor a customer's product performance in real time to service it more quickly and efficiently?

The Industrial Internet of Things (IIoT) is bringing more intelligence to manufacturing operations that allow them to be more competitive and improve efficiencies. IIoT involves the use of sensing technologies and other devices that can collect or transmit information about machines and other objects over a network. The worldwide market for the Internet of Things was \$16.3 billion in 2016 but is expected to reach \$185.9 billion by 2023⁵.

Still, nearly 77 percent of Sikich survey respondents say they have "no plans" to implement IIoT technologies (see Figure 5). These companies are likely missing opportunities to differentiate their products and reduce operational costs through more intelligent data. Sensors can send predictive maintenance data, such as temperature or friction, to technicians so they can service the equipment prior to a costly shutdown.

77%

of respondents say they have no plans to implement IIoT technologies

FIGURE 5

Despite its projected value to manufacturing, many firms are not taking advantage of IIoT opportunities.

Manufacturers also should implement security patches on a regular basis and continually reassess their antivirus capabilities. "Don't worry about buying a fancy new product as much as optimizing the tools you likely already have," Lutgen explains. "Make sure you're patching your systems at least monthly and ideally weekly if resources allow. Also, look at your antivirus and make sure it's configured properly and implemented throughout your network."

Employee training is critical, as well. Nearly 70 percent of manufacturers said they don't provide cybersecurity training. Companies may want to consider implementing an ongoing program that includes multiple security tests throughout the year along with incentives for staff members who adhere to company standards. Manufacturers also can incorporate IIoT technologies into their products or services. For example, Bunn-O-Matic Corp. a manufacturer of dispensed beverage equipment, including coffee-makers, wanted to deliver higher levels of service to customers⁶. Previously, Bunn handled service calls by phone. This was often a struggle for Bunn technicians who struggled to obtain complete diagnostic information from callers, according to Microsoft.

Bunn wanted to decrease onsite visits to customers and increase its number of first-time fixes. The company had already implemented an automated monitoring system in 1995 called BUNNlink, a service tool that connected its espresso makers to datacenters for remote diagnoses.

But leaders at Bunn were striving for even higher service levels. The company decided to move to a cloud-based system to gain information in real time. It incorporated IIoT technologies from Mesh Systems and Microsoft. Bunn worked with Mesh Systems to enhance BUNNlink using IoT services provided by Microsoft Azure.

⁵Wintergreen Research Inc. (via Research and Markets), [Internet of Things Market Shares, Strategies, and Forecasts 2017-2023](#), March 2017

⁶Microsoft, (case study) ["Now the Cloud's in Your Coffee: Improving Beverage Service With Real-Time Data."](#) March 2016

Now, embedded technologies connect the espresso machines to the cloud for real-time diagnostic insights. Service technicians can observe machine performance through a web-based portal that provides critical information in various formats, including interactive dashboards, notifications and reports. The company also added a feature that automatically sends a text message alert to customers when a machine is out of a beverage product or needs to be cleaned.

The results: The company can minimize downtime and reduce service costs for customers, which are typically \$250 for the first hour of an onsite visit. In addition, Bunn's customers can boost their profit margins because of increased machine availability. Looking ahead, the company plans to install a built-in payment system, so each espresso machine becomes a point-of-sale device as well as a beverage dispenser.

Many manufacturers may struggle to adopt similar types of IIoT technologies because they lack the internal expertise, says John Kleb, partner, Strategic Technologies at Sikich. Kleb suggests manufacturers consider third parties who can help them implement the technologies and understand the data.

"One of the challenges manufacturers have is that the people who understand these devices and what to do with the data are probably not employed by the manufacturer today," Kleb says. "If they're going to do this in-house, then they need to hire some people with that skill, and if they're not going to do that in-house then they need to find people like us, or others, who will work with them to get that done."

SUCCESSION PLANNING: MOST MANUFACTURERS LACK AN EXIT PLAN

Nearly 30 percent of survey respondents say long-term strategic planning is among their top-three priorities in 2017. However, survey feedback also indicates that manufacturers are not including an exit strategy in their long-term plans. Two-thirds of respondents said they have no written plan for exiting the business (See Figure 6). Succession planning helps preserve wealth and reduce risks for all stakeholders, including ownership, the leadership team and employees.

Succession planning is critical for both planned and unplanned exits, such as disagreements with a co-owner or partner or a health event. Business owners should begin the process by considering how to protect the value of their business, which should always include retaining key employees. "The most successful transactions include some form of a key-employee retention plan," says Rick Herbst, partner with Sikich Investment Banking.

According to Tom Bayer, a Sikich partner and a Certified Exit Planner (CEXP), some questions companies should ask themselves when beginning the succession-planning process include:

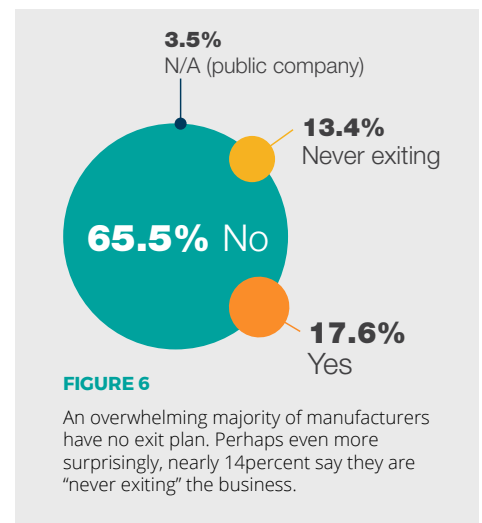
- How much is my business worth?
- How much do I need to retire?
- How much will I have after taxes?

Also, business owners should begin the process of net-proceeds planning at least two years before a planned transaction, says Ray Lampner, a Sikich partner and certified exit planning adviser. "Oftentimes we not only find opportunities to reduce the tax burden, but we also find opportunities to reduce the working capital needs," Lampner says. "Both strategies increase net proceeds to the owner."

Owners have several succession-planning options to consider, including sale to a third party, sale to a manager, transfer to a family member or an employee stock ownership plan (ESOP). Just over 30 percent of respondents said they plan to sell their business to a third party, the top choice selected by survey participants.

Advisers can help manufacturers decide which option makes the most sense. They also can help manufacturers determine the value of their business by assessing several factors, such as future potential profit, competition, intellectual property, customers and any potential risks.

"We find that for many businesses there's a gap between what they have financially and what they think they need," Bayer says. "That's where a financial planner comes in to help them understand what their retirement needs are and what kind of liquid assets they're going to have."



LOOKING AHEAD

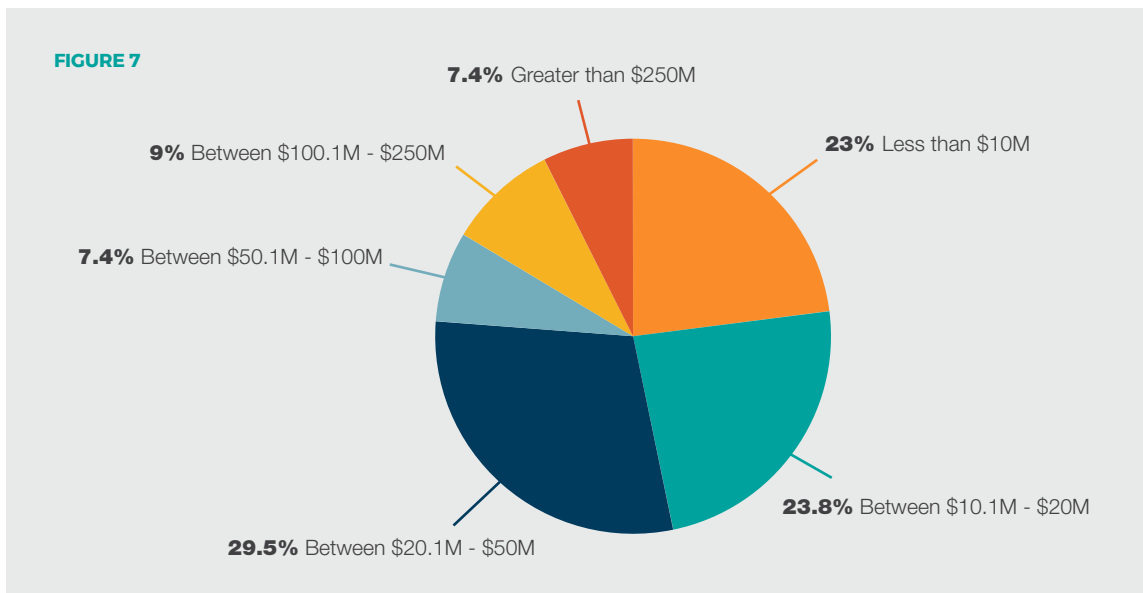
Manufacturers can sustain the wave of optimism they felt heading into 2017 by taking more proactive steps to compete in a demand-driven economy. The path to growth starts with the workforce. The industrial sector must find ways to attract workers with advanced-manufacturing skills.

Workers with high-tech skills can help manufacturers bring new, innovative products to market faster. Manufacturers should consider hiring and recruiting workers who can operate in highly automated environments and have the ability to analyze Big Data as they begin adopting IIoT technologies. However, the introduction of new technologies also increases cyber security risks. Manufacturers need to continually monitor and assess their systems to ensure they're secure.

On the financial side, manufacturers are missing opportunities to reduce costs and ensure they're prepared for the future. The Trump administration's promise of regulatory and tax reforms should not lead to complacency. Financial experts can help manufacturers identify additional opportunities to lower their tax burden and create a long-term strategic plan.

METHODOLOGY

The Sikich 2017 Manufacturing report includes responses from more than 250 participants across a wide range of industrial sectors, including metal fabrication, industrial equipment food and beverage, OEM equipment, chemicals and petroleum, automotive, plastics and wholesale/distribution. The majority of respondents had 50 to 250 employees. (see Figure 7).



Sikich LLP, a leading professional services firm specializing in accounting, technology, investment banking* and advisory services**, has more than 800 employees throughout the country. Founded in 1982, Sikich now ranks as one of the country's Top 30 Certified Public Accounting firms and is among the top 10 of all enterprise resource planning solution partners in the country. From corporations and not-for-profits to state and local governments, Sikich clients can use a broad spectrum of services and products that help them reach long-term, strategic goals.

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