2013 OUTLOOK

MANUFACTURING

PERSPECTIVE

Lingering challenges limit rise in 2013, but the **long-term outlook for manufacturing is promising.**

CHRIS MONTAGUE

At the beginning of 2012, many of us felt that the year would usher in a period of strong resurgence for American manufacturing. But despite promising first and second quarters, industry growth rates were hampered throughout the remainder of the year. The fiscal cliff, changes in health care, the economic decline in Europe, uncertainty over tax rates, and new federal regulations caused many U.S. manufacturers to delay making investments in new equipment, systems, and talent.

Recently the Manufacturers Alliance for Productivity and Innovation (MAPI) forecast that the inflation adjusted gross domestic product will come in at 1.8 percent this year and 2.8 percent next year, moving toward the historic average of 3 – 3.25 percent. This holds the promise of the United States putting the recent years of sluggish growth behind us and moving into a longer period of moderate growth.

The 1,000 executives that the National Center for the Middle Market (NCMM) surveys each quarter lack confidence in the global economy yet are optimistic about growth opportunities this year. This optimism

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is tempered by a number of remaining challenges including the lack of consistent demand, continued globalization of manufacturing in general, regulatory and legislative uncertainty, uncertain commodity pricing, the effects of changes in healthcare legislation, and the skills gap.

From the amount of attention it gets, it would seem that the skills gap is a major challenge, but in the NCMM findings for the fourth quarter, manufacturers ranked it far below uncertainty in Washington, D.C., and the impact of healthcare reform. In fact, they listed it as 10th on a list of 22. Perhaps there is such buzz about the skills gap because manufacturers realize that in their efforts to cope with the economics of the recent years, they have done many things right, but they should have taken a longer view on developing talent.

While there's no one-size-fits-all solution to this issue, we do advise that a good place to start is to assess your organization's workforce with a few key strategic questions:

- Does our organization have sufficient talent and resources to support the development required by our customers?
- Does our current talent support excellence in sales targeting, quoting, and capacity management?
- Does our organization have the right people in place to execute disciplined and effective program and launch management?
- Does our organization have "A" level talent in all activities that are included within our differentiation and value capture business model elements?
- Does our organization have succession plans in place for its "A" players?

At Plante Moran we see growth in the manufacturing sector over the next five years, but lingering challenges suggest a more modest outlook for 2013. Whether it's challenges associated with workforce, pressure for international expansion, or financial or operational performance gaps, we are ready to help.

We thank the National Center for the Middle Market at The Ohio State University for its data and analysis and all of the others who worked with us to develop this outlook on 2013.

Chris Montague

Chris Montague
Manufacturing and Distribution Leader

THANK YOU

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American Welding Society

Healthcare costs and uncertainty in Washington are the **top challenges for manufacturers.**

Fifty-three percent of middle market manufacturers say dealing with the uncertainty in Washington, D.C., is their biggest challenge. Healthcare costs come in second at 52 percent, the cost of doing business comes in a distant third at 34 percent, according to data collected in early December 2012 and released in late January 2013 by the National Center for the Middle Market (NCMM) at The Ohio State University.

The data is based on the center's middle market quarterly survey of 1,000 C-suite executives including 172 in manufacturing. NCMM defines the middle market as companies with revenue between $10 million and $1 billion.

85 PERCENT OF RESPONDENTS SAID THAT **A SOLUTION TO THE FISCAL CLIFF WILL NOT END UNCERTAINTY IN WASHINGTON**

The survey was completed before the fiscal cliff debate went into high gear. However, while an overwhelming majority, 85 percent of all respondents, said that a solution to the fiscal cliff would not end uncertainty in Washington, D.C., that uncertainty would not affect their investment spending.

HEALTHCARE REFORM MEANS A HIRING FREEZE

Unlike the fiscal cliff issue, middle market executives did say that the impact of

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healthcare reform would impact their investment spending. Thirty-two percent said they will be investing less in technology and operations; 30 percent said they would be instituting a hiring freeze; and 17 percent said they would be laying off workers.

One respondent seemed to represent many when he wrote: "We are trying to invest in advanced equipment to increase our capacity and reduce our manual workforce to help offset the increasing costs of health care and pensions. We will be eliminating 5 percent of our workforce over the course of next year due to our newly acquired advanced equipment."

WHAT LIES AHEAD FOR MANUFACTURING?

Since the end of the Great Recession, manufacturing has been among the major drivers of growth in the United States and perhaps it is one of the first to accept what it means to operate in the "New Normal."

According to NCMM data, manufacturing seems to have entered a period of sustained modest growth with revenue up 6.8 percent in 2012 and a 4.1 percent gain forecasted for 2013.

These statistics are in line with production figures reported by the Manufacturers Alliance for Productivity and Innovation (MAPI). According to the MAPI's chief economist there will be a "gradual increase in growth in 2013, but it will not be until the second half of 2014 that the economy will grow at what could be called a moderate pace."

CONFIDENCE IS SLOWLY IMPROVING

Confidence in the U.S. and global economies is low, but improving among manufacturers according to the NCMM data.

Manufacturers who are confident or somewhat confident in the global economy rose to 37 percent in the fourth quarter up from 34 in the third quarter. Those confident or somewhat confident in the U.S. economy rose to 53 percent up from 52.

Looking at the international markets, the 2013 Global Manufacturing Competitiveness Index (GMCI) puts things into perspective. Three years ago when the index debuted, the world seemed poised for recovery. Since then there has been an earthquake and tsunami in Japan, the Arab Spring, the European sovereign debt crisis, Vladimir Putin's return as Russia's president, stubborn unemployment in the United States, and Standard & Poor's downgrade of the U.S. credit rating.

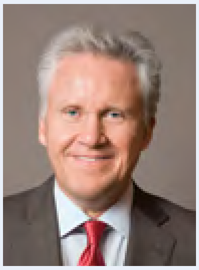
So the weary pundits suggest – "as we enter 2013, much is up for grabs."

That isn't a reason to stand still; you and your advisors can be:

- Perfecting your innovation efforts to differentiate your business and give it a competitive edge
- Taking a comprehensive look at regulations, tax rates, and tax policies, and developing a comprehensive plan
- Assessing the way you provide healthcare benefits and looking for the best options for you and your employees
- Making wise choices about international operations

ANOTHER VOICE

STRONG MIDDLE MARKET MANUFACTURERS CAN KEEP THE U.S. COMPETITIVE



JEFF IMMELT

The following are excerpts from a conversation with GE Chairman and CEO Jeffrey Immelt about the future of manufacturing in the United States.

As head of the Council on Jobs and Competitiveness you are called upon to give a number of presentations. What is one thing you'd like members of your audiences to take away?

The nation's consumers cannot lead this recovery. Business investment and exports must. That is the imperative, but before an imperative comes an impetus for action. We can't do any of this if we're afraid to get in the game. We need to believe that we can design, develop, and produce here in the United States; that we can do it cost effectively and efficiently; and that we can win. Then we need to find ways to collaborate and make the necessary investments. If we do, our workers will prove America's potential.

But didn't GE move a lot of its manufacturing out of the United States to low-cost countries?

About 30 years ago, as the appliance business became less profitable, we did move some of our manufacturing. The decision was relatively simple. We had strong brand recognition and customer loyalty – two things we believed would continue whether our products were made in Kentucky or Korea. But eventually our suppliers turned into competitors. Other forces were at play as well. Shipping and materials costs were rising, wages were increasing in Asia, and we didn't have control of the supply chain. Core competency was a big issue. Engineering and manufacturing are hands-on and iterative, and our most innovative appliance-design work is done in the United States. At a time when speed to market is everything, separating design and development from manufacturing didn't make sense.

Driving down manufacturing hours per unit is everyone's goal. You often use an example from your operations in Louisville, Ky. Could you give us a little background on that?

We tore down the functional silos and replaced them with a "one team" mentality. Designers, engineers, and assembly-line workers worked as a team to determine the best way to meet their goals. Managers posted their action items and deliverables for all to see, and employees had a strong sense of accountability. This approach allowed the team to reduce the time to produce a dishwasher by 68 percent and the required space by more than 80 percent.

Are there two stories? One about GE Appliances and one about GE Aviation? Does the same rationale apply to GE Aviation?

If the GE Appliance story is about manufacturing teams taking ownership and working together with unions, the GE Aviation story is about the technical innovation and expertise that makes building our engines in the United States our only choice. When we decide where to manufacture, a lot of complex factors are at work. With aviation we take into account the need to protect our proprietary technology. We consider that our technical innovation is dual sourced, supporting both commercial and military engines. Finally, we look at where we can partner with the intellectual capability of American universities. We will be opening an R&D avionics center on the campus of the University of Dayton in Ohio. We are currently partnering with Mississippi State University and hope to replicate that relationship with the University of Southern Mississippi.

What do you say to people who talk about the industrial decline in the United States?

China is growing fast because it is investing in technology and has zero intention of letting up on manufacturing. We shouldn't be afraid of that; we should be inspired by the competition. To meet that competition, we need a strong core of innovation and a stable financial system built around helping small and medium–sized businesses and industrial companies succeed.

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Innovation and success are like the chicken and egg for manufacturers.

70 PERCENT OF MANUFACTURERS REPORTED INNOVATION IN THEIR MARKETS

It was true in 2012 and it remains true in 2013, manufacturers see innovation as key to their growth. In the 2012 Plante Moran Innovation Quotient Survey, manufacturers rated the importance of revenue-generating or cost-savings innovations at 8.25 on a 10-point scale.

This was particularly interesting because hard hit manufacturing had been ramping up its innovation since the financial crisis in 2008, and statistics indicated it was continuing to focus on it. In fact, of all industries, manufacturing led the pack.

In our 2012 Innovation Quotient Survey, 70 percent of manufacturers reported innovation in their markets and 50 percent had registered for a patent or trademark. Data indicated they were taking a two-pronged approach using innovation to enhance and extend their product lines as well as cut costs.

The innovation superstars in the Plante Moran research integrated their innovation efforts into the fabric of their organization. A poster child for that approach is Steelcase, which has built its international reputation on sustainability and environmentally friendly manufacturing.

Innovation is in their DNA, our analysts like to say. An innovation study sponsored by Oracle and done by The Economist agreed with our finding that companies that take advantage of good ideas from all departments see better results. The software sponsored survey, however, took it a little further.

According to Oracle's data, companies are underutilizing their IT departments, seeing their primary responsibility as implementers, not proactive players. By doing so they overlook the potential of the IT department to play an influential role, perhaps finding innovations of its own. Unquestionably, members of the IT department can be effective ambassadors for innovation because of their interaction with departments throughout your organization. They can also be involved in educating staff about key new technologies.

Other researchers have also validated Plante Moran's findings that successful innovators use customer feedback and analyze customer data to innovate effectively.

Perhaps one of the most important findings of our innovation quotient survey was although manufacturers are improving products and developing new ones, they are not looking for new services at the same rate.

Manufacturers need to be reminded that new service delivery models can grow their bottom lines as effectively as new products.

SUCCESSFUL INNOVATORS USE CUSTOMER FEEDBACK AND ANALYZE CUSTOMER DATA

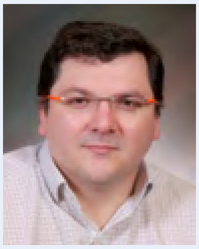
GE Aviation's "Power by the Hour" service is a good example. The manufacturer of jet engines offers customers the option of paying for the engine per operating flight hours rather than paying tens of millions of dollars upfront. The company realizes that the lifetime profit of the engine does not arise at the time of initial purchase, but instead comes from the spare parts, maintenance, and servicing.

One thing is clear, innovation superstars have:

- a strategy in place that includes innovation
- metrics to measure their innovative efforts

These seem to be essentials for incremental innovation, but if you are going for breakthrough innovation you probably need to find collaborators or develop an ecosystem.

MIDDLE MARKET MANUFACTURERS CAN MATCH R&D MUSCLE WITH THE BIG GUYS



PEDRO GUILLEN

Pedro Guillen is a contributor to the World Industrial Reporter and managing partner at Kinetik Partners, a boutique innovation consulting firm with offices in Detroit, Mich., and Barcelona, Spain.

When you talk about a new frontier in innovation, what do you mean?

I'm talking about middle market companies developing and nurturing an innovation ecosystem. Because industries are becoming more and more complex to serve, it is becoming evident that no one company can completely innovate internally and provide long-term results. The degree of know-how, expertise, and investment required to develop new products is not often found within individual companies.

Do you mean joint ventures or new approaches to technology licensing? How do you create an ecosystem?

I'm talking about innovation hubs where research institutions, start-ups, and commercial entities are codeveloping new products, generating know-how, and designing transformational business models. For instance, some competitors are working to understand the basic and applied science behind new products or services. Taking it even further some suppliers are codeveloping to reduce time-to-market as well as mitigate the risk and investment required. Codevelopment is the norm in the European CORDIS Program and it's also surfacing in the defense industry in both the United States and Europe.

Can you give us an example of how to create an ecosystem and how it works?

It takes mapping, looking at the current needs, and projecting future needs. When you find gaps, then you look for solutions. A perfect example is the revolution taking place in the automotive advanced materials industry. They are starting to link aerospace technologies, materials development, and advanced manufacturing to develop new lightweight, high-efficiency vehicles.

What kind of business models do these ecosystems have?

They are self-regulating and they are adaptable. It is important for each member of the ecosystem to have a strong business model because once the power of innovation is unleashed they will need to harness it for strong returns and increased value.

What's one thing you'd add about ecosystems for innovation that we have failed to cover?

They can be self-perpetuating. As industries grow more complex the need for innovation expands; an ecosystem can adjust and expand to include the members it needs, always generating new solutions.

Is this just a factor for the middle market, don't big companies continue to have big R&D operations?

Actually this approach to external or open innovation filtered down from the big corporations like Siemens, Dow, and Procter & Gamble. More than 10 years ago, P&G decided on an open innovation model and now it requires its team to identify or source 50 percent of its products from the outside.

Will healthcare reform improve U.S. competitiveness in the international marketplace?

Manufacturers indicate that the cost of healthcare is one of their biggest challenges moving forward and they are not just talking about the impact of the "play or pay" mandates that go into effect next year. They are also talking about the importance of healthcare costs in making a country competitive. Taking a long view it is clear that the appeal of a manufacturing destination is greatly influenced by the effectiveness and efficiency of its healthcare system.

Germany considers healthcare such an important factor that it recently started using government funds to reduce wage-based health insurance contributions.

In the United States, one of the goals of healthcare reform (Affordable Care Act) is to slow the growth of costs, but for the present, the costs continue to rise at a rate exceeding general inflation and employers are facing complex requirements. Most of the talk to date has been around should we drop the benefits we offer or should we keep them because they are critical to attracting and retaining qualified employees.

McKinsey and Company researchers insist there are other options and refer to data that indicates that after employers better understand the economic and social incentives embedded in the law they may dramatically restructure benefits.

Employers have a lot to consider. We suggest you find a trusted advisor who can help you take a comprehensive approach. A good beginning would be to look at the number of employees you have and their average salaries, while keeping in mind any plans for expansion.

It is important to remember that "play or pay" mandates will be based on your staffing patterns this year. In other words, your employee count for 2014 will be calculated on your number of full-time staff and full-time equivalent employees working more than 120 business days in 2013.

After determining your staffing requirements, crunch the numbers and see what works for your business.

Beginning on Jan. 1, 2014, employers with more than 50 full-time and full-time equivalent employees will be required to provide minimum essential health benefits. Individuals without employer-sponsored insurance (ESI) will have to purchase their own policies. It's called play or pay, and failure to play means penalties.

For employers, whose total number of full-time and full-time equivalent employees is equal to or greater than 51, playing means:

- Offering at least one group health plan with the minimum essential health benefits described by law
- That the qualified plan is "affordable"
- Affordable is defined as having self-only coverage with an employee cost that does not exceed 9.5 percent of the employee's household income for employees with household income between 100 and 400 percent of the federal poverty level.

Employers that fail to meet these requirements are subject to the lesser of the following penalties:

- $2,000 per year per full-time employee (excluding the first 30 full-time employees); and
- $3,000 per year per full-time employee who opts out of an ESI and receives subsidized coverage through a healthcare exchange

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What is an exchange? It is a marketplace where consumers can go to shop for health insurance coverage that meets the requirements of the Affordable Care Act (ACA) and qualifies for federal subsidies. Exchanges are intended to provide a safety net to ensure access to health care and are important because ACA has an individual mandate. All individuals must have health insurance coverage or pay a penalty.

For 2014, the penalty would be $285 for a family of three or 1 percent of taxable income whichever is greater; in 2015, it is $975 or 2 percent of taxable income; and in 2016 it is $2,085 or 2.5 percent of taxable income. After 2016 the penalty is adjusted annually for the cost of living.

Each state will have an exchange available to its residents. An exchange can be state run, a state-federal partnership, or federally run. As of the end of January 2013, half of the states had opted for federally run exchanges.

Some people think these exchanges will be a game changer like never seen before because they will bring increased competition to the healthcare insurance marketplace. Employers will need to stay on top of this situation and be ready to adjust quickly, because the government has just begun to work out the details.

ANOTHER VOICE

HEALTHCARE REFORM AFFECTS THE ENTIRE VALUE CHAIN FROM SERVICE PROVIDER TO PATIENT TO SUPPLIER

MATT WEEKLEY

The following are excerpts from an overview on the Affordable Care Act prepared by the Plante Moran National Healthcare Team led by Matt Weekley.

Healthcare reform as laid out in the Affordable Care Act requires dramatic action for all participants in the healthcare value chain from service providers to patients to suppliers.

As of Jan. 1, 2013, all medical device manufacturers are required to pay a 2.3 percent excise tax on medical device sales and they are being called on to help reduce the total cost of care by limiting product lines and emphasizing long-term value versus short-term profit.

It is predicted that healthcare providers will shrink their preferred supplier list for medical devices and demand more transparency in pricing in efforts to bring down the margins that manufacturers expect. There is also a call for more cost effective and less invasive medical devices and tests.

Unless international testing and production are altered to meet U.S. standards, it seems that there will be less price pressure on pharmaceutical firms, but the emphasis on wellness will force them to focus on preventative solutions, such as statins to manage underlying conditions, and genetic testing to identify people predisposed to certain diseases.

What do healthcare providers want from their suppliers? Help diffusing chronic conditions and keeping patients well longer. Healthcare providers want to be seen as value generators. Being the lowest cost provider with the highest level of quality is critical.

Despite uncertainty in Washington, **U.S. manufacturers have a competitive edge.**

THOSE IN THE U.S. AND EUROPE SEE INTELLECTUAL PROPERTY PROTECTION HELPING CONTRIBUTE TO THEIR COMPETITIVE ADVANTAGE

U.S. manufacturers in the fourth quarter of 2012 rank uncertainty about government actions and their impact on their businesses as their No. 1 concern followed closely by healthcare costs, according to the National Center for the Middle Market.

Despite the uncertainty, however, it seems the mature countries have the edge on economic, trade, financial, and tax systems. When manufacturers from North America, Asia, Europe, South America, and Australia looked at tax rate burdens and system complexity as well as stability of policies, 73 percent found Germany competitive; 71 percent found the United States competitive; and 63 percent found Japanese policies competitive. China is moving up the maturity path and weighed in at 61 percent, but the international CEOs found Brazil and India lagging on the tax and policy fronts.

It is interesting to look at the way CEOs view government policies. Those in the United States and Europe see intellectual property protection helping contribute to their competitive advantage. In China, they see the government encouraging or directly funding investments in science and technology, employee education, infrastructure development, safety and health regulations, as well

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as sustainability policies giving them a competitive edge.

In the United States, CEOs see environmental policies, energy policies, corporate taxes, and healthcare policies putting them at a disadvantage.

In Europe, business leaders see labor policies, immigration policies, and policies resulting in government intervention and ownership putting them at a disadvantage.

In China, business executives see antitrust laws and regulations, government financial intervention and ownership in companies, foreign direct investment policies, immigration, and corporate tax policies to put them at a disadvantage.

More than half of the international executives in this survey represented companies with revenue of less than $100 million, which puts them in the middle market range.

When the NCMM asked what kind of policy changes U.S. leaders in the middle market would like to see, they ranked deficit reduction No. 1 with cuts in government programs second, and corporate tax reform third.

There is concern that the current environment in the United States makes it difficult for entrepreneurs to start businesses and for small businesses to scale up. The regulatory environment is more restrictive now than it was a year ago, according to 54 percent of the respondents to the NCMM fourth quarter survey. According to the National Association of Manufacturers (NAM) 67 percent of small business owners and manufacturers say federal regulations have been harmful.

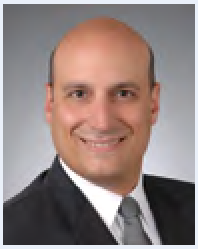
Many middle market manufacturers according to NCMM reports also seem uncertain about how to find their place in international markets. They continue to rank the ability to expand internationally among one of their top 10 challenges at the same time that they show a lack of confidence in the global economy. Only 37 percent said they were confident or somewhat confident.

When thinking globally, it is important to be realistic. We suggest you collaborate with an advisor who can help you weigh all the factors.

WHEN THINKING GLOBALLY, IT IS IMPORTANT TO BE REALISTIC

ANOTHER VOICE

BE CAREFUL TO UNDERSTAND ALL OF THE FACTORS BEFORE YOU ADD NEW FLAGS TO YOUR MAP



LOU LONGO

Lou Longo leads the Plante Moran global services team which includes consultants, accountants, and engineers experienced in strategy, finance, tax, and business operations for multinational organizations.

Why are U.S. companies bringing their manufacturing back onshore and foreign companies bringing their manufacturing here?

First I'd like to say there was an irrational movement offshore. Some companies seemed to think that Wall Street expected them to move 20 to 25 percent of their production offshore. But the metrics really didn't support that.

Now that manufacturing is moving back, many manufacturers are realizing that they cut too lean. They don't have the people they need and they're forced to right size by adding staff.

Reasons for the resurgence of manufacturing in the United States include the weak U.S. dollar, escalating offshore labor costs, and the increasing costs of the logistics involved in a long supply chain. There is also the skills issue. The engineering talent and research and development resources in the United States are important to the success of an operation.

Does this resurgence in manufacturing in the United States mean we can put globalization on the back burner?

If you're interested in growth, you have to have a global strategy. In mature markets like those in the United States and Europe, you are going to have to take market share from someone else to grow. Your opportunity for growth is far better in emerging and developing markets. For instance, India and China with 40 percent of the world's population offer real opportunity for organic growth and it is important to get a foothold now, so that you have the capacity to respond to what is sure to be rising demand.

Can we be a global company and not have bricks and mortar outside of the United States?

Absolutely. Putting flags on a map means investing capital, and we suggest that before you make that decision, you have a full understanding of your customer's needs. When you understand exactly what they need, you can better determine your next steps. Do you need to be in a certain country or would it be better for you to take a regional approach so that you are positioned to serve a wider range of locations? Can you provide the service they need through a strategic alliance or vendor relationships? You need to examine the situation carefully.

I hear a lot about geographic rationalization, just exactly what does that mean?

Rationalization means analyzing all the factors, not just moving for cheap labor like so many companies did when they went to China. It means tracing currency and expected trends and having the flexibility to spread risk by market sector versus a one-size-fits-all investment in a single market. Geographic rationalization means establishing operations where you can serve more than one market, yet keep your supply chain tight.

Where's the next big market?

I like to say the next big market after China is China. Currently all of the growth is along the coast. That represents only one quarter of the population. As the progress on the coast begins moving inland, you're going to see a whole new consumer class emerge that is even bigger than the one we witnessed on the coast. I'd suggest a double focus. You can look at the CIVETS, Columbia, India, Vietnam, Egypt, Turkey, and South Africa, but you don't want to lose sight of China.

What is one of the biggest mistakes you see happening?

Manufactures interested in sales and growth will move into a country because their customers ask them to move and show them potential purchase orders. They don't take time in their decision-making process to evaluate how they can best meet the needs of their customer. Often they don't need to invest in new manufacturing capital. Their options can include local strategic partners, exporting with in-country inventory warehousing, or toll manufacturing. Be diligent and thoughtful in assessing international expansion opportunities.

Fact or fiction: **Skilled workers are in short supply.**

There is no question that talent is a big issue with manufacturers. When comparing the United States on cost and availability of labor and materials, it is clear that U.S. workers allow the nation to hold its own in the competitive global market. Although the U.S. has higher labor costs, it also has the highest labor productivity.

RESEARCH DIDN'T FIND A LARGE NUMBER OF PEOPLE RETIRING, MIGRATING OUT OF THE AREA, OR LEAVING THE WORKFORCE ENTIRELY

But demographics and economic factors have combined to leave manufacturers with a gap. During the lean years of the Great Recession, they laid off workers with the lowest seniority, mostly younger workers, leaving the experienced baby boomers. Some like to call it the graying of the factory floor.

Now the baby boomers have reached retirement age and the economy is improving, so they are leaving. But companies have not been grooming their replacements. And to find those replacements is not easy. Those that were laid off are looking for job security the second time around and the attitudes have changed.

Workers have higher expectations and blue collar jobs don't have a particularly strong appeal. Plus there is the skills issue. Many manufacturers express difficulty finding people to fill their middle-skill positions such as engineers, welders, machinists, and technicians.

Certainly the headlines trumpet a shortage of skilled workers, but the W.E. Upjohn Institute for Employment Research indicates that the perception isn't in line with available workforce data. Using U.S. Census data, the research group compiled employment statistics on machinists in seven Midwest states. Data didn't find a large number of people retiring, migrating out of the area, or leaving the workforce entirely.

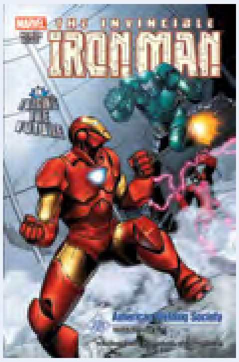
They also didn't see wages going up. Generally when a shortage exists, wages will increase but research showed the average wages of machinists at all skill levels declined slightly. This led the researchers to point out that the data doesn't fit the stories coming out of the hiring departments. "I have a feeling employers are being more careful about who they are hiring. There are still more job seekers than there are jobs," concluded one of the researchers.

Only 23 percent of manufacturers in the NCMM 2012 fourth quarter survey listed the abilities to attract, train, and retain talent as challenges. Yet economic development groups, like the Greater Cleveland Partnership, are focused on improving the availability of a skilled workforce and insist it is all about offering educational opportunities.

Certainly there are numerous examples of how education can be a pivotal factor in the country's success. Look at industrial giant Germany where the government has an impressive apprenticeship system to help blue-collar workers stay competitive by keeping their skills current. And Finland's transformation from a fishing economy to a technological power can be traced back to the government's offer to fund free education all the way through college.

ANOTHER VOICE

ENLISTING TECHNOLOGY, COMIC BOOK HEROES, AND THE BSA TO RECRUIT NEW WELDERS



The United States is experiencing a resurgence in manufacturing and energy production, but where are the steady hands to do the welding or cut the profiles?

The average age of a welder in the United States is 55, and they are retiring twice as fast as new welders are entering the workforce.

Manufacturing could be facing a serious skills shortfall, but thanks to an all-out campaign by the American Welding Society (AWS) more young people are learning about welding as a career.

To engage young people, the society:

- Arranged for Marvel Comics to publish an "Iron Man" comic book that features young welders as heroes
- Worked with the Boy Scouts of America to introduce a merit badge for welding
- Created a traveling exhibit aboard a 53-foot tractor-trailer with five virtual welding stations

The exhibit has traveled to state fairs, jamborees, and the Indy 500 to give tens of thousands of young people an opportunity to experience welding within a very realistic simulated environment. Each "welder" is rewarded with a score for his or her welding prowess.

The AWS Careers in Welding trailer is part of a multifaceted plan to reverse the shortage of welders, enlist more young women into the profession, and ensure an adequate workforce for America's manufacturing future.

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15 Enlisting technology, comic book heroes, and the BSA to recruit new welders

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