

THE MANUFACTURING INSTITUTE TRAINING SURVEY

January 17, 2020

Executive Summary

Manufacturers have consistently cited the inability to attract and retain talent as their top business concern. For nine consecutive quarters, businesses surveyed in the [NAM Manufacturers' Outlook Survey](#) said that the skills gap was their top challenge. More than 60% of respondents cited this concern in the most recent outlook survey. Underscoring the severity of this challenge, 78.7% of respondents in the third quarter outlook survey said that they have open positions that they are struggling to fill, the most recent survey for which the question was asked, and roughly one-third said that they were forced to turn down business opportunities due to their inability to find sufficient talent. This challenge has been heightened by the tight labor market and baby boomer retirements.

Indeed, a [recent study](#) by Deloitte and The Manufacturing Institute found that manufacturers will need to hire 4.6 million workers by 2028. The study suggests that 2.4 million of those jobs could go unfilled if we don't take the steps now to prepare more workers for the next generation of jobs.

Accordingly, The Manufacturing Institute has focused on this issue for several years now. As the workforce and education partner of the National Association of Manufacturers, the Institute works to support the manufacturing workforce of today and grow the manufacturing workforce of tomorrow. The Institute has many different programs dedicated to addressing manufacturing's workforce crisis. It also works hand in glove with manufacturers who are themselves working hard to proactively address skills-gap shortfalls. These efforts often include working closely with local educational institutions to ensure credentialing programs meet current and future workforce needs. Increasingly, efforts also include an emphasis on providing skills training opportunities to current workers. That tactic is critical because skills training is the best way to ensure that manufacturing employees will be able to keep up with new technologies and processes as the industry continues to evolve.

But how many manufacturers are actually employing these types of programs? Are they looking to scale up those efforts? How much are they investing? These questions interest the public and policymakers at every level of government, including Congress and the White House, as well as manufacturers themselves. So, as the leading authority on data and research for the industry, the Institute decided to take a closer look.

We fielded a first-of-its-kind survey of member manufacturing companies in order to examine how manufacturers are employing innovative programs to train new workers and upskill their current workforce and to identify the trends and challenges being experienced across the industry. We wanted to get a clearer understanding of just what manufacturers are doing to ensure that their workers have the skills needed to be successful at their jobs as the industry continues to adapt.

The results of that survey are contained in the paper that follows.

Here are some key findings:

- Nearly 70% of manufacturers are addressing the workforce crisis by creating and expanding internal training programs for their workforce, among other tactics.
- More than 79% of respondents said that they have increased their training activities.
- Three-quarters of respondents said that upskilling workers helped to improve employee productivity, with promotion opportunities and morale also leading the list of reasons why companies might embrace training programs.
- In dollar terms, the Institute estimates that the sector spent at least \$26.2 billion in 2019 on internal and external training programs for new and existing manufacturing employees.

Additional and more detailed findings—including the types of training, upskilling and professional development programs and strategies—can be found below.

The main takeaway from the survey is this: Manufacturers have long accepted the industry's role as the source for solutions to the greatest challenges facing our country. And when it comes to actually addressing the workforce crisis, they are taking the lead, as manufacturers so often do. Across the country, manufacturers have taken it upon themselves to build stronger pipelines to address not only the needs of their businesses but also the needs of their workers. And they are doing so in a lot of different ways.

More still needs to be done, of course, and the Institute will continue to conduct research to closely examine the issue and then take action to address it. For instance, the Creators Wanted campaign developed by the Institute and the NAM is an immersive manufacturing workforce recruitment campaign slated to launch in 2020 in at least 20 states. Its goal is to help recruit a new generation of talent. Individual manufacturing companies are showing their dedication as well. And that's good for the country, because it's clear to just about everyone that the future of the manufacturing industry is tied to the future of its workforce.

Moving forward, this survey will be conducted annually to track workforce training trends during this critical period for the industry. The survey was in the field from Sept. 5 to 17, 2019.

Assessing Training and Upskilling Efforts of Manufacturers

Manufacturers are seeing strong growth in employment and training according to the latest data (Table 1). In the survey, 43.2% of respondents reported that they are currently increasing their workforce levels, with 16.7% noting declines. This translates into a Manufacturing Institute Workforce PMI reading of 62.3, with readings above 50 indicating an expansion, much like other similar measures. At the same time, there was very robust activity regarding training efforts. More than 79% of manufacturers suggested that they are currently engaged in more training efforts for their employees, with just 2.3% citing reductions in those efforts. This would indicate a solid reading of 88.6 for The Manufacturing Institute Workforce Training PMI in this report.

Table 1: The Manufacturing Institute Workforce and Training PMIs

	Increasing	Staying the Same	Decreasing	Index
Current Workforce Levels	43.2%	40.2%	16.7%	63.3
Current Workforce Training Efforts	79.4%	18.3%	2.3%	88.6

Note: Index readings above 50 suggest that the activity is currently expanding; whereas, readings below 50 would indicate declining growth in that activity. The percentages above could reflect rounding error.

Manufacturers were asked about total annual spending on in-house and external training for new and existing employees. Based on these responses, the Institute estimates that the sector spent at least \$26.2 billion in 2019 on training.¹

In addition, there is a weighted average estimate of 42.9 hours of in-house and external training provided to new U.S. employees, with existing U.S. employees receiving a weighted average of 27.7 hours, according to the responses in this survey. Table 2 breaks out those data by firm size, and it also lists weighted averages for the number of employees being trained at each size level.

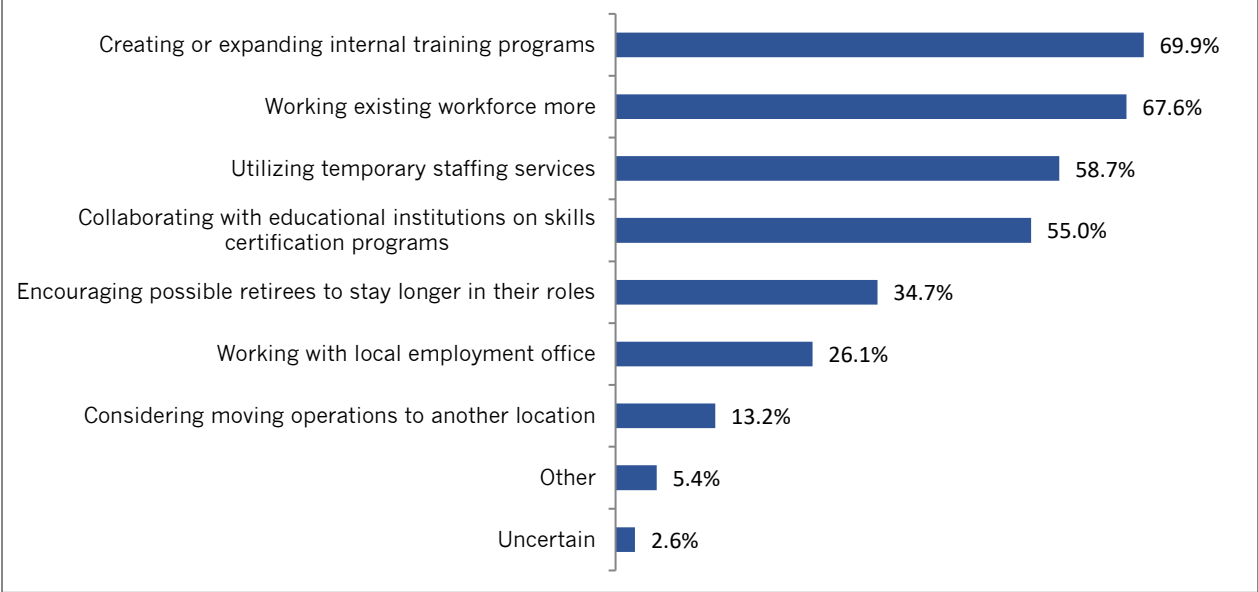
Table 2: Weighted Averages for the Number of U.S. Manufacturing Employees Being Trained

	Average # of Hours of Training for New Employees	Average # of Employees Being Onboarded	Average # of Hours of Training for Existing Employees	Average # of Existing Employees Being Trained
Small Firms	39.1	17.9	28.8	49.4
Medium-Sized Firms	46.9	41.7	25.9	293.7
Large Firms	38.0	638.4	30.5	2314.5
ALL FIRMS	42.9		27.7	

¹ This estimate is based on average spending by firm size among the responses. The national estimate utilizes 2016 firm-size data from the Census Bureau's Statistics of U.S. Businesses database, the most recent available, for firms with 20 employees or more. Survey responses from the NAM Manufacturers' Outlook Survey on unfilled positions and the percentage of firms creating or expanding internal training programs are also used as proxies for estimating the number of firms that might be engaged in training activities from the population of all manufacturing firms cited in the Census data. The estimate noted here is the lower bound of a possible confidence interval.

Figure 1 shows some of the tactics employed by manufacturers to bridge the current skills gap, led by creating and expanding internal training programs (69.9%) and offering more opportunities for current workers (67.6%).

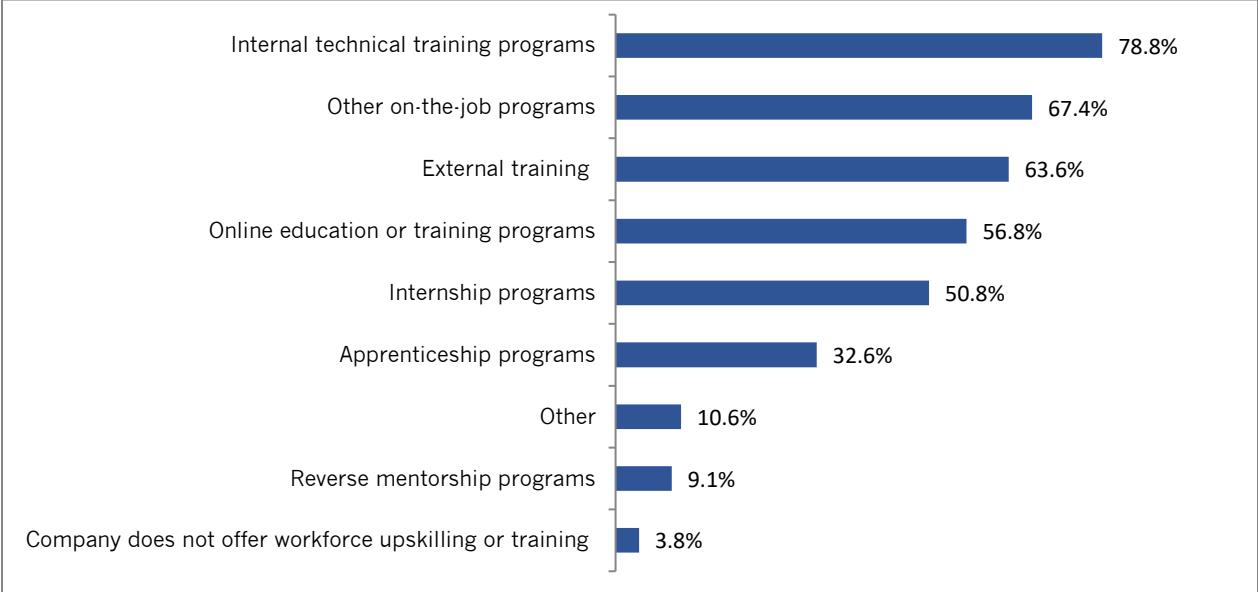
Figure 1: How Firms Are Addressing the Skills Shortage, Third Quarter 2019



Source: NAM Manufacturers’ Outlook Survey, Third Quarter 2019
 Note: Respondents were able to check more than one response; therefore, responses exceed 100%.

Manufacturers appear to be utilizing a wide variety of training options, with the most prevalent being internal technical training programs, which were cited by 78.8% of respondents (Figure 2). Other top choices included other on-the-job programs (67.4%), external training (63.6%), online education and training (56.8%) and internships (50.8%). Nearly one-third of manufacturers completing this survey said that they used apprenticeship programs, and 9.1% cited reverse mentoring initiatives, where younger employees mentor their older colleagues. In addition, 10.6% checked “other,” with those examples including coaching, personal growth plans, professional association participation, safety training and tuition reimbursement and older employees mentoring younger workers.

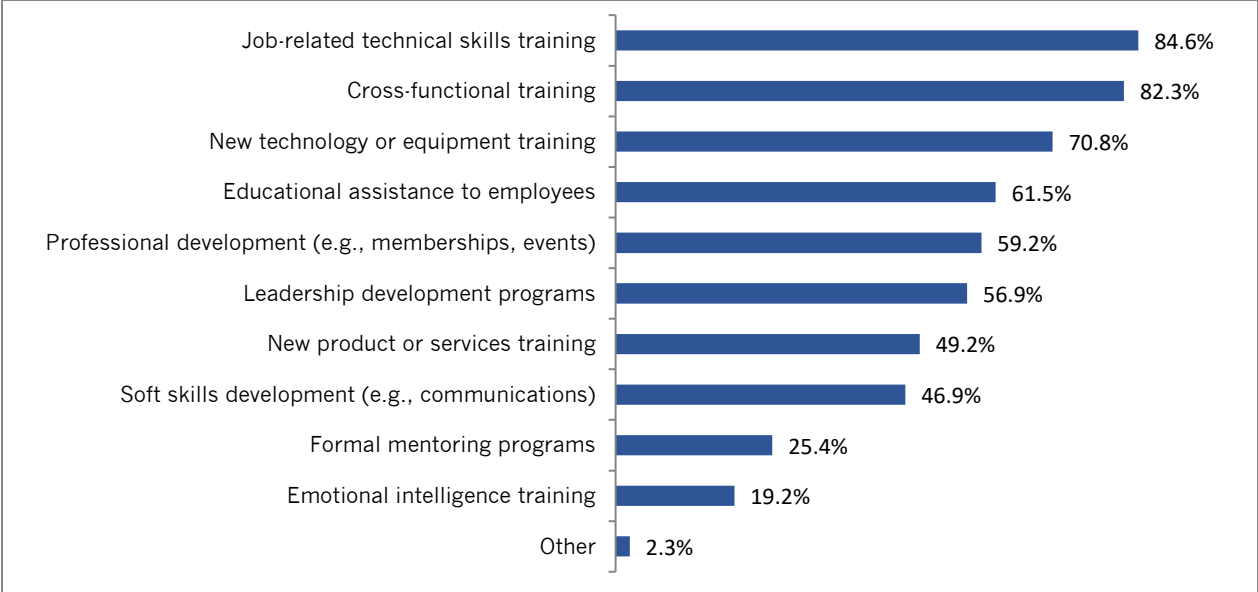
Figure 2: Types of Workforce Training Programs Being Utilized for U.S. Manufacturing Companies



Note: Respondents were able to check more than one response; therefore, responses exceed 100%.

Digging a little deeper into employee development, manufacturers were asked about the types of training that workers were engaged in at their companies (Figure 3). At the top of the list were job-related technical skills training (84.6%), cross-functional training (82.3%) and new technology or equipment training (70.8%), each of which will help improve the performance of workers in their daily tasks. Respondents also cited training programs devoted to growing the employee personally and professionally, including professional development (e.g., membership, professional events: 59.2%), leadership development (56.9%), soft skills development (e.g., communications; 46.9%), formal mentoring programs (25.4%) and emotional intelligence training (19.2%).

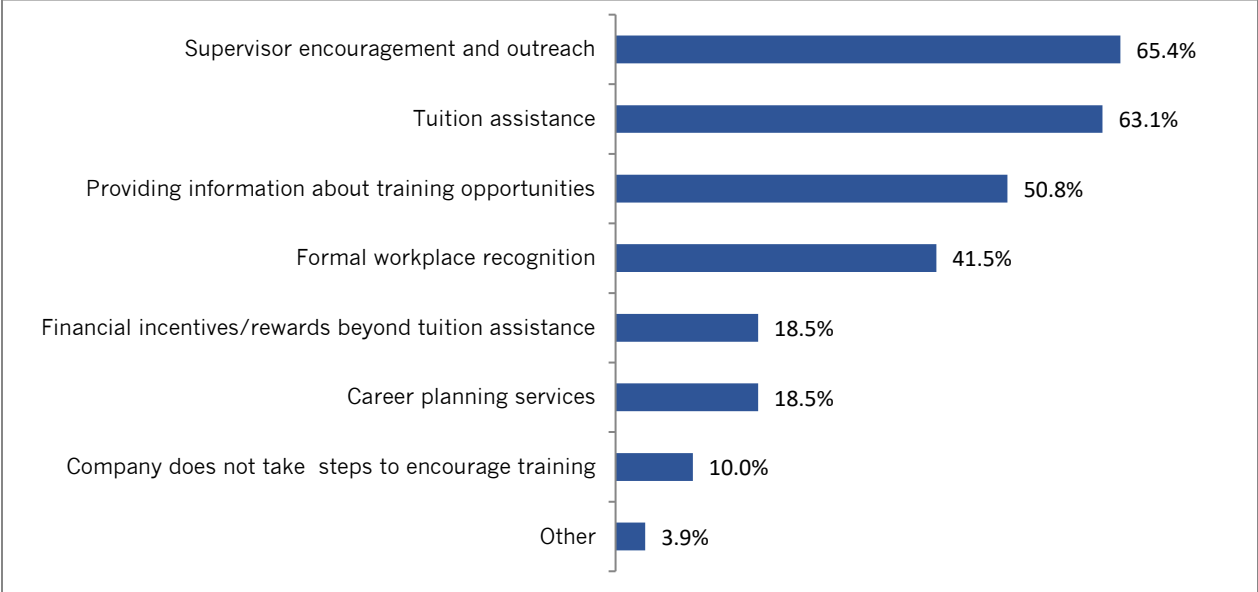
Figure 3: Types of Employee Development Training for U.S. Employees at Manufacturing Companies



Note: Respondents were able to check more than one response; therefore, responses exceed 100%.

Supervisor encouragement goes a long way toward encouraging workers to participate in upskilling or training programs, with 65.4% of manufacturers noting this as an important step in the process (Figure 4). This was closely followed by tuition assistance, cited by 63.1% of respondents. Just over half of manufacturing companies said that they provided information about training opportunities to their employees, 18.5% said that their firm had other financial incentives or rewards beyond tuition assistance, and the same percentage suggested that career planning services were available. Beyond those steps, 41.5% of manufacturers noted the importance of formal workplace recognition as a means of encouraging upskilling or training.

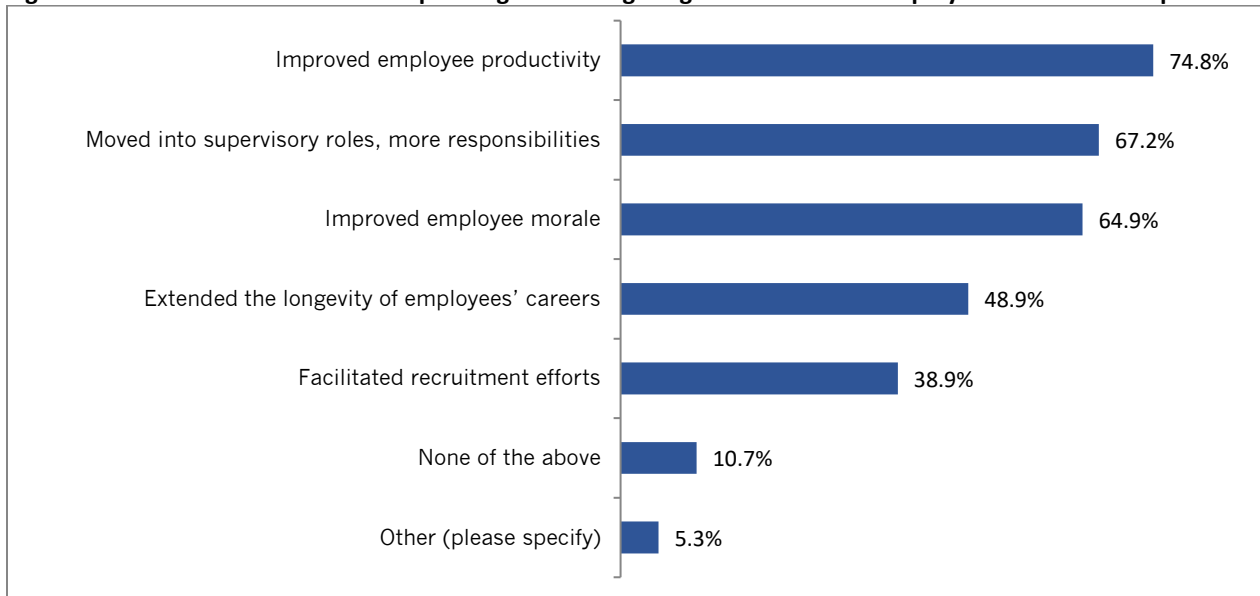
Figure 4: Steps Taken to Encourage U.S. Workers to Participate in Workforce Upskilling or Training Programs



Note: Respondents were able to check more than one response; therefore, responses exceed 100%.

Figure 5 outlines the motivations that push manufacturers toward embracing training programs, with three-quarters of respondents saying that upskilling workers helps to improve employee productivity. Other factors influencing the decisions to seek training include a desire to move into supervisory roles or roles that have more responsibility (67.2%), to improve employee morale (64.9%) and to extend the longevity of employees’ careers (48.9%). Moreover, the availability of such training opportunities also helps to facilitate recruitment efforts, as noted by 38.9% of those taking the survey. Of the write-in comments, people added that training helps to increase compensation and reduce machine downtimes.

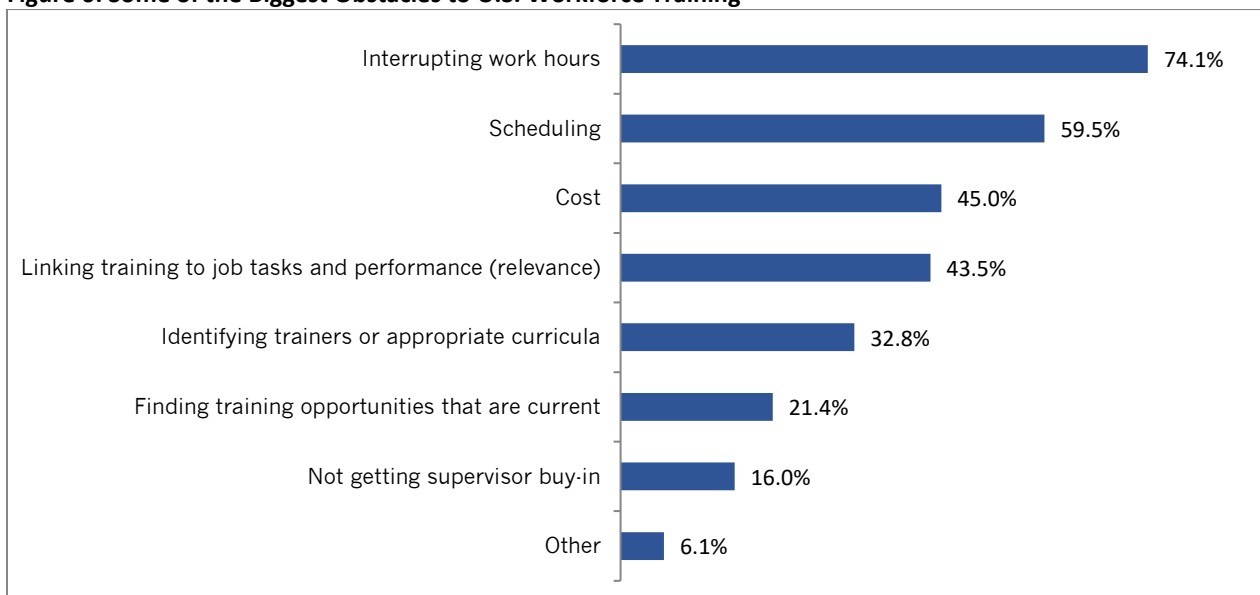
Figure 5: How Have U.S. Workforce Upskilling or Training Programs Influenced Employee Careers at Companies



Note: Respondents were able to check more than one response; therefore, responses exceed 100%.

One of the greatest obstacles to workforce training is the concern that such efforts might interrupt work hours, as noted by 74.1% of respondents (Figure 6). Scheduling (59.5%), cost (45.0%) and linking training to job tasks and performance (43.5%) were also major reasons provided. Regarding the training itself, nearly one-third of manufacturers said that it was difficult to identify trainers or appropriate curricula relative to their needs, with 21.4% suggesting that finding training opportunities that were current was a problem. Sixteen percent also noted that not getting supervisor buy-in was an impediment.

Figure 6: Some of the Biggest Obstacles to U.S. Workforce Training



Note: Respondents were able to check more than one response; therefore, responses exceed 100%.

Concluding Remarks

As the data show, the manufacturing sector continues to adapt, utilizing new technologies and altering the ways firms innovate and operate on the shop floor each day. An ever-changing workplace necessitates a dynamic set of worker skillsets. With that in mind, it has become commonplace for employers to stress the need for continuous learning on the job.

This process is not without a fair amount of challenges, however. Firms cite scheduling and cost barriers as obstacles for undertaking training, with many mentioning difficulties in finding appropriate training opportunities or instructors. Additionally, the success of training programs relies on supervisor encouragement. But firms are committed to creating opportunities for employee development, devoting dollars to tuition assistance and other initiatives to encourage greater participation. Manufacturers know that workforce training programs are critical to their future, both for assisting in job performance and enhancing employees' professional development.

The Manufacturing Institute will continue to follow these trends by fielding this survey once a year.

Survey Responses

1. Looking at your current U.S. workforce levels, would you say that they are:
 - a. Increasing – 43.2%
 - b. Staying the same – 40.2%
 - c. Decreasing – 16.7%

MI Workforce Growth Index: 63.3

2. Looking at your current U.S. workforce training efforts (both in terms of dollars spent and hours devoted), would you say that they are:
 - a. Increasing – 79.4%
 - b. Staying the same – 18.3%
 - c. Decreasing – 2.3%

MI Training Growth Index: 88.6

3. Roughly, how much does your firm spend annually on in-house and external training programs in the U.S., both for new and existing employees?

Average amount spent for training of new and existing employees: \$15,396,559.46

4. What is the average number of hours of in-house and external training that new U.S. employees receive?
 - a. None – 1.5%
 - b. Fewer than 8 hours – 9.9%
 - c. 8 to 19 hours – 16.0%
 - d. 20 to 39 hours – 24.4%
 - e. 40 to 80 hours – 27.5%
 - f. More than 80 hours – 20.6%

This is consistent with a weighted average of 42.9 hours of training for new employees.

5. Roughly, how many employees were onboarded in the U.S. at your firm this year?

Average number of employees being onboarded consistent with these responses: 189.2.

6. What is the average number of hours of in-house and external training that existing employees in the U.S. receive?
 - a. None – 0.8%
 - b. Fewer than 8 hours – 21.4%
 - c. 8 to 19 hours – 33.6%
 - d. 20 to 39 hours – 19.1%
 - e. 40 to 80 hours – 17.6%
 - f. More than 80 hours – 7.6%

This is consistent with a weighted average of 27.7 hours of training for existing employees.

7. Roughly, how many existing U.S. employees received training (or “upskilling”) at your firm this year?

Average number of existing employees receiving training consistent with these responses: 740.1.

8. What are the types of workforce training programs that are utilized in your company for U.S. employees? *(Check all that apply.)*
- a. Internal technical training programs – 78.8%
 - b. External training offered by local educational institutions or other companies – 63.6%
 - c. Online education or training programs – 56.8%
 - d. Apprenticeship programs – 32.6%
 - e. Internship programs – 50.8%
 - f. Other on-the-job programs – 67.4%
 - g. Reverse mentorship programs, in which younger employees mentor more senior employees – 9.1%
 - h. Other – 10.6%
 - i. My company does not offer workforce upskilling or training programs – 3.8%
9. Looking specifically at employee development programs, which of the following types of training does your company regularly engage in for U.S. employees? *(Check all that apply.)*
- a. Job-related technical skills training – 84.6%
 - b. New product or services training – 49.2%
 - c. New technology or equipment training – 70.8%
 - d. Cross-functional training – 82.3%
 - e. Educational assistance to employees – 61.5%
 - f. Formal mentoring programs – 25.4%
 - g. Leadership development programs – 56.9%
 - h. Soft skills development (e.g., communications) – 46.9%
 - i. Emotional intelligence training – 19.2%
 - j. Professional development, including memberships and participation in professional events – 59.2%
 - k. Other – 2.3%
10. What steps is your company taking to encourage U.S. workers to participate in workforce upskilling or training programs? *(Check all that apply.)*
- a. Supervisor encouragement and outreach – 65.4%
 - b. Career planning services – 18.5%
 - c. Tuition assistance – 63.1%
 - d. Financial incentives or rewards outside of tuition assistance – 18.5%
 - e. Providing information about training opportunities – 50.8%
 - f. Formal workplace recognition – 41.5%
 - g. Other – 3.9%
 - h. My company does not take particular steps to encourage workers to participate in workforce upskilling or training programs – 10.0%
11. How have these U.S. workforce upskilling or training programs influenced employee careers at your company? *(Check all that apply.)*
- a. They have extended the longevity of employees' careers at my company – 48.9%.
 - b. They have allowed workers to move into supervisory roles and gain more responsibilities – 67.2%
 - c. They have improved employee morale – 64.9%
 - d. They have improved employee productivity – 74.8%
 - e. They have facilitated our recruitment efforts – 38.9%
 - f. Other – 5.3%
 - g. None of the above – 10.7%
12. What is your annual turnover rate in the United States?
- a. Less than 10% – 56.5%

- b. 11 to 20% – 28.2%
- c. 21 to 30% – 9.2%
- d. More than 30% – 6.1%

This is consistent with a weighted average of an annual turnover rate of 11.4%.

13. What are some of the biggest obstacles to U.S. workforce training that your company regularly encounters? *(Check all that apply.)*
- a. Scheduling – 59.5%
 - b. Cost – 45.0%
 - c. Interrupting work hours – 74.1%
 - d. Finding training opportunities that are current – 21.4%
 - e. Linking training opportunities to job tasks and performance (relevance) – 43.5%
 - f. Identifying trainers or appropriate curricula – 32.8%
 - g. Not getting supervisor buy-in – 16.0%
 - h. Other – 6.1%
14. Who at your company is most responsible for establishing workforce training parameters and responsibilities for U.S. employees? *(Check all that apply.)*
- a. Company-wide policies set by senior executives – 61.1%
 - b. Human resources – 61.1%
 - c. Plant managers – 48.1%
 - d. Direct supervisor – 45.8%
 - e. Individual employees themselves – 23.7%
 - f. Other – 3.8%
15. What is your company's primary industrial classification?
- a. Chemicals – 2.3%
 - b. Computer and electronic products – 1.5%
 - c. Electrical equipment and appliances – 8.4%
 - d. Fabricated metal products – 32.8%
 - e. Food manufacturing – 1.5%
 - f. Furniture and related products – 0.8%
 - g. Machinery – 9.9%
 - h. Nonmetallic mineral products – 1.5%
 - i. Paper and paper products – 2.3%
 - j. Petroleum and coal products – none
 - k. Plastics and rubber products – 6.9%
 - l. Primary metals – 1.5%
 - m. Transportation equipment – 1.5%
 - n. Wood products – 3.8%
 - o. Other – 25.2%
16. What is your firm size (e.g., the parent company, not your establishment)?
- a. Fewer than 50 employees – 20.0%
 - b. 50 to 499 employees – 53.1%
 - c. 500 or more employees – 26.9%
17. NAM President and CEO Jay Timmons and Manufacturing Institute Executive Director Carolyn Lee asked NAM members to commit to President Donald Trump's [Pledge to America's Workers](#) last year—a commitment to expand programs that educate, train and reskill American workers from high-school age to near retirement. In July, they [announced](#) that manufacturers had committed to training roughly 1.2 million workers over the next five years.

If you commit to this pledge, how many workers do you plan to train in the next five years?

- a. Fewer than 50 – 33.6%
- b. 50–100 – 16.8%
- c. 101–250 – 16.8%
- d. 251–500 – 5.6%
- e. 501–1,000 – 3.2%
- f. 1,001–2,500 – 4.0%
- g. 2,501–5,000 – 1.6%
- h. More than 5,000 – 3.2%
- i. I do not commit to the pledge – 15.2%

This is consistent with a weighted average of 385.4 workers being committed for training.