THE MANUFACTURING EXPERIENCE

How Firms Would Invest a Marginal Dollar with Their Company

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KEY FINDINGS AND INSIGHTS FROM MANUFACTURERS

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MANUFACTURING Institute

Center for Manufacturing Research

THE MANUFACTURING EXPERIENCE:
How Firms Would Invest a Marginal Dollar with Their Company

September 2023

By Chad Moutray and Anjana Radhakrishnan[1]

The Manufacturing Institute's Mission

We aim to build, diversify, and strengthen the manufacturing workforce for individual opportunity, community prosperity, and a competitive manufacturing industry for the future.

The MI helps build a manufacturing workforce resilient to the challenges and prepared for the opportunities of the 21st century. Through implementing groundbreaking programs, convening industry leaders and conducting innovative research, the MI furthers individual opportunity, community prosperity and a more competitive manufacturing industry. As the 501(c)3 nonprofit workforce development and education affiliate of the National Association of Manufacturers, the MI is a trusted adviser to manufacturers, equipping them with solutions to address the toughest workforce issues.

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Executive Summary:

As manufacturing continues to evolve, the nature of work and skills must also adapt to fit the new needs of the industry. These short- and long-term changes require manufacturing leaders to weigh various factors and competing priorities to make informed investment decisions. Manufacturing leaders are constantly thinking how to best position their companies in a competitive marketplace and set themselves up for success over the long term. To do so, they must prioritize investments, making tough but important decisions about where to deploy marginal dollars.

To further explore the topic, the MI, with support from Cognizant conducted a study that examined the different approaches manufacturers took in making investment decisions from June to August 2023. The study consisted of an online survey as well as in-depth interviews with manufacturing leaders. The purpose of this project was to understand how manufacturers prioritized investing in various aspects of their businesses, primarily through the question of the marginal dollar. If manufacturers had an extra $1 million (or $10 million or $100 million) to invest, how would they utilize those dollars?

The following are highlights of the report:

- When asked about their top priorities for current dollars, nearly 74% of manufacturers reported building a robust and trained workforce as a key area for investment, which fits in with the larger macroeconomic conditions of the tight labor market and shortage of available workers.
- When business leaders were asked how they would spend a marginal $1 million, 61.5% said that they would invest in new equipment. These findings point towards a desire to make smart investments that will transform operations and the production process, while also ensuring that the workforce can adapt to such changes.
- Additional areas of focus for marginal dollar investment included new equipment (56.3%), optimizing existing equipment (50.5%), operational and process transformation (46.5%) and updating existing facilities (44.7%).
- When considering their future growth strategies, manufacturers identified a stronger domestic economy for growing sales (69.5%), increased efficiencies in the production process (67.8%) and maintaining a robust and trained workforce (67.0%) as the most significant factors in contributing to expansion.

Key Takeaway

From survey data and interviews, three investment priorities emerged across manufacturer size and industry:

- Increasing throughput and lowering costs where possible
- Creating new opportunities for growth
- Building a stronger, more resilient workforce

These priorities should not be considered as competing interests, but rather as interdependent.

As several of our interviewees indicated, having a trained workforce is crucial to capitalizing on the full potential of equipment, technology and facilities. Streamlined processes, integrated automation and optimized workspaces in turn allow employees to maximize their productivity. No investment in technology or capital equipment can succeed without a corresponding workforce trained and ready to maximize the new capacity.

Introduction

In recent years, manufacturers have faced many challenges including trade conflicts, the COVID-19 pandemic, global supply chain disruptions, soaring costs and workforce shortages. Through it all, the sector has been remarkably resilient with firms continuing to focus on future growth, even in the current economic climate. This forward thinking reflects the economic drive to invest in manufacturing in the United States. Additionally, the pandemic exposed weaknesses in the system, particularly supply chain bottlenecks, motivating companies to ensure the industry is not dependent on other nations for critical inputs in the production process. This has led to a rapid acceleration in investments in the U.S. as companies reevaluate their production processes and supply chains to improve resiliency and better meet customers' needs.[2] Economic indicators further suggest that the economy is approaching an inflection point that should increase optimism about future growth and competitiveness in the sector.

Data reflect this shift in manufacturing. For instance, among companies that are engaged in international trade, 62.3% are planning to increase investments and/or sourcing in the U.S. after reevaluating their supply chains.[3] A survey from the Manufacturing Leadership Council—a division of the National Association of Manufacturers focused on the digital transformation in manufacturing—similarly found that more than 60% of respondents expect to increase their company's onshoring or nearshoring over the coming years.[4]

Spurring even more growth, foreign direct investment in manufacturing in the U.S. reached a record level in 2022, rising to $2.3 trillion as expressed on a historical cost basis, with the manufacturing sector comprising 42.4% of total FDI. The Reshoring Initiative's data also show another record year for FDI in 2022, including for jobs created by these announced investments.[5] Core capital goods spending—a proxy for capital spending in the U.S. economy—remains at historic levels, and private manufacturing construction spending has soared to record heights, up to a whopping 80.7% year-over-year in June.[6] Job postings also remain highly elevated and well above pre-pandemic levels, even with recent cooling. Manufacturing employment remains just shy of 13 million workers, the highest level since 2008.

To that end, manufacturers constantly adapt, implement new technologies and rethink innovation and production processes to improve quality and efficiency. In fact, nearly 90% of manufacturers say they plan to invest in disruptive technologies over the next couple of years,[7] with government data continuing to show solid growth in investments in structures, equipment and intellectual property products. These are all signs of confidence in the manufacturing sector, with businesses investing in their future. This spending will likely boost productivity growth in the coming years, adding to the competitiveness of the sector and expanding employment opportunities for more people.

As manufacturing continues to evolve, the nature of work and skills must also adapt to fit the new needs of the industry. These short- and long-term changes require manufacturing leaders to weigh various factors and competing priorities to make informed investment decisions. Manufacturing leaders are constantly thinking how to best position their companies in a competitive marketplace and set themselves up for success over the long term. To do so, they must prioritize investments, making tough but important decisions about where to deploy marginal dollars.

This study explores the different approaches that manufacturers take in making investment decisions. If manufacturers had an extra $1 million (or $10 million or $100 million) to invest, how would they utilize those dollars? Would they purchase new equipment? Would they build a new facility or spend it on new disruptive technologies, digital

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2 The NAM has produced a longer discussion on the potential opportunity for manufacturing. See "This Is Manufacturing's Moment: The Industry's Vision for 14 Million Jobs and $3 Trillion in Output by 2030" by Chad Moutray. National Association of Manufacturers. July 2023.

3 NAM Manufacturers' Outlook Survey. National Association of Manufacturers. Q1 2023. March 2023.

4 Survey Results: A Lens on the Future. Manufacturing Leadership Council, Manufacturing in 2030 Project. October 2022.

5 "Reshoring and FDI Up 53%, a New Record." Reshoring initiative. Press release. March 24, 2023.

6 For a breakdown of the rapid rise in construction spending, the U.S. Department of the Treasury offers an excellent analysis. See https://home.treasury.gov/news/featured-stories/unpacking-the-boom-in-us-construction-of-manufacturing-facilities.

7 "Survey: More Expect M4.0 Tech Adoption to Increase." Manufacturing Leadership Council. September 18, 2022.

transformation and/or research and development? Or would they hire new workers and invest in training existing employees? If it is a combination of these elements, how is the pie split up? In implementing these capital investments, how are manufacturers accounting for workforce elements? To analyze these complex decision-making processes, we conducted an online survey among manufacturing leaders. In addition, manufacturing executives were interviewed for their insights on this topic. This report summarizes the findings of those surveys and conversations.

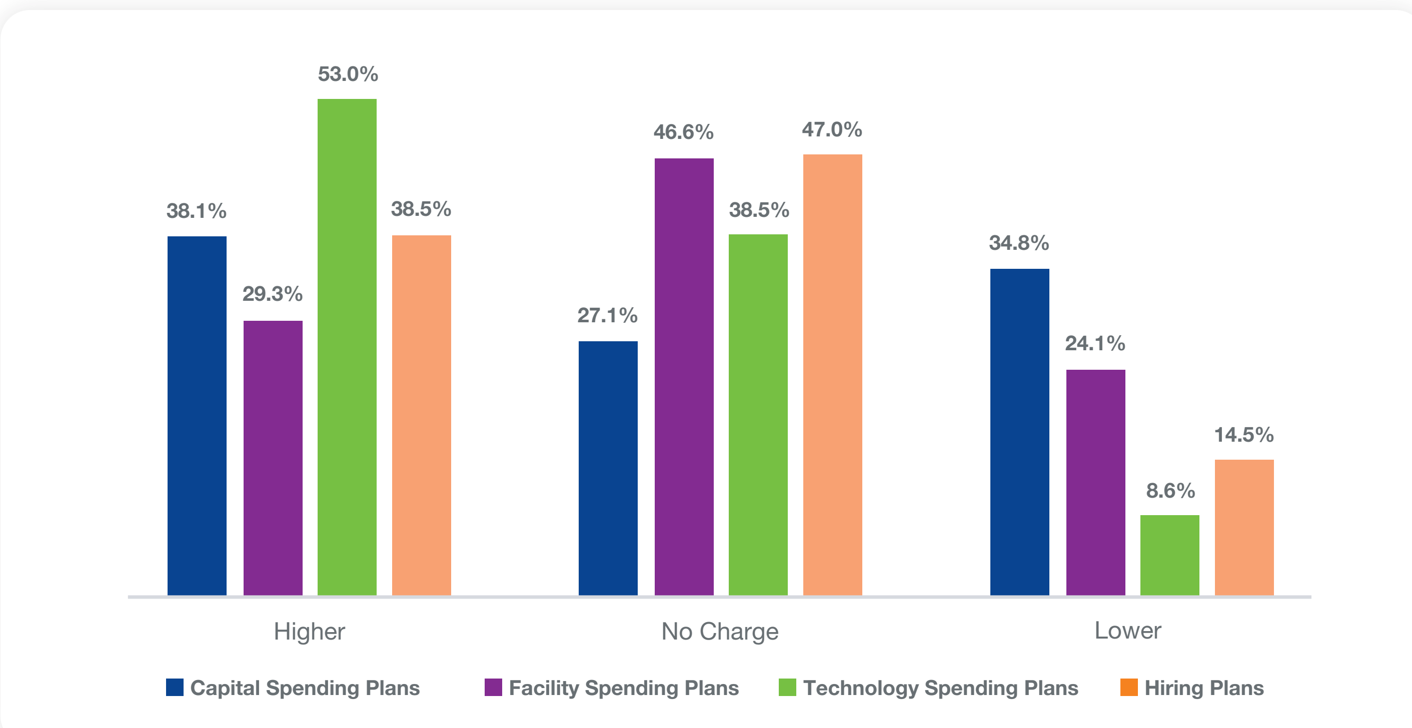
Sample Characteristics

To better understand the investment decision-making processes of manufacturers, the MI conducted an online survey from June 5 to 28, 2023, receiving 118 responses. Survey respondents spanned a broad range of sectors including chemicals, electrical equipment and appliances, fabricated metal products, machinery, plastics and rubber products, among others. Nearly 77% of those completing the survey worked in small and medium-sized companies. See Appendix A for the survey questions and the breakdown of responses. In addition, this analysis draws upon insights from interviews with nine manufacturing leaders, mostly from executive leadership and strategic functions of the business.

Capital Spending Plans

We surveyed manufacturers about their capital spending plans for the next 12 months (Figure 1). Just over 38% of respondents said they anticipated spending more on capital investments over the next year, with 34.8% predicting lower spending and 27.1% seeing no change. More than anything, this reflects the current economic landscape, which balances the short-term challenges seen globally in the sector with longer-term optimism as well as the increased investments noted earlier. Technology spending was the biggest bright spot, with 53.0% of respondents predicting increased purchases over the next year and only 8.6% anticipating declines. Hiring was also encouraging, with 38.5% expecting increased employment over the next 12 months and 14.5% forecasting reduced hiring. Sizable percentages of respondents predicted no changes in spending on facilities, technology or employment.

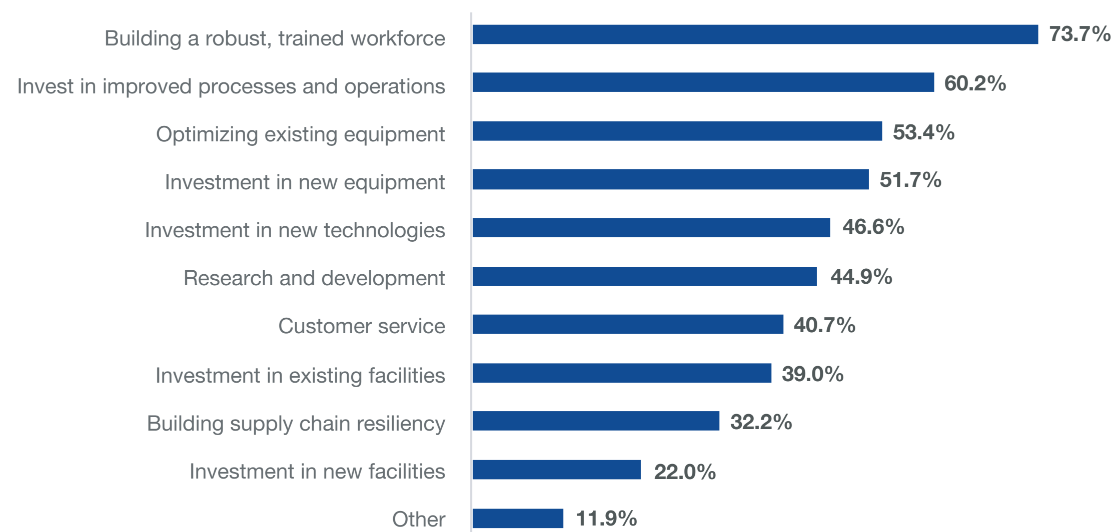
Figure 1: Current Manufacturer Spending Plans for the Next 12 Months



Nearly 74% of manufacturers reported building a robust and trained workforce as a top priority (Figure 2), which fits in with the larger macroeconomic conditions of the tight labor market and shortage of available workers. Indeed, the inability to attract and retain workers has been the top primary challenge for four straight quarters in the NAM Manufacturers' Outlook Survey.[8] Beyond the workforce, other top priorities included investing in improved processes and operations (60.2%), optimizing existing equipment (53.4%), investing in new equipment (51.7%), investing in new technologies (46.6%) and research and development (44.9%), among other options. Those offering additional responses noted the need for more automation, improved branding or marketing, decreasing supply chain costs and investing to meet new regulations, specifically mentioning environmental issues.

The priorities of manufacturers can also be seen through the prism of what business leaders consider the strongest prospective drivers of growth moving forward, with an expectation that firms will accelerate their investments in those areas. Indeed, the largest drivers of growth for manufacturers in their future growth strategies were a stronger domestic economy for growing sales (69.5%), increased efficiencies in the production process (67.8%) and maintaining a robust and trained workforce (67.0%) (Figure 3). Other significant drivers included new product development (50.9%), investments in new technologies (47.5%), increasing worker flexibility and improving employee culture (36.4%) and research and development (33.05%). Expanding existing facilities, moving into new markets and becoming more sustainable were among the suggestions offered by those providing additional strategies.

Figure 2: Top Priorities of Manufacturers



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

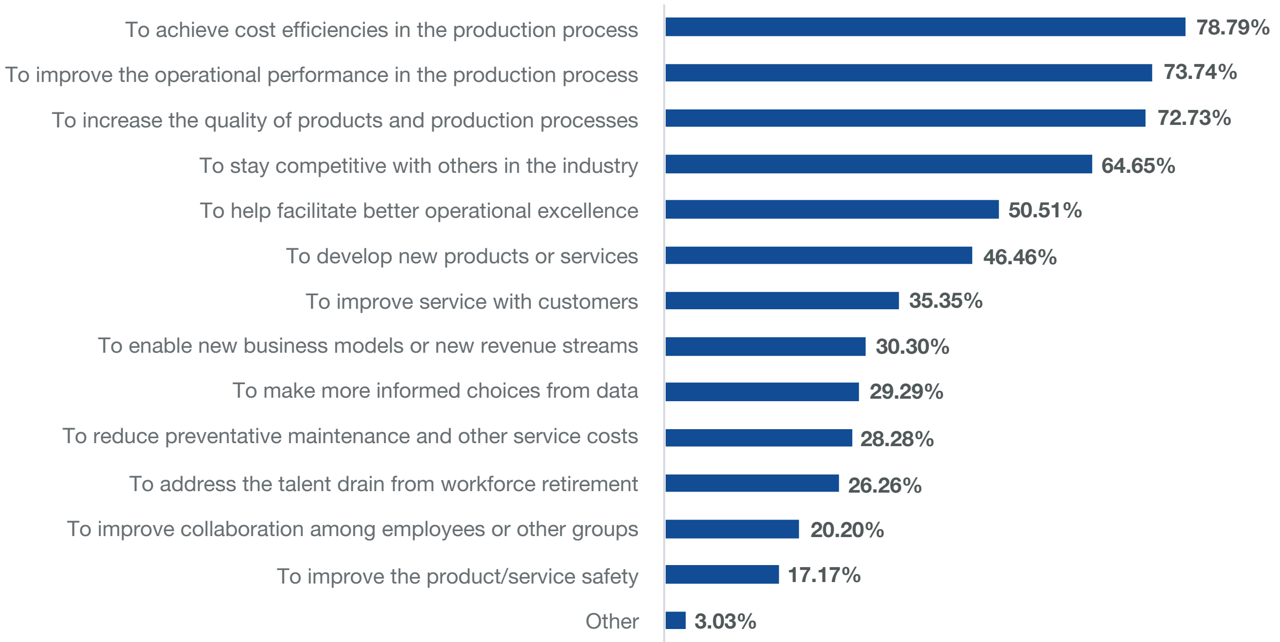
8 NAM Manufacturers' Outlook Survey. National Association of Manufacturers. Q3 2023. September 2023.

Figure 3: Primary Drivers of Manufacturers' Future Growth Strategies

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

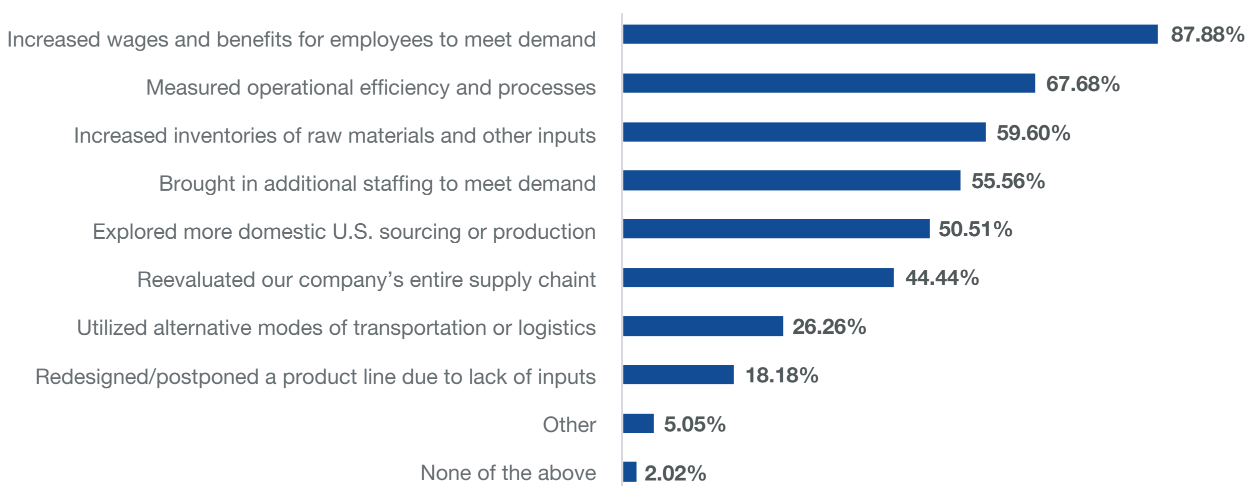
Given the importance of new technologies for business growth, survey respondents were asked about their primary motivations for making such investments (Figure 4). The top answers were unsurprising: to achieve cost efficiencies in the production process (78.8%), improve the operational performance in the production process (73.7%), increase the quality of products and production processes (72.7%), stay competitive with others in the industry (64.7%) and help facilitate better operational excellence (50.5%). Other motivations of note included a desire to utilize new technologies for developing new products or services (46.5%), improve customer service (35.4%), enable new business models or revenue streams (30.3%), make more informed choices from data (29.3%), reduce preventative maintenance (28.3%) and address the talent drain produced by workforce retirement (26.3%).

Figure 4: Primary Motivations for Investing in New Technologies



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

Figure 5: "Has your company done any of the following over the past two years?"



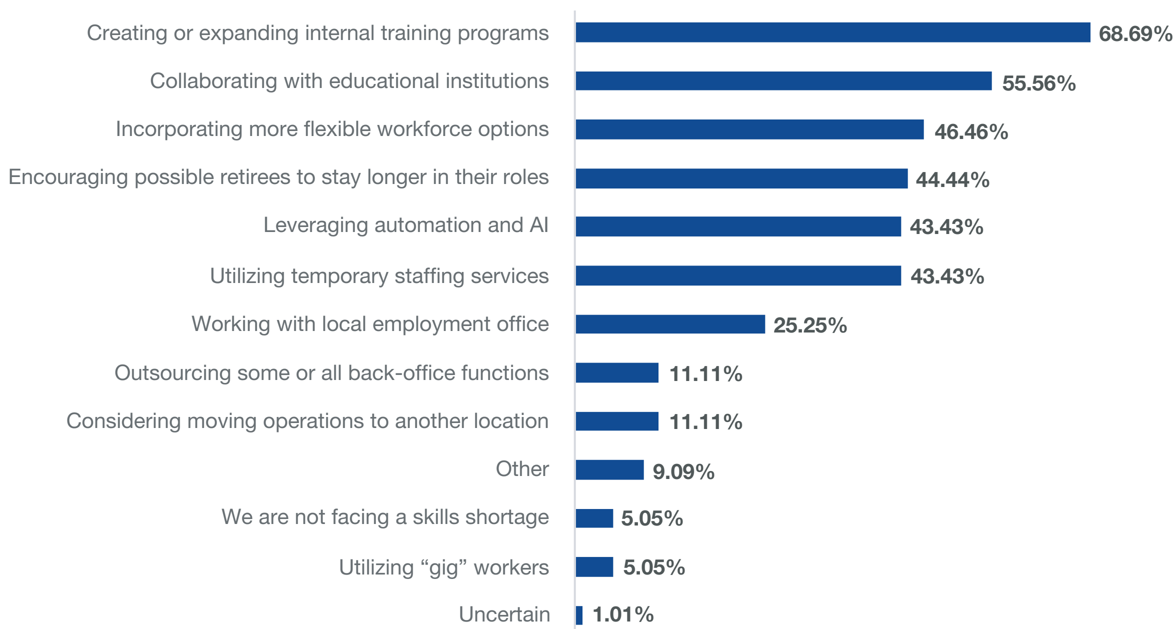
Note: Respondents were able to check more than one response; therefore, responses exceed 100%.

Before turning to how manufacturers would utilize additional dollars in their businesses, it would be instructive to learn about investments over the past few years, particularly given the challenges that the sector has grappled with post-pandemic. With the current tightness of the labor market, it is perhaps not a surprise that nearly 88% of respondents said they increased wages and benefits to meet demand, with 55.6% noting that they brought on additional staffing. Indeed, manufacturing leaders have faced talent shortages, with many businesses increasing wages and salaries significantly in recent years to maintain competitiveness.[9] Facing structural constraints of a tight labor market, manufacturers have found other ways to better differentiate themselves in the marketplace for talent.

At the same time, business leaders in the sector are also working smarter due to supply chain bottlenecks and a desire to improve efficiencies during a time of significant disruption and rising costs (Figure 5). Indeed, just over two-thirds of respondents said they have measured operational efficiencies and processes, likely looking for avenues that make sense from an operational and cost-cutting sense. In addition, 59.6% mentioned their company increased inventories of raw materials and other inputs, likely as a hedge against supply chain challenges and to prevent delays or stoppages of production. Likewise, 44.4% had reevaluated their entire supply chain, with 26.3% reporting they utilized alternative modes of transportation or logistics.

With ongoing workforce shortages, manufacturing leaders have explored and implemented a number of strategies to address their employee needs to meet production demand (Figure 6). These included creating or expanding internal training programs (68.7%) and collaborating with educational institutions on program offerings to help ensure that the workforce has sufficient training and to recruit possible candidates (55.6%).

Figure 6: How Manufacturers Have Addressed the Skills Shortage



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

9 “The Manufacturing Experience: Compensation and Labor Market Competitiveness.” The Manufacturing Institute and Colonial Life. May 2022.

10 National Association of Manufacturers. Q1 2023. March 2023.

11 Manufacturing Leadership Council, Manufacturing in 2030 Project. October 2022.

12 In a very tight labor market, particularly in the post-pandemic workforce, manufacturers have had to increasingly focus on flexibility issues to remain competitive. For more information, see “The Manufacturing Experience: Compensation and Labor Market Competitiveness.” The Manufacturing Institute and Colonial Life. May 2022.

13 For more on efforts being made in this space, see “The Aging of the Manufacturing Workforce.” The Manufacturing Institute and AARP. July 2019.

Research conducted by the MI has found that flexibility is a key way that companies communicate their family-friendly culture and address top employee challenges like childcare and accessible transportation.[10,11] These findings were further supported by the data collected in this study, as incorporating more flexible workforce options was a strategy cited by 46.5% of those completing the survey.[12] With more workers at or approaching retirement age, there were efforts to encourage possible retirees to stay longer in their roles, with 44.4% of respondents suggesting this as an option.[13] Other strategies included leveraging automation and artificial intelligence (43.4%), utilizing temporary staffing services (43.4%) and working with the local employment office (25.3%).

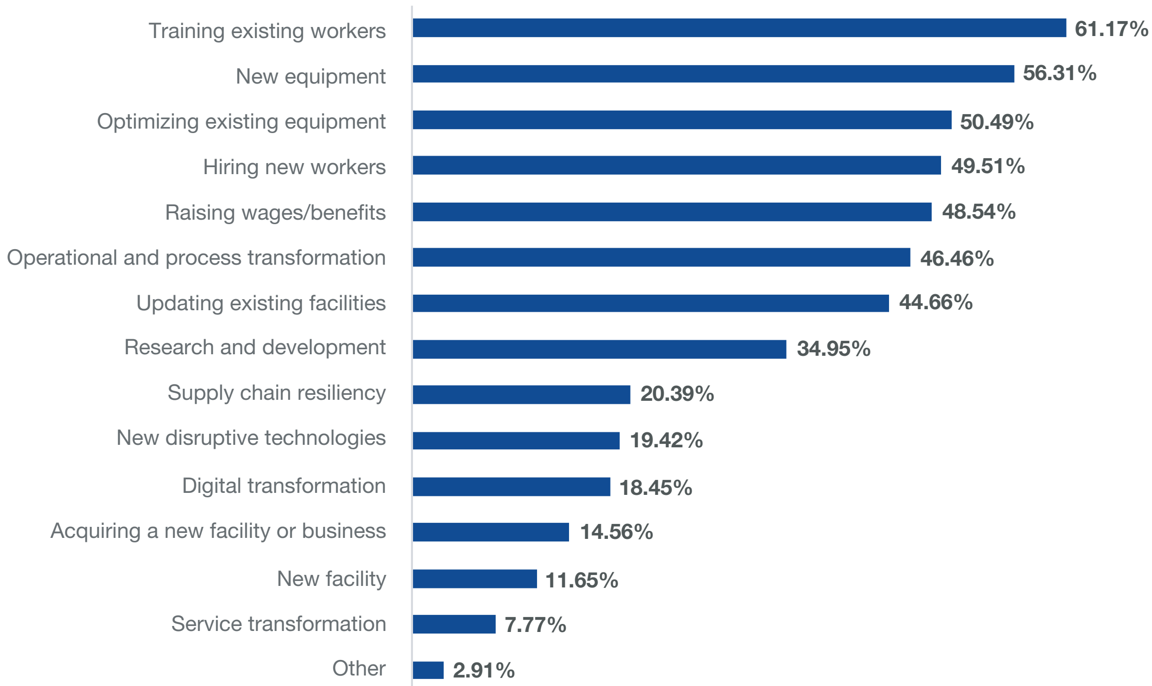
› Spending the Marginal Dollar

Exploring the ways manufacturers spend their marginal dollars allows for insight into their priorities, especially as it relates to the role of these investments in future growth strategies. This section will highlight survey data that elucidate this topic before turning to interview analysis in the following section.

While it is useful to understand what a company might do with additional dollars, the reality is that such marginal funds are often more aspirational than not. With costs continuing to rise dramatically, manufacturers make crucial trade-offs in their decision-making process, opting for some key investments over others, even those that—in an ideal world—they might prefer to invest more in. It is with that in mind that we asked about their budgeting priorities over the next two or three years considering current and projected dollars—a scenario in which a marginal $1 million was not forthcoming (Figure 7).

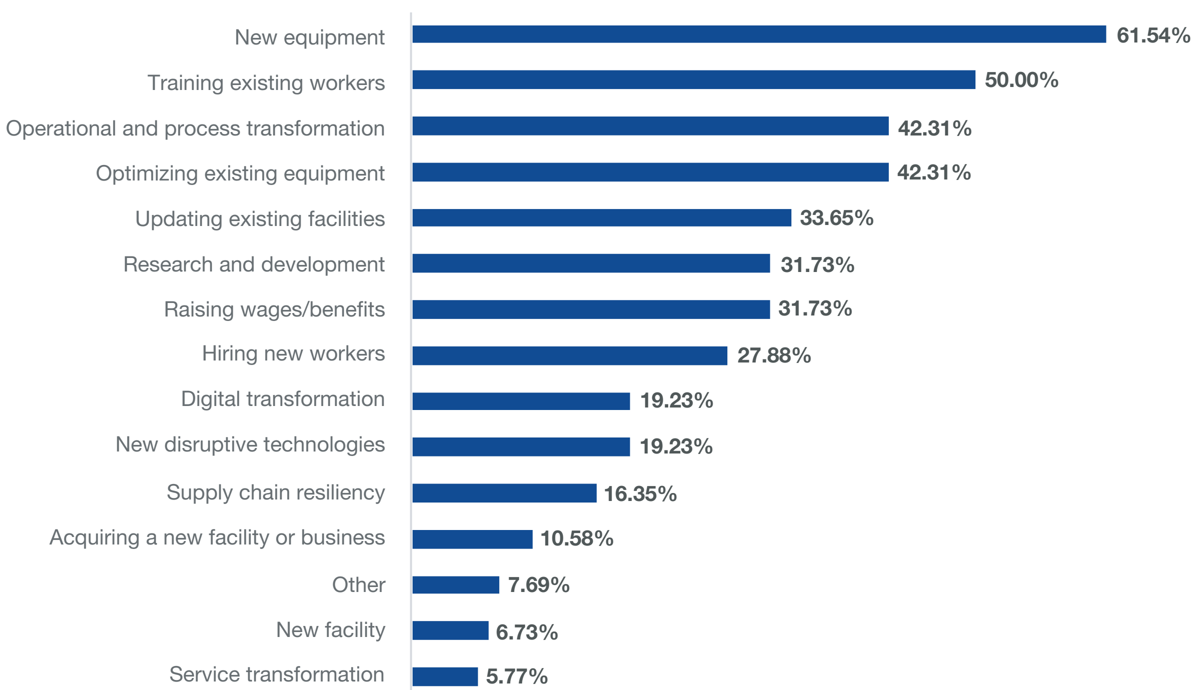
The need to address workforce challenges emerged as top-of-mind for many in this exercise, with training existing workers (61.2%), hiring new workers (49.5%) and raising wages and benefits (48.5%) either leading or nearing the top of the list. At the same time, other priorities included investing in new equipment (56.3%), optimizing existing equipment (50.5%), making operational and process transformations (46.6%), updating existing facilities (44.7%) and conducting research and development (35.0%).

Figure 7: “In lieu of a marginal $1 million—assuming your company’s current financial situation and outlook—what are your priorities for budgeting moving forward over the next two or three years?”



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

Figure 8: “What areas of investment would your company consider if you had a marginal $1 million that you could spend on your priorities?”



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

When business leaders were asked how they would spend a marginal $1 million, 61.5% said that they would invest in new equipment (Figure 8), with half of those completing the survey reporting they would train existing workers and more than a quarter investing in hiring new workers. These findings point towards a desire to make smart investments that will transform operations and the production process, while also ensuring that the workforce can adapt to such changes. Along those lines, the other top investments that manufacturers would make with marginal dollars were operational and process transformation (42.3%), optimizing existing equipment (42.3%), updating existing facilities (33.7%), raising wages and benefits (31.7%) and hiring new workers (27.9%). More than 19% also reported they would invest in increased digital transformation and in new disruptive technologies. Debt reduction and marketing were two options mentioned by those offering a write-in comment.

While survey data can provide us with a snapshot of how manufacturers currently prioritize their investment decisions as well as where they would spend their marginal dollars, it cannot tell us why companies are choosing to spend their capital in these ways. To explore the motivations behind these investment decisions, we present analysis from in-depth interviews in the following section.

Insights from Manufacturers

As noted earlier, we interviewed nine manufacturers from companies of varying sizes and industries to get their insights on investment decisions and strategies, particularly to understand how they would invest the marginal $1 million, $10 million or $100 million dollars. In answering this "million-dollar question," a variety of approaches emerged, largely centering on manufacturers' priorities for growth. This section outlines the three key insights from those conversations.

INCREASING THROUGHPUT AND REDUCING COSTS WHERE POSSIBLE

There was a strong desire in many of the interviews for marginal dollars to expand the volume of activity flowing through the production process, creating more growth opportunities and helping to reduce costs where possible. Along those lines, Elisabeth Smith, president and chief executive officer at Acutec Precision Aerospace, said that one of her biggest priorities is to increase throughput and reduce costs where possible. "Cash is king," she added, noting that management of that cash is paramount in her mind and a major consideration in investment decisions, particularly with higher interest rates and extended lead times for payment. The drive to improve efficiency and optimize processes weighs heavily in her considerations of future growth strategies. She added, "Unless an investment helps get more parts through the door, it is likely a lower priority."

If Acutec Precision Aerospace were to receive an extra $1 million, Smith said that they would use all of it to augment their current system with new equipment. With the average age of Acutec's equipment being five and a half years old, there is a desire to introduce new equipment accessories that would allow them to automate more of the process. This would allow Acutec to earn a higher return on investment, increasing labor productivity. With the growth they are seeing, Acutec will need more workers, but the roles of these employees might shift as new technologies and processes are introduced. The company would also try to reduce the number of SKUs that it produces, striving to be more strategic in determining what projects to pursue, ensuring that the company stays focused on what it does best.

Smith was particularly interested in creating a new project engineer role—machinists that would focus specifically on optimizing production. Beyond the efficiency gains, this would also serve as an aspirational role for the more than 200 machinists that work at Acutec, many of whom could be trained to become a project engineer, setting up an important avenue for professional growth and increased pay. Moreover, this new opportunity would allow Acutec to tap into college graduates, potentially offering a position that would be more marketable.

Likewise, Brian McDonald, vice president for strategy at International Paper, spoke about the need to get "bigger"—expanding within their company's existing footprint—and "better"—bringing more value to customers and reducing the cost of production wherever possible. International Paper invests about $1.5 billion each year on capital expenditures, including facilities and new equipment. Those investments, along with a trained workforce, help to enable better performance with their customers and to improve financial conditions. Indeed, all decisions are vetted through a process that assesses how International Paper can put capital to work to create more value for the company and its customers.

Given the size of the company, McDonald addressed this question with a marginal $100 million in mind. Of the additional dollars, McDonald set aside 80% towards increasing the throughput of certain operations, including a combination of investments in fixing existing equipment and purchasing new equipment. With increased spending on automation and technology, there would also be more real-time data that would be useful in increasing efficiency, productivity and quality. Investing in research and development, both for industrial packaging and fluff pulp, would also be key to developing new processes.

In a similar manner, Michael Lauber, the chief executive officer (and self-described "chief strategist") at Tusco, said that his company would prioritize its marginal dollars on investments in their people and new equipment, both of which increase productivity. For instance, Tusco continues to invest in automated hardware, allowing it to be "leaner" in the production process. As an example, Tusco recently purchased a $1.2 million new laser, allowing them to do processes up to eight times more efficiently. As such, the new equipment allows the existing workforce to be more productive and the company to be more competitive, driving more business. In addition, Tusco utilizes MAGNET[14], the local manufacturing extension program in Cleveland, with the company completing seven projects for a total investment of $80,000. Those projects led to further investments of $250,000, and overall, these efforts "continue to pay dividends."

In addition, Tusco publishes its productivity numbers daily for all employees to see. These data are closely monitored by employees, as biweekly bonuses are based on their performance. Employees know where they are from a productivity standpoint at all times, particularly if they are on the bubble of a higher rate. This approach in part drives the growth that Tusco has experienced over the past few years.

CREATING GROWTH AND POSSIBLE NEW REVENUE STREAMS

When making key investments, manufacturers want those dollars to help open up new opportunities for growth, creating new products and services and/or new markets that will allow the company to flourish in the years to come. One illustration of this came from BorgWarner, one of the largest automotive suppliers in the world with facilities in more than 20 countries. "When I think about investing in the company, it's always about profitable growth. How do we improve our top-line and bottom-line?" said Daniel Kennel, director, corporate strategy and ventures. When considering current growth strategies as well as investing the marginal dollar, Kennel concentrated on creating new revenue streams. Investments would be related to maximizing the company's product line and capabilities as well as strengthening the company's position within the sector.

Kennel wanted to split the investment equally going towards the longer-term future and into further growing existing portfolio and business to strengthen and accelerate product leadership top-line profitability. When thinking about the long-term future, which Kennel defined as a timeframe longer than 7 years, he was interested in leveraging organic developments, as well as early-stage companies in or adjacent to the sector. "It's a medium- to long-term play with a potentially high return. There's the possibility that the engagement leads to disruptive technology or process that could lead to increased growth."

14 For more information on MAGNET, see https://www.manufacturingsuccess.org/.

When investing in the existing business, Kennel would spend about a quarter of the marginal dollars on engineering. These investments would enable BorgWarner's products to grow and advance. Much of this investment would be in the form of talent, particularly in advanced engineering. "What doesn't currently exist on the market? How do we get ahead of it? We need the talent, a mix of a diverse team in terms of age, experience and the sectors they come from to research this," Kennel observed.

Early Charm, a manufacturing operation that stems from licensed innovations that it acquires from university research, provided more examples of how investments could serve as an accelerator for creating new opportunities. Ken Malone, the founder, said that Early Charm's future growth strategies focus on new technology areas that are developed in coordination with universities, with a goal of bringing more products to market. With a marginal $1 million, Malone would spend 50% on new capital equipment devoted to 3D printing. This would allow Early Charm to continue growing their business in ways that they cannot do right now. Malone noted that Early Charm already has customers lined up for its products, which would make this investment pay for itself in no time.

Malone would spend the other 50% on better clean-room facilities. Early Charm has biological manufacturing projects that they cannot currently undertake because they do not have appropriate facilities to be able to complete them. Like the capital equipment spending discussion above, this investment would allow Early Charm to continue to expand their business and hire more workers.

Another major growth driver that Malone identified was intellectual property. Early Charm invests significantly in research and development, with innovation vital to the success of the business. This includes R&D from federal and state funding (e.g., Small Business Innovation Research program, Maryland Development Corporation) with an eye on translating university research into useful business products. The company also does a fair share of investing in their own products to get them ready for the marketplace, often partnering with large companies to develop technologies and products.

Meanwhile, Parr Instrument Company designs, manufactures and sells laboratory instruments and apparatuses for testing fuels and conducting chemical reactions and tests. "Our business is performing at an extremely high level right now. In fact, we've outstripped our capacity at existing facilities," said Jim Nelson, president and chief executive officer. "We really could use that marginal dollar right now." In terms of current growth priorities, Parr Instrument is laying out an expansion plan. In recent months, they've hired an architect and placed significant capital investment in a new building as well as renovating their current spaces and purchasing machine tools with more capacity. When thinking about future growth strategies, Nelson discussed the need to forecast. "If I knew how business was going to be in five years, then I would know exactly how much square footage I should invest in now," he noted.

As a medium manufacturer, Nelson approached this question with $10 million in mind. While Nelson would spend 10% on machines and equipment to build out production capacity, he would spend the other 90% on product development and workforce. Nelson considered these last two to be closely interrelated. "The number one priority is hiring human capital. To do that, you need to make the job and the workplace more attractive," Nelson said. To that end, Parr Instrument was also interested in investing in community colleges and trade schools to bring potential employees in front of employers.

RECRUITING AND DEVELOPING THE WORKFORCE

Like most manufacturers, International Paper cites workforce challenges as a notable problem, particularly given the tight labor market. It has increased wages to stay competitive and has experienced significant churn over the past couple of years. As a result, the company has worked to create a more predictable schedule for its employees in an attempt to address the demands of the workforce and improve work–life balance.

Regarding what it would do with marginal dollars, Brian McDonald spoke about using 80% of it on new and existing equipment, as noted above. International Paper would put the other 20% towards training and developing the workforce. As McDonald noted, “It is important to continually reinvest in people. With new technologies, there would be a throughput bottleneck if our workers were not adequately trained. Such efforts go a long way in helping to improve retention and to ensure that employees are more engaged and part of the process.”

Tom Kleino, president of L&L products, agreed. In his interview, he emphasized the importance of investing in employees, a crucial component of business success. “I want to do what best supports our employees,” Kleino noted. Employee benefits and working environment investments include expanding onsite medical clinic offerings, repurposing the cafeteria into a more convenient grab-and-go style with food prepared fresh daily as well as continuing to provide mental health counseling. “There are some things that don’t give you a monetary payback,” said Kleino. “Being located in Michigan can also offer a challenge when recruiting as we do have a lovely winter.”

In addition, L&L Products values its internship program. Kleino said, “We really focus on retaining interns. When you see great talent, you’ve got to hire them. We pair young people with someone who has more experience. It’s great to see interns go from being afraid of their shadow to owning their confidence.” L&L Products has a highly structured internship program where interns are given meaningful projects and present their work to the management team at the end of their program. For L&L Products, investing in building talent pipelines and retaining quality employees was central to their future growth strategies.

In line with our survey findings (Figure 2), Schneider Electric emphasized the importance of expanding recruitment, retention and training efforts. Schneider Electric is considering incorporating flexibility in the workplace. Additionally, the company has been identifying partnerships with trade schools and building on its work with Creators Wanted[15] to connect with young people, presenting them with opportunities for stable, fulfilling careers that do not require college degrees. Schneider Electric has also prioritized facility tours to recruit entry-level positions. “You have to get people into the initial funnel. Our tours are the best story to get more people to come in,” said Kevin Self, the senior vice president for business development and government relations. To retain employees, Self also mentioned that he would invest in creating clear paths to advancement.

Michael Lauber at Tusco took that a step farther. “When we hire new people for a job, we tell them that Tusco will train them for their next job, as we devote a lot of resources and time to upskilling and training. Indeed, we have even lost people after we invested in them because they had a new, marketable skill, and for us, that is okay. The investment is still worth it.” To retain employees, however, once an employee obtains a new skill, Tusco provides them with an immediate pay increase—a significant incentive to learn and stay.

Tusco’s investment in people goes beyond training. Lauber said that Tusco tries to think holistically about an employee’s needs. For instance, Tusco has worked with a local daycare provider to expand hours and recruit more daycare workers, which has been more of a challenge. Tusco has also set up financial management courses and assistance for their employees, helping them better manage their money. Lauber said, “We have long had wellness programs to improve workers’ health outcomes, and these financial wellness initiatives mirror those efforts. At the end of the day, we have to ask, ‘What can we do to help?’” Such efforts, he concluded, speak to the importance of company culture in attraction and retention[16] and help to set Tusco apart from other companies.

On the skills front, Tusco would spend a fair share of its marginal dollars to invest more in internal and external training, providing numerous opportunities for its employees. (The other category would be in automated hardware, as mentioned above.) For its part, the state of Ohio helps to support training efforts of manufacturers such as Tusco, particularly when the training is tied to a new skill.[17] Lauber said that the TechCred grant subsidizes half of the cost of training and upskilling, which helps to make these investments more possible.

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15 See https://www.creatorswanted.org/.

16 “The Employee Experience: The Role of Culture and Employee Engagement in Workforce Attraction and Retention.” The Manufacturing Institute and Colonial Life. Forthcoming 2023.

17 For more information on Ohio’s TechCredit grant, see https://techcred.ohio.gov/.

Bob Blandford, president and founding member at Miltec, said that the best use of the marginal dollar would be to focus on the company's current priorities, aiming for the low-hanging fruit. "What's going to have the biggest bang for our buck? What's going to give us those immediate results? That's what I think of when I think of the marginal dollar," said Blandford. "And really when it comes down to it, people are the number one priority, especially in engineering and sales."

Miltec would split up the marginal dollar part with 50% on employee recruitment, 10% on employee retention, 20% on product development and 20% on efficiencies. "For employee retention, I would take a hard look at salaries and annual bonuses." Overlapping both recruitment and retention, Blandford also underlined the importance of training. "Training is really important," Blandford noted. "You don't want just a few rock stars. You want to train everyone up so everyone is a rock star. That goes back to hiring. We want to make sure we hire people that want to work and care, fit into the company culture. We have one of the best teams on board. We just have to make some more investment there."

Meanwhile, Jim Nelson at the Parr Instrument Company spoke about the connection between investing in new plants and equipment and the impacts that has on workforce needs. "New machines means we need more people. It's a difficult market to find talent, especially machinists." In fact, in addition to machinists, Parr Instrument employs a large number of highly skilled professionals including engineers, welders, special assembly crews and advanced degree researchers. To meet these labor needs, Nelson shared Parr Instrument's commitment to invest in reliable and resilient workforce pipelines.

He added, "The number one priority is hiring human capital. To do that, you need to make the job and the workplace more attractive," Nelson said. To that end, Parr Instrument was also interested in investing in community colleges and trade schools to bring potential employees in front of employers.

For Parr Instrument, creating a more attractive environment with more amenities was a key way to attract and retain employees. Nelson had seen how businesses nearby had begun making these types of investments. "It makes sense," Nelson said. "For folks who have to come into the office, they're going to spend more time here than at home. That's why I'd want to make this space more appealing to them." While the Parr Instrument benefits package was rich, with the marginal dollar, Nelson also was interested in adding benefits like more paid time off and childcare.

Ken Malone at Early Charm also spoke about the need to cultivate a culture that helps to attract and retain the best workers. He noted, "We have created a robust area—a cool place to work with a great culture. People want to work here." The company also produces "really engaging" products, offering an innovative portfolio of work to its employees. Early Charm has also created an environment where everyone feels included and where constant learning is assumed. The company does a lot of formalized training, including for managers. It is important for Early Charm employees to learn new skills, especially given the nature of the business.

Finally, Acutec is organized as an employee stock ownership plan with Elisabeth Smith noting that employee ownership helps with attraction and retention. Acutec has increased wages significantly over the past couple of years, particularly as there are many other manufacturers in the local area who also require machinists. Smith shared some concerns regarding the impact that turnover or retirements might produce, but the company has done well with promoting internally and hiring from within. These efforts, along with investments in new equipment and process improvements, have helped to keep overall labor productivity increasing—helping with cash flow and the overall bottom line.

ADDITIONAL INSIGHTS

A few other insights of note emerged from these interviews. Among them was the use of marginal dollars to help increase overall supply chain resiliency. Michael Lauber at Tusco said that the pandemic exposed the fragility of supply chains everywhere. His company has been attractive to other companies for the speed and reliability with which it could produce fabricated products, particularly in relation to foreign competitors.

Kennel at BorgWarner echoed that sentiment, saying that he would devote 25% of the marginal dollar pot towards supply chain resiliency. “I would want to develop resiliency at the regional level,” Kennel said. Some of these efforts could include vertical integration or acquiring companies that supply products, goods and services. “Identifying and acquiring companies is based on a structured process. It has been and will be an important growth strategy from BorgWarner,” Kennel noted.

Bob Blandford at Miltec also spoke about the need to build more supply chain resiliency, including adding more square footage and incorporating internally more of the product development currently managed through local and regional suppliers.

Beyond the elements discussed above, Kennel said that he would spend the final quarter of the marginal dollars into operations that would be needed to execute on the increased growth. I am thinking from manufacturing capacity to anything that is needed for employees to operate. When thinking about making investments in equipment specifically, Kennel added that the investment in eProduct engineering comes first. “The lead time for R&D is longer – let’s say around 5 years from idea to program nomination. Making changes to the manufacturing line, sites, expansions – that can happen a lot sooner, but is critical to support the growth.” Kennel also included investments in shop floor worker safety, reskilling and automation in this section. “Safety is the most important,” Kennel said, “and with reskilling, we see it as a continuous process.”

While Michael Lauber did not attach a dollar figure to it, he said that research and development is a critical component of the company’s identity. He added, “The best clients are the ones where we can partner with them in the development of products. We always think about ways to improve the product that we are being asked to make, even when it is a stock product.” This requires employing engineers and accessing knowledge, which would be two other areas of investment for the marginal dollar.

› Conclusion

Investment decisions are complex evaluations of the short-term and long-term needs of a company to fulfill its current demand while simultaneously expanding its capacity to grow. In posing the question of how to spend the marginal dollar, we can better understand how manufacturers are making these types of decisions, particularly in today’s unprecedented economic climate. The way manufacturers determine how to split their marginal dollars is based on an analysis of the current state of their organization – where money is already being invested – and what is either at the top of their wish list or outside their current capacity.

From data collected in our survey and interviews, three investment priorities emerged across manufacturer size and industry: increasing throughput and lowering costs where possible, creating new opportunities for growth and building a stronger, more resilient workforce. These priorities should not be considered as competing interests, but rather as interdependent. As several of our interviewees indicated, having a trained workforce is crucial to capitalizing on the full potential of equipment, technology and facilities. Streamlined processes, integrated automation and optimized workspaces in turn allow employees to maximize their productivity.

When it came to investing in capital expenditures, manufacturers considered optimizing production processes, increasing throughput and focusing on the ROI. They are also thinking strategically about their labor needs. Most companies interviewed targeted ROI in the medium range, often within three to five years. Automation and new technologies were common themes, particularly in terms of increasing efficiencies, cutting down costs and maximizing labor inputs. Often, the question of investing in new equipment necessitates facility expansion. Manufacturing leaders noted that in addition to needing more square footage to house equipment, higher levels of output required more warehouse storage as well. With high inflation and interest rates, these types of investments were typically on hold. If there were marginal dollars, they would expedite such plans.

Nearly all the companies we interviewed emphasized the importance of investing in their workforce. However, the ways that they would invest in their workforce differed. Some manufacturers would spend their marginal dollars on expanding their talent pipelines through internships and accessing different populations. For others, hiring was a key priority, particularly for roles like engineering and sales. Several interviewees emphasized the importance of investing in more attractive work environments, flexibility and benefits to both attract and retain employees. Training was another priority that consistently emerged in our conversations, with several companies highlighting the effectiveness of upskilling and promoting employees from within.

While the marginal dollar could be considered an aspirational concept, the exercise in thinking through investment decisions through the lens of surplus can be instructive. For example, several of the manufacturers we interviewed noted that investing in supply chain resiliency would be a sound decision. However, it did not rank as high as other priorities. Indeed, the fact that this investment category was not top of mind for many of the manufacturers we interviewed indicates that the supply chain bottlenecks experienced earlier in the decade have reached a new equilibrium.

The balanced approach that our interviewees took in identifying investment decisions reflects manufacturers' recognition of the interrelated links between capital assets and workforce. Although short-term and long-term investments can be nuanced and varied from company to company, as captured in both the survey and interview analysis, the underlying logic of meeting current needs and building for future demand is the same. In exploring the question of the marginal dollar, manufacturers shared with us their hopes and visions for the future. The key insights highlighted in this study provide food for thought as companies address current economic headwinds and strategize for tomorrow.

Appendix: Survey Responses

1. **How would you characterize your company's capital spending plans over the next 12 months relative to current levels?**
    a. Higher – 38.14%
    b. No change – 27.12%
    c. Lower – 34.75%

2. **How would you characterize your company's facility spending plans over the next 12 months relative to current levels?**
    a. Higher – 29.31%
    b. No change – 46.55%
    c. Lower – 24.14%

3. **How would you characterize your company's technology spending plans over the next 12 months relative to current levels?**
    a. Higher – 52.99%
    b. No change – 38.46%
    c. Lower – 8.55%

4. **How would you characterize your company's hiring plans over the next 12 months relative to current levels?**
    a. Higher – 38.46%
    b. No change – 47.01%
    c. Lower – 14.53%

5. **What aspects of your company are your top priorities? (Select all that apply.)**
    a. Investment in new equipment – 51.69%
    b. Optimizing existing equipment – 53.39%
    c. Investment in new technologies – 46.61%
    d. Investment in new facilities – 22.03%
    e. Investment in existing facilities – 38.98%
    f. Research and development – 44.92%
    g. Customer service – 40.68%
    h. Building a robust, trained workforce – 73.73%
    i. Building supply chain resiliency – 32.20%
    j. Invest in improved processes and operations – 60.17%
    k. Other – 11.86%

6. What are the primary drivers of your company's future growth strategies? (Select all that apply.)

a. Stronger domestic economy and sales for our products – 69.49%

b. Increased international sales – 27.12%

c. Reevaluating the supply chain for the goods and services we produce – 22.88%

d. Increased efficiencies in the production process – 67.80%

e. Investments in new technologies – 47.46%

f. Investments in new facilities – 16.10%

g. Research and development – 33.05%

h. New product development – 50.85%

i. Recent mergers or acquisitions – 16.10%

j. Maintaining a robust, trained workforce – 66.95%

k. Worker flexibility and improvements in employee culture – 36.44%

l. Other – 5.08%

For the following two questions, imagine that you have been given $1 million to invest in your company in whatever way you would like.

7. What areas of investment would your company consider if you had a marginal $1 million that you could spend on your priorities? (Select all that apply.)

a. New equipment – 61.54%

b. Optimizing existing equipment – 42.31%

c. New facility – 6.73%

d. Updating existing facilities – 33.65%

e. Acquiring a new facility or business – 10.58%

f. Hiring new workers – 27.88%

g. Training existing workers – 50.00%

h. Raising wages/benefits – 31.73%

i. New disruptive technologies – 19.23%

j. Digital transformation – 19.23%

k. Research and development – 31.73%

l. Supply chain resiliency – 16.35%

m. Operational and process transformation – 42.31%

n. Service transformation – 5.77%

o. Other – 7.69%

8. What percentage of the $1 million would you spend on (sum must equal 100%):

a. new equipment? – Average percentage reported: 43.20%

b. optimizing existing equipment? – 21.60%

c. a new facility? – 21.88%

d. updating existing facilities? – 13.76%

e. acquiring a new facility or business? – 20.71%

f. hiring new workers? – 13.49%

g. training existing workers? – 15.12%

h. raising wages/benefits? – 11.82%

i. new disruptive technologies? – 18.34%

j. digital transformation? – 11.50%

k. research and development? – 18.05%

l. supply chain resiliency? – 11.26%

m. operational transformation including smart manufacturing? – 16.31%

n. service transformation? – 11.36%

9. Assume you have a trained and reliable workforce. Where would you spend the $1 million now? (Select all that apply.)

a. New equipment – 68.63%

b. Optimizing existing equipment – 47.06%

c. New facility – 9.80%

d. Updating existing facilities – 33.33%

e. Acquiring a new facility or business – 10.78%

f. New disruptive technologies – 25.49%

g. Digital transformation – 20.59%

h. Research and development – 26.47%

i. Supply chain resiliency – 13.73%

j. Operational transformation – 32.35%

k. Service transformation – 7.84%

l. Additional upskilling and professional development – 25.53%

m. Other – 1.96%

10. What aspects of your company would you hope to improve through investing $1 million? (Select all that apply.)

a. Agility – 43.14%

b. Competitiveness – 76.47%

c. Culture – 39.22%

d. Innovation – 49.02%

e. Resilience – 30.39%

f. Return on investment – 57.84%

g. Other – 9.80%

11. There has been some surprising resilience in the manufacturing sector over the past two years or so despite numerous challenges. Moving forward, do you anticipate your company continuing to experience the following? (Select all that apply.)

a. Solid demand for our company's products – 73.79%

b. Hiring of new employees – 61.17%

c. Upskilling and training of existing workforce – 69.90%

d. Capital spending on new equipment and technological investments – 72.82%

e. Spending on new structures and existing facilities – 33.98%

f. Investing in research and development – 49.51%

g. Investing in making service a revenue generator – 15.53%

h. None of the above – 1.94%

i. Other – 2.91%

12. In lieu of a marginal $1 million—assuming your company's current financial situation and outlook—what are your priorities for budgeting moving forward over the next two or three years? (Select all that apply.)

a. New equipment – 56.31%

b. Optimizing existing equipment – 50.49%

c. New facility – 11.65%

d. Updating existing facilities – 44.66%

e. Acquiring a new facility or business – 14.56%

f. Hiring new workers – 49.51%

g. Training existing workers – 61.17%

h. Raising wages/benefits – 48.54%

i. New disruptive technologies – 19.42%

j. Digital transformation – 18.45%

k. Research and development – 34.95%

l. Supply chain resiliency – 20.39%

m. Operational and process transformation – 46.60%
n. Service transformation – 7.77%
o. Other – 2.91%

13. Has your company done any of the following over the past two years? (Select all that apply.)

a. Reevaluated our company's entire supply chain – 44.44%
b. Explored more domestic U.S. sourcing or production – 50.51%
c. Utilized alternative modes of transportation or logistics (e.g., air cargo, new sources) – 26.26%
d. Increased inventories of raw materials and other inputs – 59.60%
e. Brought in additional staffing, including temporary workers, to meet demand – 55.56%
f. Increased wages and benefits for existing and new employees to meet demand – 87.88%
g. Redesigned or postponed a specific product line due to lack of input availability – 18.18%
h. Measured operational efficiency and processes – 67.68%
i. None of the above – 2.02%
j. Other – 5.05%

14. Do you have unfilled positions within your company for which you are struggling to find qualified applicants?

a. Yes – 79.80%
b. No – 16.16%
c. Uncertain – 4.04%

15. If you answered "yes" to the previous question, how are you addressing the skills shortage? (Select all that apply.)

a. Creating or expanding internal training programs – 68.69%
b. Encouraging possible retirees to stay longer in their roles – 44.44%
c. Collaborating with educational institutions on skills certification programs – 55.56%
d. Utilizing temporary staffing services – 43.43%
e. Utilizing "gig" workers – 5.05%
f. Incorporating more flexible workforce options – 46.46%
g. Working with local employment office – 25.25%
h. Considering moving operations to another location – 11.11%
i. Leveraging automation and AI – 43.43%
j. Outsourcing some or all back-office functions – 11.11%
k. We are not facing a skills shortage – 5.05%
l. Uncertain – 1.01%
m. Other – 9.09%

16. If you had additional dollars in general that you could devote to improving your workforce, how would you utilize it? [Open-ended question.]

17. What are the primary motivations for investing in new technologies for your company? (Select all that apply.)

a. To achieve cost efficiencies in the production process – 78.79%

b. To improve the operational performance in the production process – 73.74%

c. To increase the quality of products and production processes – 72.73%

d. To reduce preventative maintenance and other service costs – 28.28%

e. To develop new products or services – 46.46%

f. To improve collaboration among employees or other groups – 20.20%

g. To improve service with customers, including connected products and services – 35.35%

h. To help facilitate better operational excellence – 50.51%

i. To stay competitive with others in the industry – 64.65%

j. To enable new business models or new revenue streams – 30.30%

k. To improve the product/service safety – 17.17%

l. To make more informed choices from data – 29.29%

m. To address the talent drain from workforce retirement – 26.26%

n. Other – 3.03%

18. What percentage of your company's capital expenditures are devoted to technology and innovation spending?

a. None – 2.02%

b. Less than 5 percent – 12.12%

c. Between 5 and 10 percent – 17.17%

d. Between 10 and 15 percent – 16.16%

e. Between 15 and 20 percent – 9.09%

f. Between 20 and 25 percent – 9.09%

g. More than 25 percent – 27.27%

h. Unknown – 7.07%

Weighted Average = 14.06%

19. Have you had to augment your workforce with a differently skilled worker as a result of your company's adoption of new equipment or technologies?

a. Yes – 48.48%

b. No – 40.40%

c. Uncertain – 11.11%

20. **Have you had to train or upskill your workforce as a result of your company's adoption of new equipment or technologies in the last two or three years?**
    a. Yes – 81.82%
    b. No – 12.12%
    c. Uncertain – 6.06%

21. **What additional considerations do you take into account when determining where to invest in your company? [Open-ended question.]**

22. **What is your company's primary industrial classification?**
    a. Chemicals – 6.06%
    b. Computer and electronic products – 1.01%
    c. Electrical equipment and appliances – 8.08%
    d. Fabricated metal products – 33.33%
    e. Food manufacturing – 3.03%
    f. Furniture and related products – 3.03%
    g. Machinery – 8.08%
    h. Nonmetallic mineral products – 2.02%
    i. Paper and paper products – 1.01%
    j. Petroleum and coal products – none
    k. Plastics and rubber products – 11.11%
    l. Primary metals – 3.03%
    m. Transportation equipment – 4.04%
    n. Wood products – 1.01%
    o. Other – 15.15%

23. **What is your company size (the parent company, not your establishment)?**
    a. Fewer than 50 employees – 17.17%
    b. 50 to 499 employees – 59.60%
    c. 500 or more employees – 23.23%

24. **While this survey is anonymous, we plan to interview a handful of companies to discuss their experiences with engaging employees and creating positive company culture, especially as it relates to challenges and best practices. Would you be interested in discussing this topic more fully in such an interview?**
    a. Yes
    b. No

25. If so, please provide your name and contact information.

a. Name ____________________________

b. Company_________________________

c. Title ______________________________

d. Phone number ____________________

e. Email ____________________________

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