JABIL

TRENDS IN DIGITAL TRANSFORMATION

A SURVEY OF **TECHNOLOGY AND BUSINESS STAKEHOLDERS IN MANUFACTURING COMPANIES**
JANUARY 2018

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dimensional research

INTRODUCTION

From exciting ideas for connected products to innovations in materials and processes, technology is impacting all aspects of manufacturing. Digital transformation has the potential to disrupt every area of operation: from practical application and infrastructure changes in systems that streamline the supply chain and increase employee and partner productivity, to visionary new customer experiences and business models. But what is the reality of digital transformation in today's manufacturing organizations? Where are investments being made? What are the challenges they are facing?

The following survey, conducted by third party research firm, Dimensional Research, and sponsored by Jabil, is based on a survey of 302 individuals with professional responsibility for their company's digital transformation activities, either as a technology implementer or a business stakeholder. The goal of the survey was to understand and quantify the current state of digital transformation in manufacturing companies including current activities, future plans, attitudes of leadership, challenges faced and roles of manufacturing partners. To capture trends, certain questions were repeated from a 2016 survey conducted with a comparable audience.

DEFINITION:

The term Digital Transformation refers to the use of technology to improve business results. Digital Transformation can include any function within a manufacturing organization including back office and supply chain applications, factory automation, social media for marketing outreach, sensors embedded in the goods produced, data analytics, and more.

KEY FINDINGS

DIGITAL TRANSFORMATION GAINING VISIBILITY AND MATURITY

85% report executives understand and support digital transformation

Board-level visibility increased **62%** in past two years

Investments in digital transformation include internal and partner ecosystems **(99%)**, customer and product innovations **(94%)**, and new digital business models **(88%)**

95% expect rate of digital transformation to accelerate

41% expect material impact from digital transformation by the end of 2018

CHALLENGES PERSIST IN DIGITAL TRANSFORMATION JOURNEY

99% report challenges

Rate of most types of challenges reported decreased in past two years

74% say cultural changes are more challenging then technology changes

TRENDS IN INFRASTRUCTURE, INTERNET OF THINGS AND FACTORY TRANSFORMATION

76% say infrastructure issues have impacted digital transformation

100% of those that have solutions that would benefit from IoT expect to produce them

81% plan to transform factories and facilities to leverage innovation

MANUFACTURING PARTNERS ARE CRITICAL IN THE DIGITAL TRANSFORMATION JOURNEY

88% expect manufacturing partners to help with digital transformation journey

Large companies expect partners to deliver capabilities **(85%)**; small companies want partners to help navigate the innovation landscape **(64%)**

89% will look to partners for help in transforming their factories and facilities

DIGITAL TRANSFORMATION GAINING VISIBILITY AND MATURITY
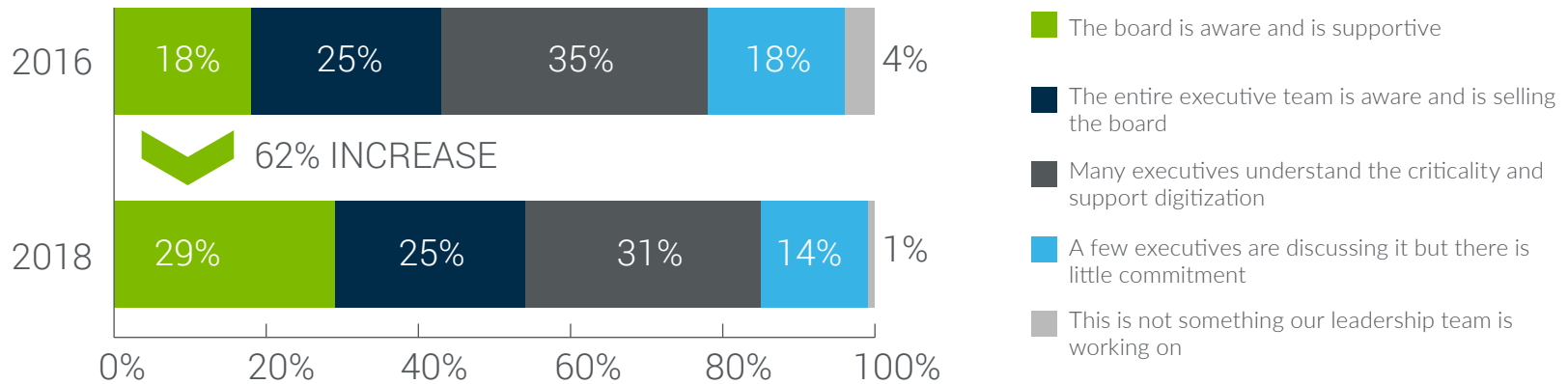
SIGNIFICANT JUMP IN BOARD-LEVEL ENGAGEMENT

One of the most reliable signs of a company's strategic commitment is the level of attention from senior leadership. By this measure, digital transformation is clearly important to manufacturing companies, with 85% reporting that executives understand the criticality and support transformation efforts. This demonstrates a clear increase from two years ago, when 78% reported the same thing.

Not only has overall leadership visibility increased, the level of leadership involvement has moved aggressively up the ladder all the way to the boardroom. In the past two years, the greatest increase in leadership support has come from the board. In 2016, less than 1 in 5 companies (18%) reported board-level support for their digital transformation efforts. This increased to 29% in the 2018 survey, a remarkable 62% increase.

How important is digital transformation to your company's leadership today?

2016	18% 25% 35% 18% 4%
62% INCREASE	
2018	29% 25% 31% 14% 1%

0% 20% 40% 60% 80% 100%

- The board is aware and is supportive
- The entire executive team is aware and is selling the board
- Many executives understand the criticality and support digitization
- A few executives are discussing it but there is little commitment
- This is not something our leadership team is working on

SIGNIFICANT JUMP IN BOARD-LEVEL ENGAGEMENT

▶ Board-level support increases dramatically as company size grows. While just over 1 in 5 (21%) of companies with less than 1,000 employees say that their board supports their digital transformation initiatives, that number jumps to more than half (53%) of companies with more than 5,000 employees.

▶ **"The board is aware and is supportive"** (By company size)

Bar chart values:
- Less than 1000 employees: 21%
- 1000 - 5000 employees: 24%
- More than 5000 employees: 53%
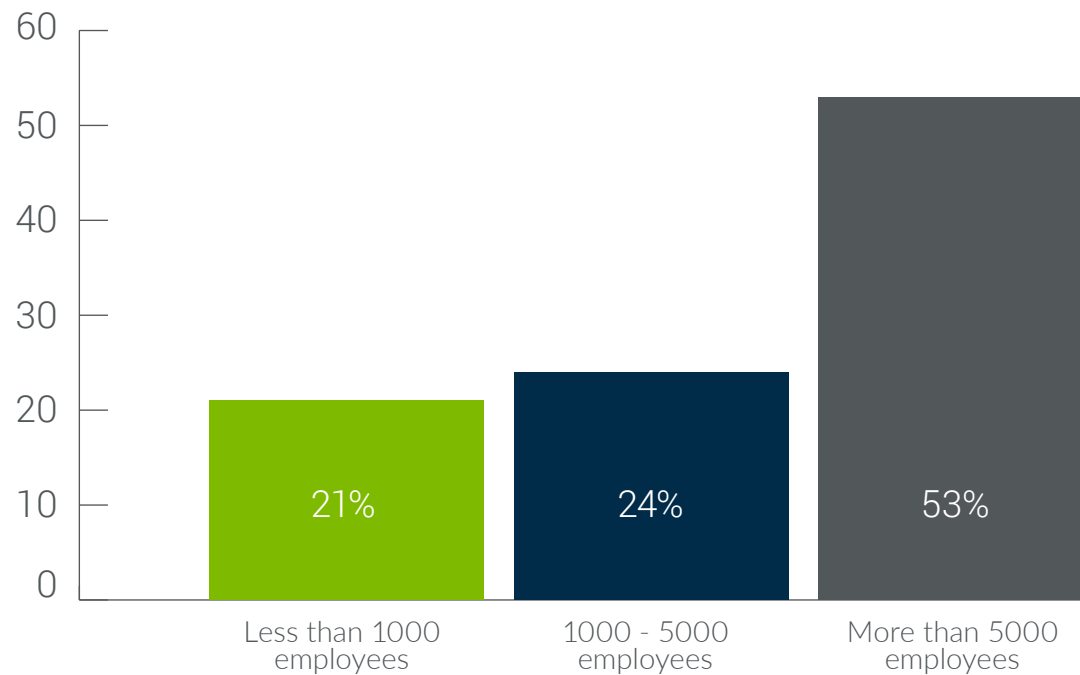
SIGNIFICANT INVESTMENTS ARE BEING MADE ACROSS A WIDE RANGE OF ACTIVITIES

Much of the hype around digital transformation at manufacturing companies has been focused on dramatic product and production innovations. Smart, connected packaging and 3D-printed medical implants can feel like the stuff of science fiction and generates significant attention, so it is not surprising that notable work is being done in this kind of customer and production innovation. Many (94%) of manufacturing companies are reporting that they are making investments in this area including IoT, intelligent digital supply chains, additive manufacturing and automation, ideation and design. This includes 40% that report they characterize their investment as "significant."

However, this is not the primary focus of digital transformation. Almost all manufacturing companies (99%) are investing in their technology infrastructure and ecosystems including cloud,
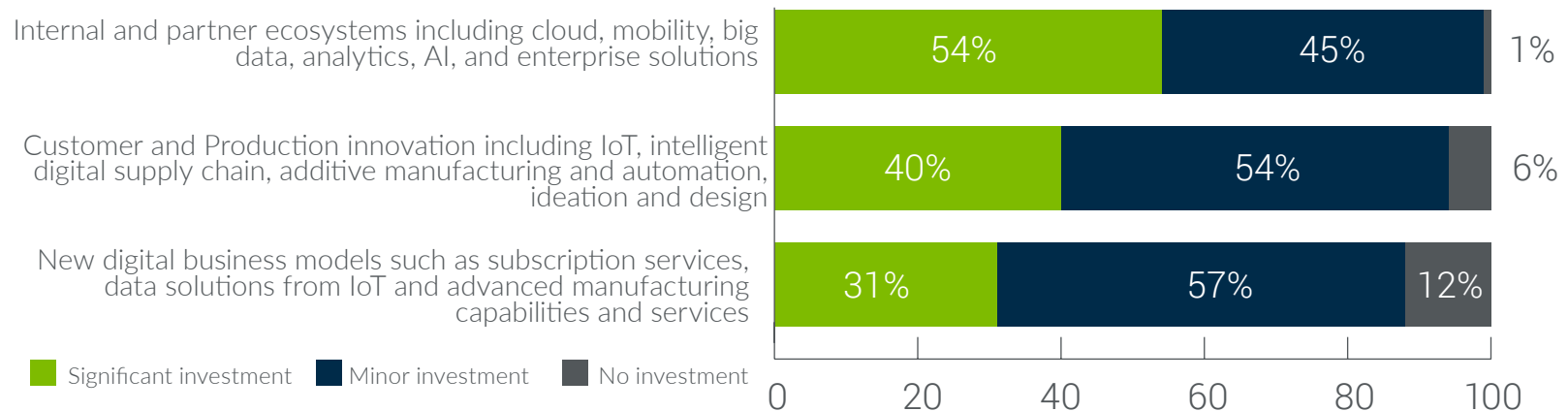
mobility, big data, analytics, artificial intelligence (AI), and enterprise solutions. This includes more than half (54%) that are making a "significant" investment in their systems.

Only slightly fewer manufacturing companies are making investments in digital transformation activities that impact their business models. Close to 9 in 10 (88%) are investing in subscription services, data solutions from IoT, and advanced manufacturing capabilities and services. This includes close to a third (31%) that are making a "significant" investment.

Taken as a whole, it is clear that significant investments are being made across the gamut of potential transformational technology and business uses.

What types of investments is your company making in the following types of digital transformation activities?

Internal and partner ecosystems including cloud, mobility, big data, analytics, AI, and enterprise solutions: 54% | 45% | 1%

Customer and Production innovation including IoT, intelligent digital supply chain, additive manufacturing and automation, ideation and design: 40% | 54% | 6%

New digital business models such as subscription services, data solutions from IoT and advanced manufacturing capabilities and services: 31% | 57% | 12%

Legend: ■ Significant investment ■ Minor investment ■ No investment

Axis: 0 20 40 60 80 100

PACE OF DIGITAL TRANSFORMATION EXPECTED TO ACCELERATE

▶ Given this remarkable level of investment, it is not surprising that the pace of digital transformation is expected to increase in the near future. The vast majority (85%) report that their pace of transformation will accelerate in the coming 3 to 5 years. This includes almost 1 in 5 (18%) that expect the acceleration to happen very quickly. There are no manufacturing companies (0%) that believe the pace of transformation will slow anytime soon.

▶ **How do you expect the pace of digital transformation to change in your company in the next three to five years?**

| | 18% | 77% | 5% |

■ Accelerate very quickly

■ Accelerate

■ No change

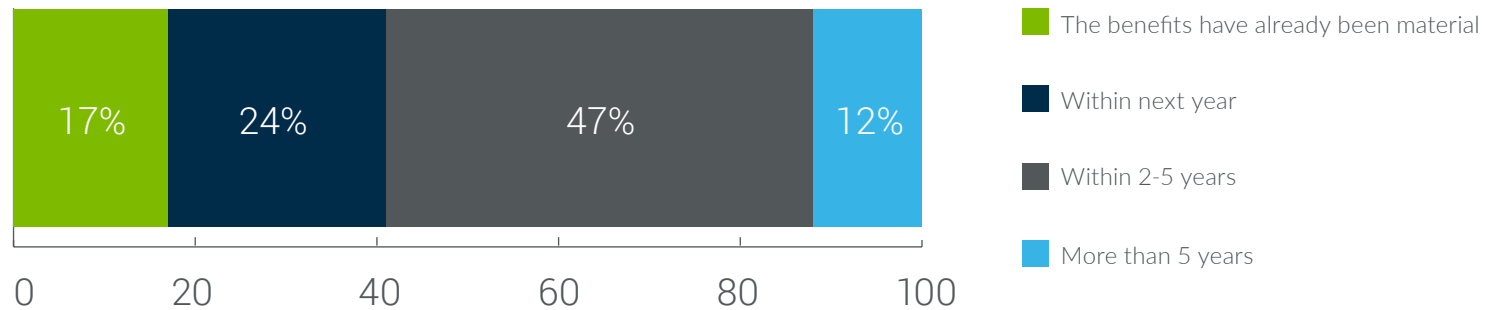■ Decelerate

0   20   40   60   80   100
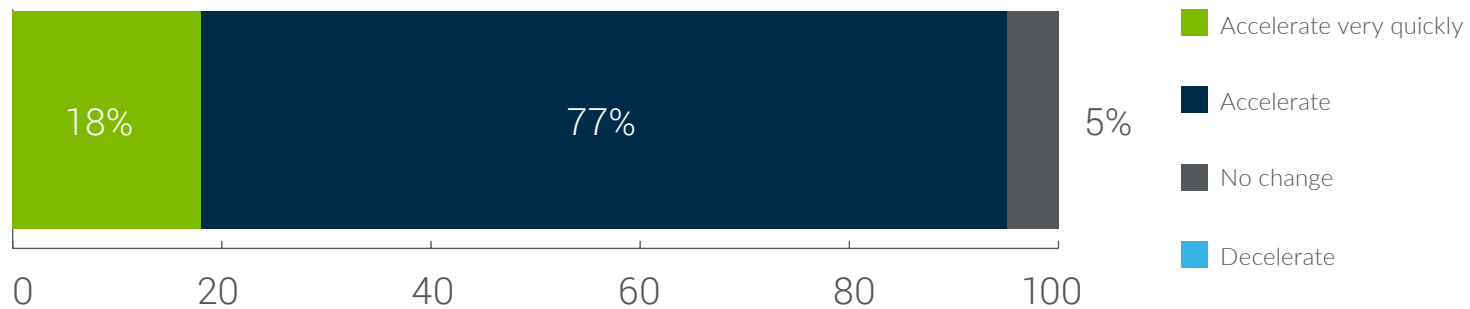
IMPACT OF DIGITAL TRANSFORMATION EXPECTED TO BE FELT QUICKLY

Given the level of visibility and support by upper management, combined with the significant investment being made in digital transformation projects, it is not surprising that there is an expectation that the impact on business outcomes will be material very soon. Less than 1 in 5 (17%) report that they have already seen material business benefits from digital transformation, but those that haven't yet seen material benefits expect it to happen soon. Almost a quarter (24%) say it will happen in 2018, and about half (47%) say that while it will not happen this year, it will be within the next five years. Only 12% believe that the material impacts of digital transformation are more than 5 years out.

When do you expect the benefits of digital transformation to have a MATERIAL impact on your business?
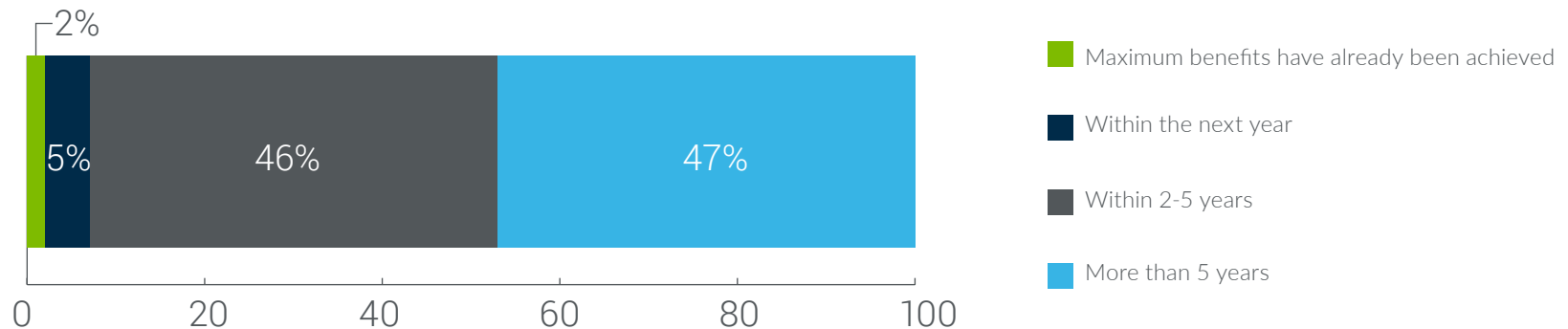

| 17% | 24% | 47% | 12% |

Legend:
- The benefits have already been material
- Within next year
- Within 2-5 years
- More than 5 years

IMPACT OF DIGITAL TRANSFORMATION EXPECTED TO BE FELT QUICKLY

▶ The benefits of digital transformation are not expected to stop once material impact has been made. When asked about the maximum impact on business results, only 2% felt that there was no more to be gained beyond what they already had, and another 5% felt that the maximum impact would be felt in 2018. The remainder were split fairly evenly between expecting maximum impact of their digital transformation to happen within the next 2-5 years (46%) and those that expected it to be more than five years out (47%). Survey participants were offered the opportunity to say that they didn't think their digital transformation activities would ever have a material or maximum impact on their business, but none (0%) selected that option in either question.

▶ **When do you expect the benefits of digital transformation to have MAXIMUM impact on your business?**

	2%		
5%	46%	47%	

| 0 | 20 | 40 | 60 | 80 | 100 |

- ■ Maximum benefits have already been achieved
- ■ Within the next year
- ■ Within 2-5 years
- ■ More than 5 years

DIGITAL TRANSFORMATION IS A JOURNEY

When respondents are asked where their company is in the midst of their transformation journey, an interesting trend appears. We saw earlier that these same companies reported both significant increases in executive support and notable levels of investment, however, there has not been a corresponding change in levels of digital transformation progress reported.
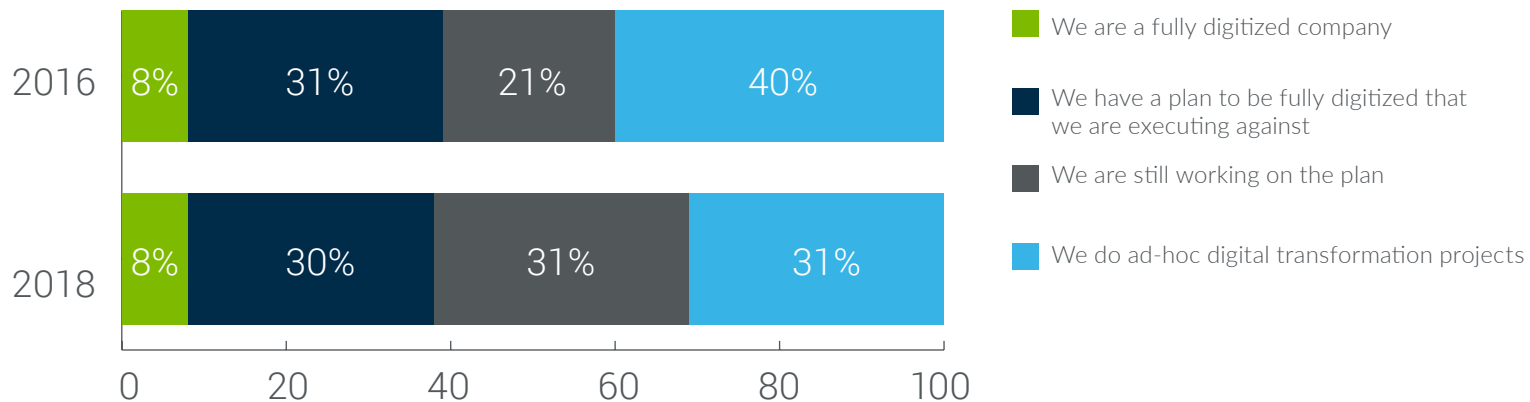
In the past two years the number of companies saying that they are fully digitally transformed has remained flat (8% in both years) as had the number saying that they have a plan to be fully digitized that they are executing against (31% and 30%). The only change that we saw in the past few years is a shift for some from ad-hoc digitization projects (40% in

2016 down to 31% in 2018) towards those who are working on a more overarching plan (21% in 2016 up to 31% in 2018).

The results suggest that progress has been made in digital transformation initiatives for the last two years, but also points to a clearer understanding of the journey by those undertaking it. As executive visibility and investments increase, the planning phase likely expands accordingly. So while it may feel like no progress is being made, that is simply because the scope of the landscape has changed as quickly as planning and execution has. The notable move from ad-hoc projects to planning demonstrates an important step in the digital transformation journey as these initiatives increase in overall company relevancy.

How would you rate your company's level of digital transformation across your entire organization?

2016: 8% | 31% | 21% | 40%
2018: 8% | 30% | 31% | 31%

Legend:
- We are a fully digitized company
- We have a plan to be fully digitized that we are executing against
- We are still working on the plan
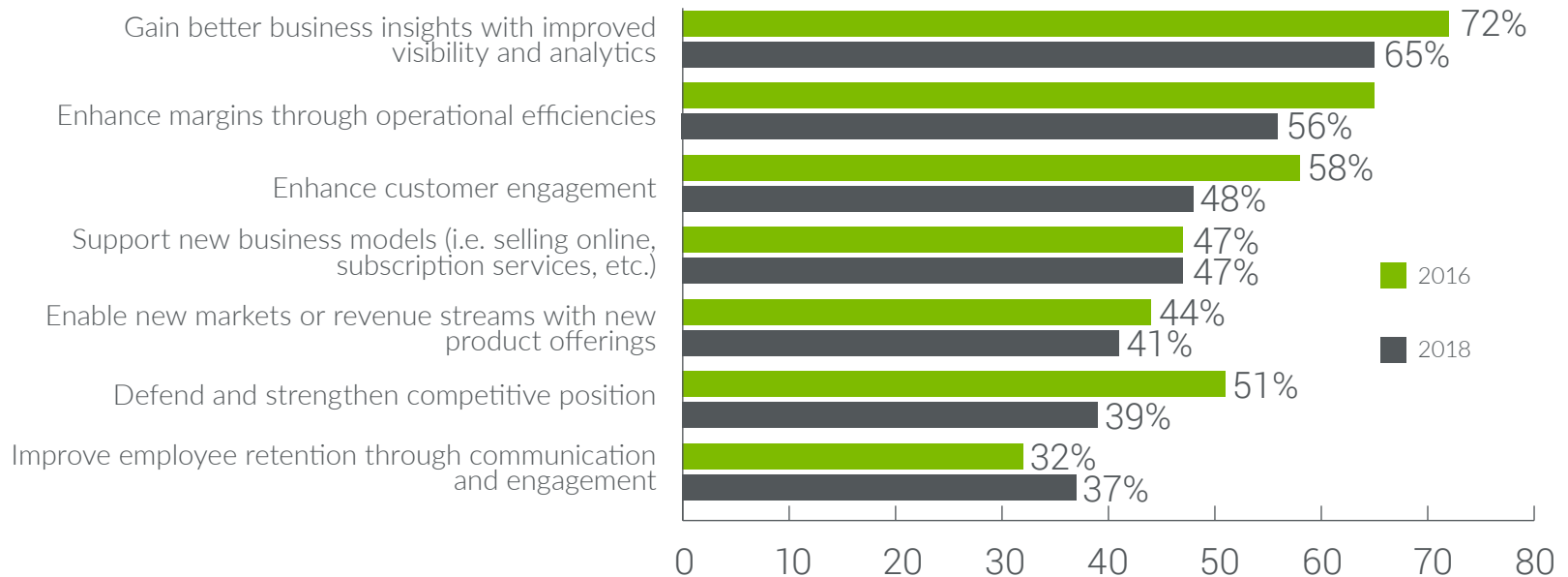- We do ad-hoc digital transformation projects

BUSINESS GOALS HAVE GAINED FOCUS

It is often said in business that "if you are doing everything, you are doing nothing." One of the indicators that manufacturing companies are maturing with their digital transformation efforts is that the related business goals are becoming more streamlined. In 2016 each participant chose on average 3.7 different goals. This decreased to an average of 3.1 different goals in 2018, demonstrating that manufacturing companies are becoming more focused as they gain experience.

Among the individual goals cited, such as enhancing customer engagement or improving operational efficiencies, most saw a small but notable decline in the number of digital transformation stakeholders stating these were key goals of their initiative, all dropping between 3-12%. The exceptions were improving employee retention, which was the only business goal to see an increase in the past two years (32% in 2016 to 37% in 2018), and supporting new business models, which stayed flat (47% in both years.)

What are your company's top business goals for digital transformation in the coming years?

Goal	2016	2018
Gain better business insights with improved visibility and analytics	72%	65%
Enhance margins through operational efficiencies	65%	56%
Enhance customer engagement	58%	48%
Support new business models (i.e. selling online, subscription services, etc.)	47%	47%
Enable new markets or revenue streams with new product offerings	44%	41%
Defend and strengthen competitive position	51%	39%
Improve employee retention through communication and engagement	32%	37%

THE DIGITAL TRANSFORMATION JOURNEY IS CHALLENGING

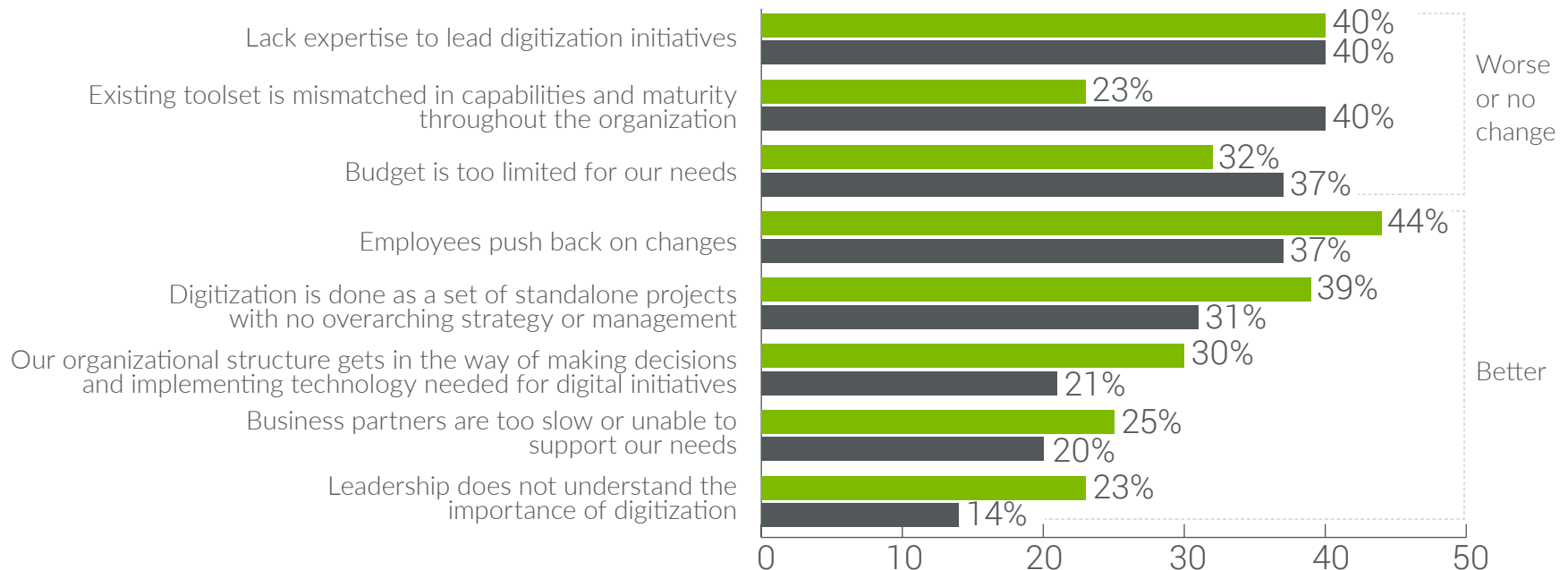# CHALLENGES PERSIST, ALTHOUGH THINGS ARE IMPROVING

Challenges are part of any strategic initiative and digital transformation is no exception. Almost all participants reported they had challenges (99%), with the top challenges in 2018 being a lack of expertise to lead digital transformation (40%) and a mismatch in existing tools sets (40%).

It is particularly interesting that most of the challenges reported have seen a notable decrease in the past two years as digital transformation stakeholders gain experience.

Fewer are facing issues such as organization structure getting in the way of decision making (31% in 2018, down from 40% in 2016), employee pushback (37%, down from 44%) and lack of understanding among company leadership (only 14% in 2018, a significant drop from 23% in 2016). Only two challenges saw an increase in the past two years. These included inadequate budget (up to 37% from only 32% in 2016) and a mismatch between existing toolset and organizational capabilities (jumped from 23% in 2016 to 40% in 2018).

What challenges are faced by your company in their digital transformation journey?

Challenge	2016	2018
Lack expertise to lead digitization initiatives	40%	40%
Existing toolset is mismatched in capabilities and maturity throughout the organization	23%	40%
Budget is too limited for our needs	32%	37%
Employees push back on changes	44%	37%
Digitization is done as a set of standalone projects with no overarching strategy or management	39%	31%
Our organizational structure gets in the way of making decisions and implementing technology needed for digital initiatives	30%	21%
Business partners are too slow or unable to support our needs	25%	20%
Leadership does not understand the importance of digitization	23%	14%

Worse or no change

Better

0   10   20   30   40   50

CULTURAL CHANGES ARE THE MOST CHALLENGING

The challenges reported by digital transformation stakeholders included a mix of technology issues and people issues. When asked which was hardest, digital transformation stakeholders at manufacturing companies were much more likely to indicate that culture and organizational changes were the hardest (74%). Only a quarter (26%) cited technology changes as being the most challenging.

When you think of your digital transformation journey, what type of change is more challenging for your organization?

74%
The cultural and
organizational changes

26%
The technology changes
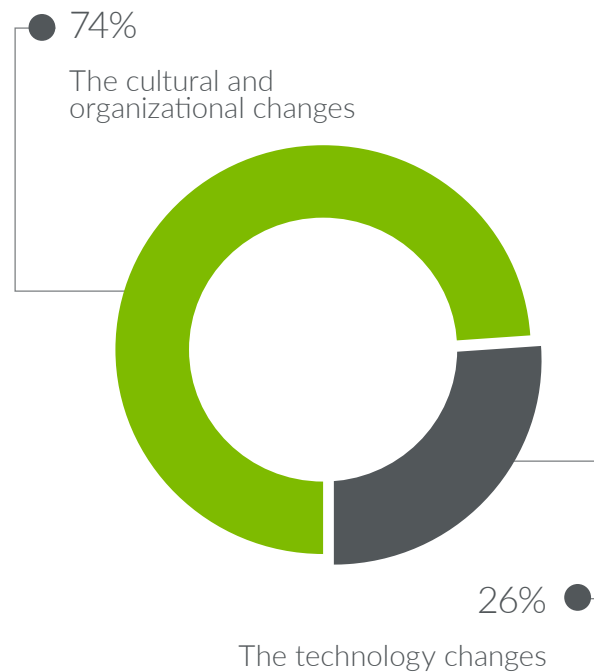
CULTURAL CHANGES ARE THE MOST CHALLENGING

▶ Interestingly, business stakeholders were much more likely to be concerned about technology changes. Almost a third (31%) said that technology changes were more challenging, much more than the 18% of the IT professionals with responsibility for technology changes.

▶ **When you think of your digital transformation journey, what type of change is more challenging for your organization?** (By role)

Business: 31% | 69%

IT: 18% | 82%

0 20 40 60 80 100

■ The technology changes

■ The cultural and organizational changes
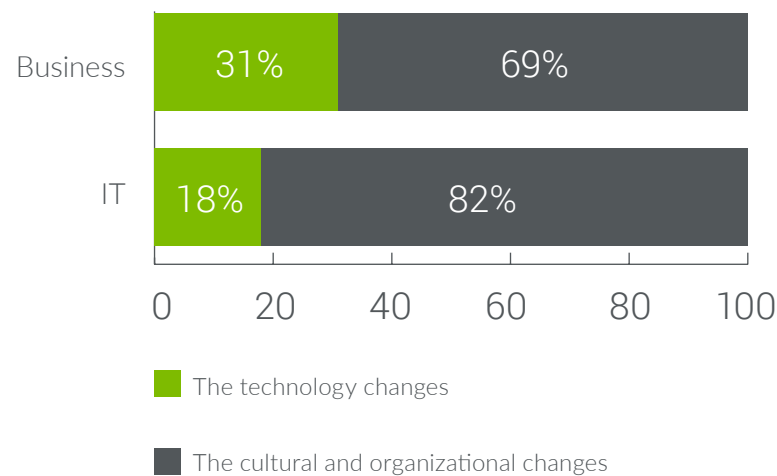
TRENDS IN INFRASTRUCTURE, INTERNET OF THINGS AND FACTORY TRANSFORMATION

INFRASTRUCTURE LIMITATIONS IMPACT DIGITAL TRANSFORMATION

▶ While digital transformation innovations can often be very exciting, the ability to execute can depend on less fascinating foundational work. Infrastructure limitations such as inadequate network capabilities and legacy applications that could not integrate with new systems have impacted the digital transformation activities of three-quarters (76%) of manufacturing companies.

▶ **Have your digital transformation activities ever been impacted by limitations with existing infrastructure?**

76%
Yes

24%
No
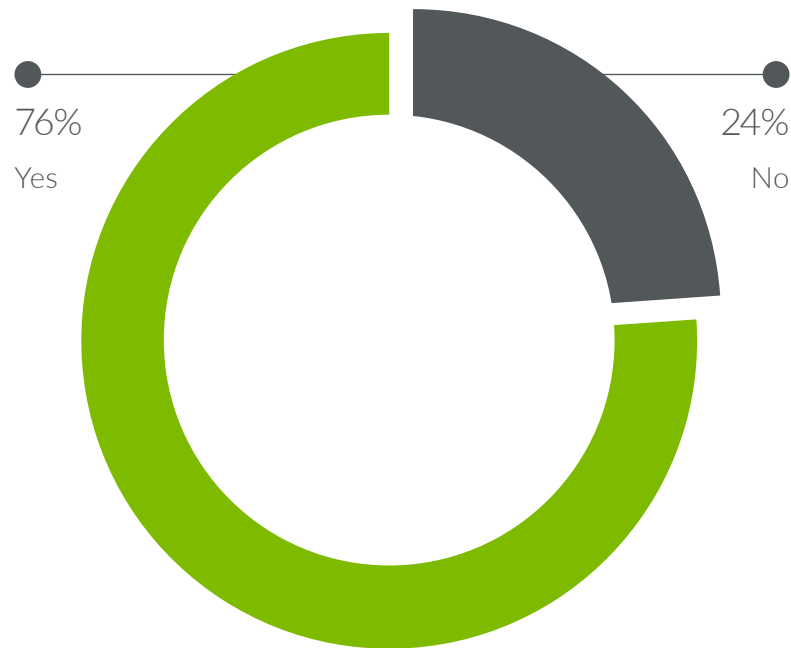
INFRASTRUCTURE LIMITATIONS IMPACT DIGITAL TRANSFORMATION

▶ These infrastructure issues are often disruptive. Only 27% of those who had issues described them as "minor," requiring some work but not having any real impact on timelines or business outcomes. However, for most organizations (73%), infrastructure issues had a significant impact, including some cases (15%) where these issues actually prevented parts of the digital transformation plan from being executed.
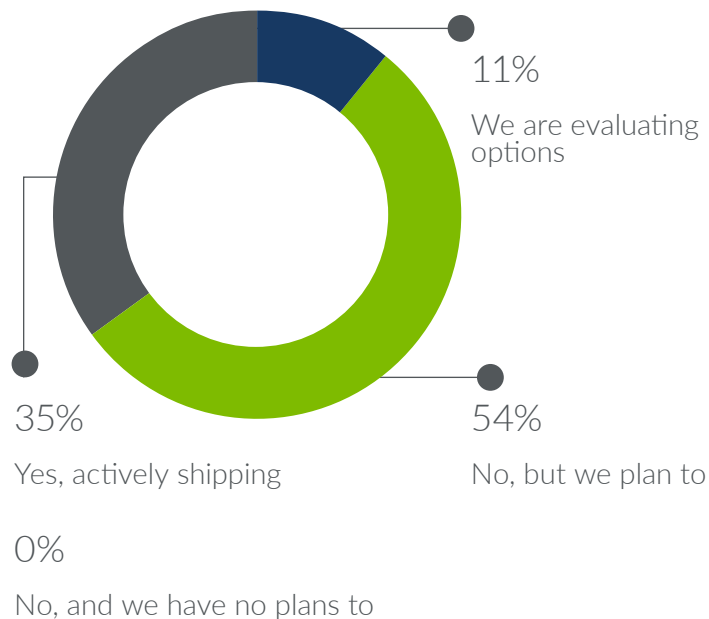
▶ **How much of an impact do infrastructure issues have on digital transformation plans?**

58%

Significant impact – we have had to delay our plans because of infrastructure issues

27%

Minor impact – we had to figure it out, but we manage without much hassle

15%

Critical impact – we have not been able to do significant portion of our plans because our infrastructure doesn't support it
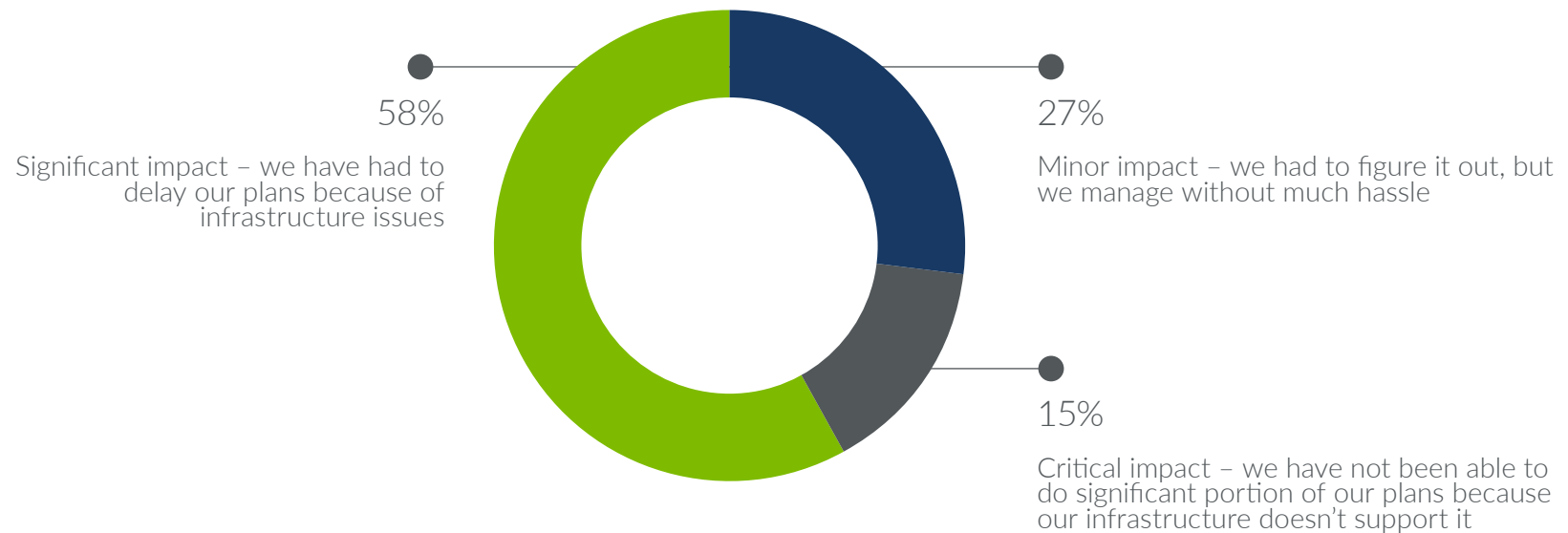
INTERNET OF THINGS SOLUTIONS ARE MOVING FORWARD AGGRESSIVELY

Among the companies represented in this study, about half produce the type of analog solutions that could benefit from IoT capabilities. Among these companies, there is aggressive movement towards enabling product connectivity. All (100%) are working on producing IoT solutions. Over a third (35%) are actively shipping and a further half (54%) have a plan to produce IoT solutions. The remaining 11% are actively evaluating options.

The companies that are currently producing IoT-enabled solutions or have plans to do so are in complete agreement (100%) that the data generated by these solutions will be important to their digital transformation initiatives. The only difference reported is in what the level of importance will be. More than 1 in 10 (12%) consider that this data will be "critically important," while a further two-thirds (65%) characterize the data as "very important."

Are you already producing IoT solutions?

11%
We are evaluating options

35%
Yes, actively shipping

54%
No, but we plan to

0%
No, and we have no plans to

How important do you expect the data from IoT solutions to be to your digital transformation initiative?

12%
Critically important

23%
Somewhat important

0%
Not important

65%
Very important
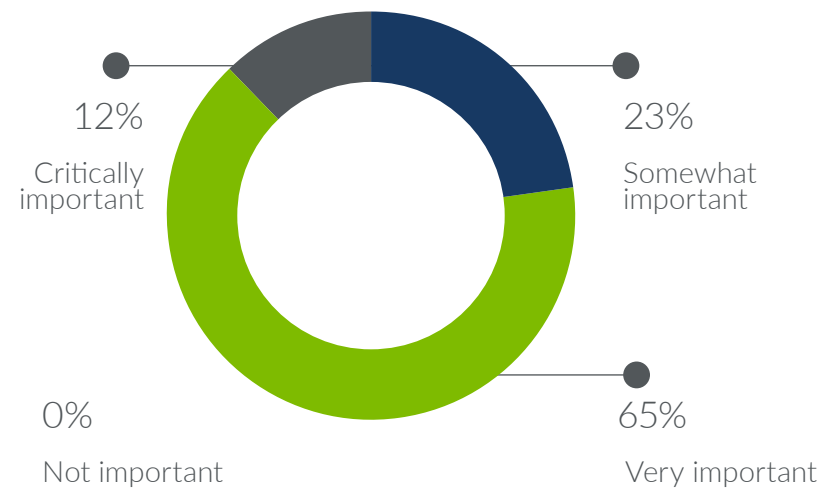
n = produce solutions that would benefit from IoT

MOST HAVE PLANS TO TRANSFORM THEIR FACTORIES

▶ For manufacturing companies, factories will be a key frontier in their digital transformation. Most stakeholders (81%) report that their companies intend to transform their factories or other facilities to take greater advantage of innovations in production including advanced automation, 3D printing, machine learning, or AI.

▶ **Does your organization intend to transform factories or other facilities to better leverage cutting edge innovations including advanced automation, 3D printing, machine learning, artificial intelligence, and similar advances?**

19%

No

81%

Yes
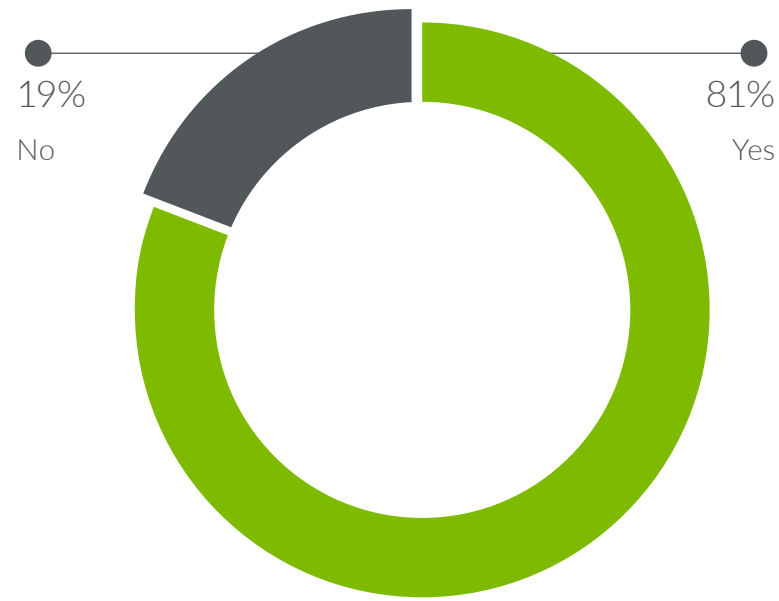
PARTNERS ARE CRITICAL TO DIGITAL TRANSFORMATION JOURNEY

MANUFACTURING PARTNERS EXPECTED TO HELP WITH DIGITAL TRANSFORMATION

Will companies "go it alone" with their digital transformation initiatives or will they look to industry experts? When asked about the role of manufacturing partners, digital transformation stakeholders overwhelmingly (88%) agreed that their partners had a role. Some expected their partners to deliver needed transformation capabilities (63%), or provide needed services (47%), or while others expected help navigating the constantly changing technology landscape (47%). Several participants took the time to write in other needs from partners, frequently mentioning they expected to learn from the partner's experiences with other companies and have them share successful approaches and best practices.
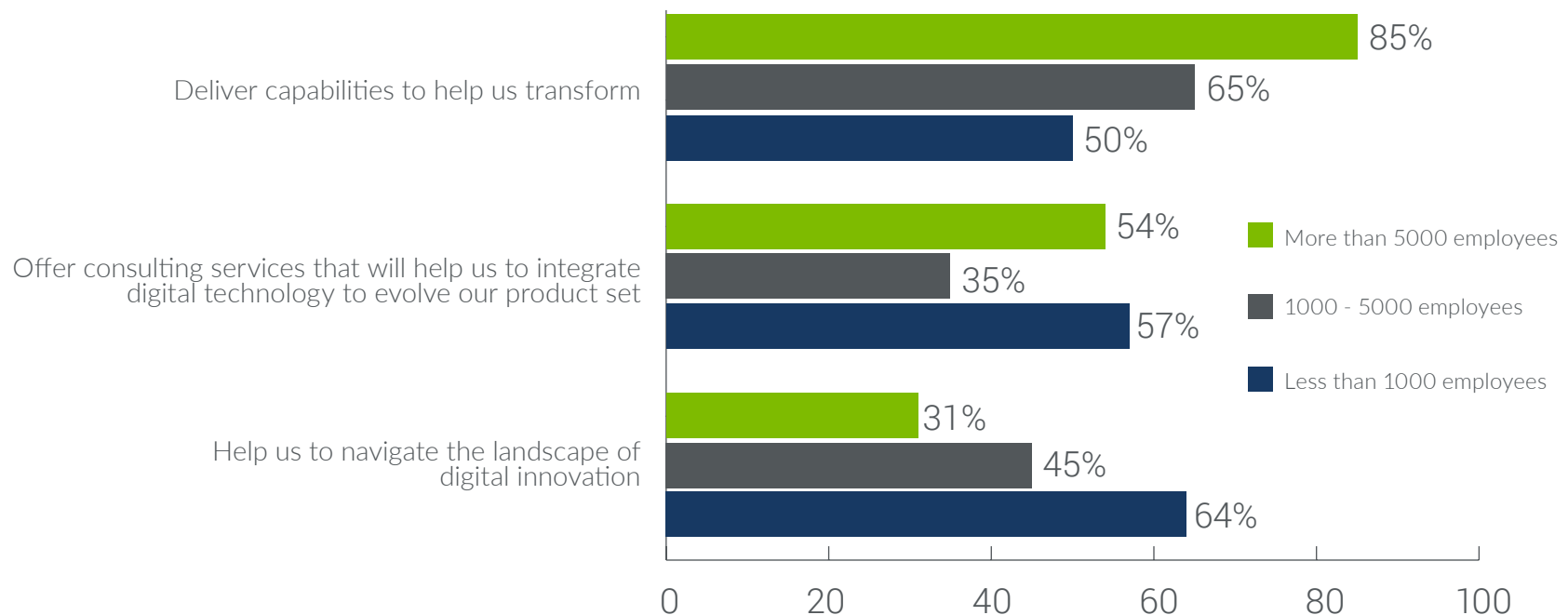
In the face of accelerating technology innovation, what role do you expect your manufacturing partners to play in digital transformation?
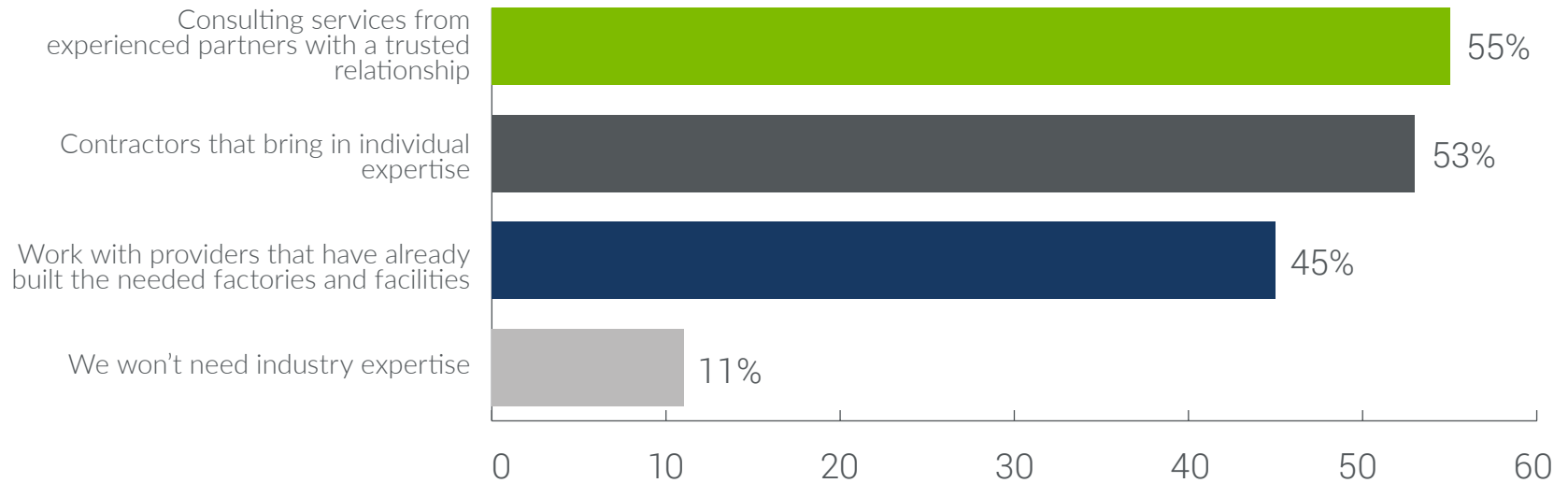
Deliver capabilities to help us transform	63%
Offer consulting services that will help us to integrate digital technology to evolve our product set	47%
Help us to navigate the landscape of digital innovation	47%
Other	2%
Our partners will not have a role in our digital transformation	12%

0   10   20   30   40   50   60   70   80
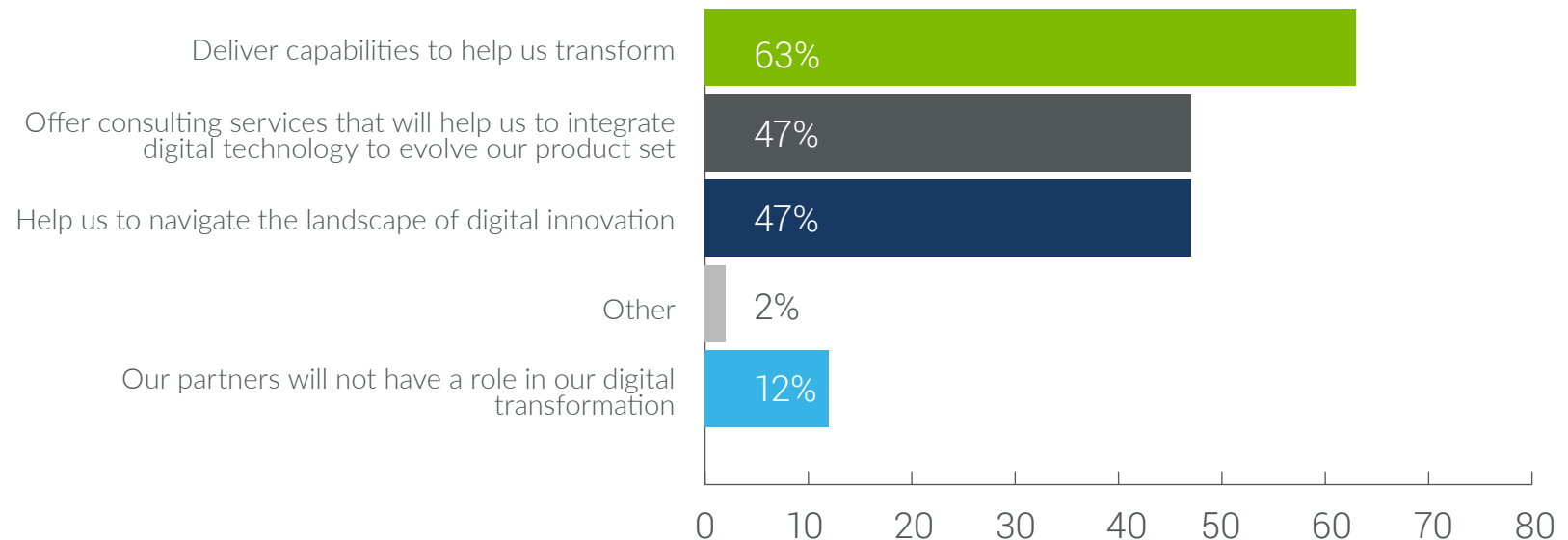
MANUFACTURING PARTNERS EXPECTED TO HELP WITH DIGITAL TRANSFORMATION

▶ The role of manufacturing partners is expected to be different depending on the size of the company. The largest companies were much more likely to expect help with transformational capabilities (85% at companies with more than 5,000 employees compared to only 50% of companies with less than 1,000 employees). The smallest companies were noticeably more likely to look to their partners for help navigating the digital transformation landscape (64% at small companies compared to 31% at larger companies.)

▶ **In the face of accelerating technology innovation, what role do you expect your manufacturing partners to play in digital transformation?** (By company size)

Category	More than 5000 employees	1000 - 5000 employees	Less than 1000 employees
Deliver capabilities to help us transform	85%	65%	50%
Offer consulting services that will help us to integrate digital technology to evolve our product set	54%	35%	57%
Help us to navigate the landscape of digital innovation	31%	45%	64%

Legend:
- More than 5000 employees
- 1000 - 5000 employees
- Less than 1000 employees

Axis: 0, 20, 40, 60, 80, 100

FACTORY TRANSFORMATION WILL REQUIRE INDUSTRY EXPERTISE

Factory transformation is another area of digital transformation requiring external expertise. The vast majority of those with plans to transform their factories (89%) will look for help with those changes from manufacturing partners and other industry experts. This help is expected to include consulting services from trusted partners (55%), individual expertise available from contractors (53%) and working with providers that have already built needed factories and facilities (45%).

What type of industry expertise will you need in order to transform your factories and facilities?

Category	Percentage
Consulting services from experienced partners with a trusted relationship	55%
Contractors that bring in individual expertise	53%
Work with providers that have already built the needed factories and facilities	45%
We won't need industry expertise	11%

n = plan to transform factories

METHODOLOGY AND DEMOGRAPHICS

DEFINITION

The term Digital Transformation refers to the use of technology to improve business results. Digital Transformation can include any function within a manufacturing organization including back office and supply chain applications, factory automation, social media for marketing outreach, sensors embedded in the goods produced, data analytics, and more.

GOALS:

RESEARCH GOAL

The goal of this research was to capture hard data on digital transformation trends at companies that produce physical goods.
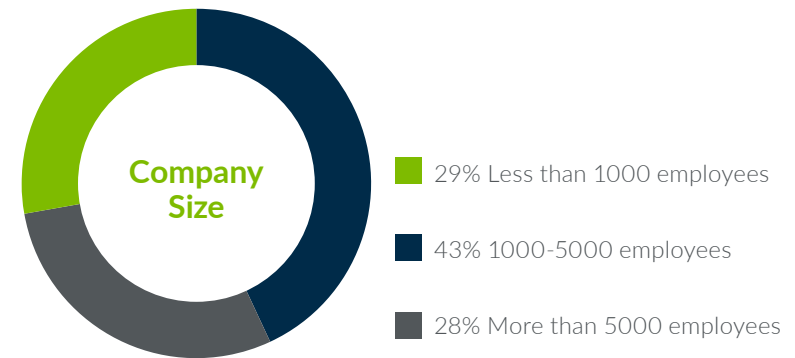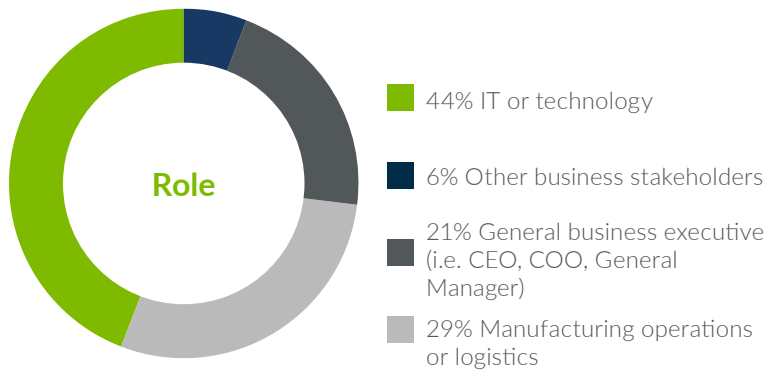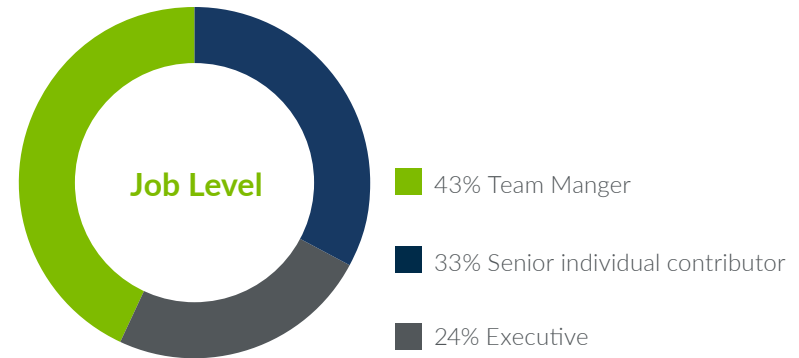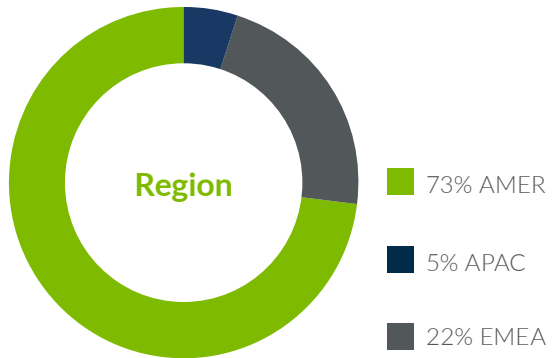
METHODOLOGY

Participants were given a definition of digital transformation then asked a series of questions on a variety of topics related to their digital transformation journey including importance, attitudes of leadership, challenges, and technology adoption. Certain questions were repeated from a similar 2016 survey to enable trend analysis.

PARTICIPANTS

A total of 302 individuals completed the survey. All respondents had professional responsibility for their company's digital transformation as a technology implementer or business stakeholder.

PARTICIPANTS REPRESENTED

Region
- 73% AMER
- 5% APAC
- 22% EMEA

Job Level
- 43% Team Manger
- 33% Senior individual contributor
- 24% Executive

Role
- 44% IT or technology
- 6% Other business stakeholders
- 21% General business executive (i.e. CEO, COO, General Manager)
- 29% Manufacturing operations or logistics

Company Size
- 29% Less than 1000 employees
- 43% 1000-5000 employees
- 28% More than 5000 employees

ABOUT DIMENSIONAL RESEARCH

Dimensional Research provides practical marketing research to help technology companies make smarter business decisions. Our researchers are experts in technology and understand how corporate IT organizations operate. Our research services deliver a clear understanding of customer and market dynamics.

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ABOUT JABIL

Jabil is a product solutions company providing comprehensive electronics design, production and product management services to global electronics and technology companies. Offering complete product supply chain management from facilities in 29 countries, Jabil leverages the power of digital to transform how products are designed, made and delivered, helping customers exploit technology and capabilities in ways they never thought possible.

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