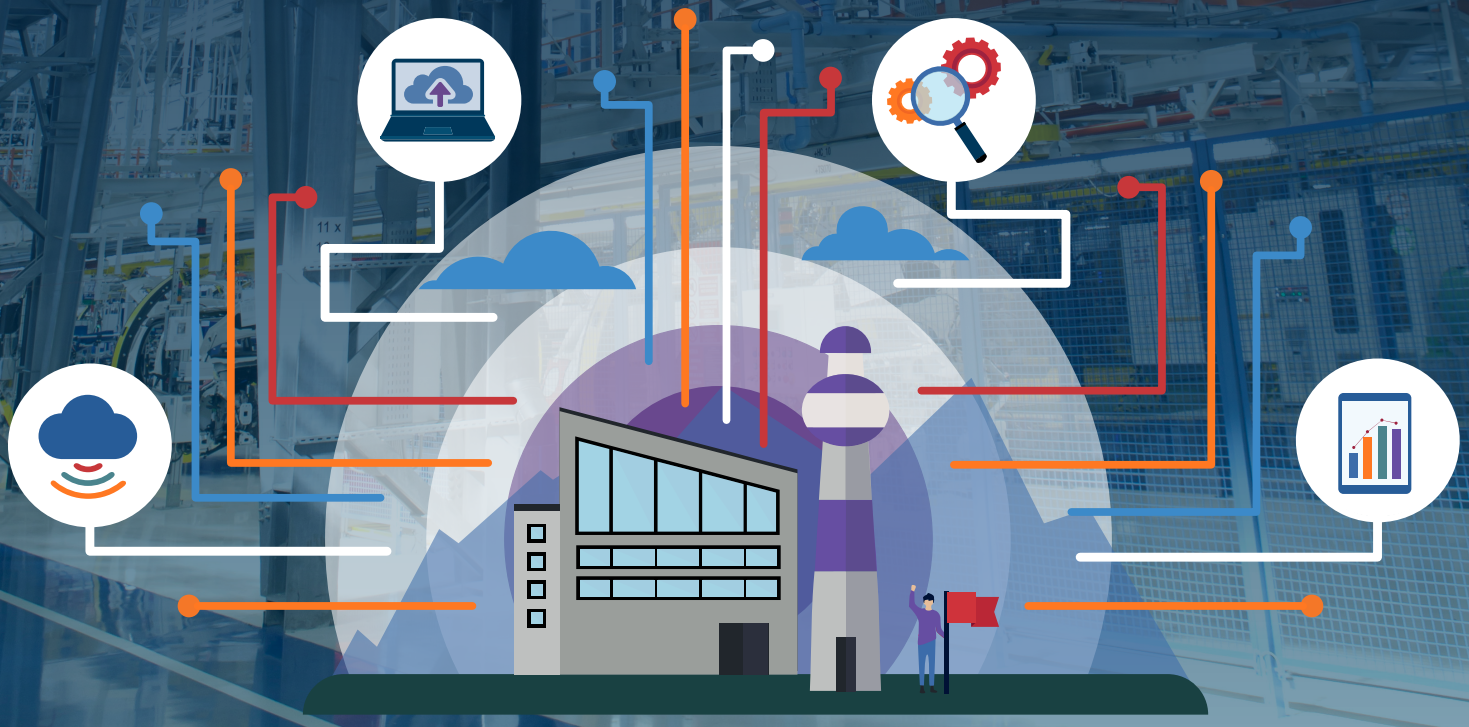
WHITEPAPER

AEGIS SOFTWARE

TRANSFORMATION ACCELERATION

How Manufacturers Overcome Challenges with the Right Tools & Tech



While supply chain slowdowns, product shortages, and consumer demand disruptions are top-of-mind for most manufacturers, **many are leveraging this challenging time to find opportunities that enable them to achieve digital dominance and accelerate transformation.**

Now more than ever, competitive differentiation stems from superior digital capabilities that leverage data and automation to optimize processes across the product lifecycle and the supply chain ecosystem. **Data is at the foundation of digital transformation—yet the velocity, volume, and contextualization of this data is overwhelming manufacturers' infrastructures, processes, and people.**

In this whitepaper, we will discuss the top drivers behind manufacturers' IoT strategies, identify the biggest pressures and best solutions to the ongoing talent shortage, and reveal the role technology plays in mitigating labor and supply chain challenges. We will also share some of IDC Manufacturing Insights' latest research, which discusses top-of-mind challenges for today's manufacturers, and the demonstrable benefits of digitalization.

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Today's Greatest Manufacturing Challenges

The COVID-19 pandemic and other conflicts like the war in Ukraine continue to send shockwaves through the labor force and supply chain, introducing unprecedented challenges for manufacturers. **While the negative impact of these realities is undeniable, they also present unique opportunities for change, growth, and success for today's manufacturers.**

According to recent surveys from IDC Research, the most forward-thinking manufacturers are using this time as an opportunity to transform operations through digital technology—whether that means unlocking new efficiencies, embracing innovation, improving competitive differentiation, or another source of improvement.

While these sources of improvement are diverse, data is the unifying factor at the heart of them all. Today's manufacturers should be asking themselves a fundamental question: **how can I maximize the transformative value of data within my organization?** Many of them are responding to this question by implementing IoT strategies and investments.

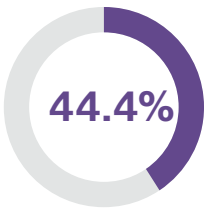
Drivers Behind IoT Strategies & Investments

There are several drivers behind a manufacturer's IoT investment, the most prominent of which is quality. As supply chain disruptions continue to permeate the manufacturing landscape, companies are attempting to swap and adjust suppliers to minimize slowdowns. But the rapid shift between supplies can have significant implications for quality. **IoT investments can help maintain high levels of quality, even as the supplier landscape shifts.**

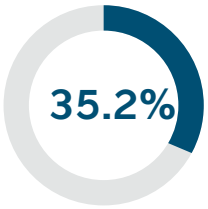
Behind quality, enhancing productivity, maximizing efficiency, and reducing costs are also top drivers of IoT investments. Within manufacturing, IoT strategies tend to focus on operational areas of the business. Ultimately, IoT success is defined by the ability to access the right data and harness it to make the right decisions.

While quality, efficiency, productivity, and cost-cutting lead the pack, IDC identified[1] several other drivers of a strategic focus on IoT within the manufacturing sector. Some of these include the below:

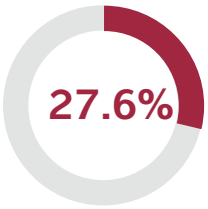
The Top Drivers Behind IoT Strategy/Investments



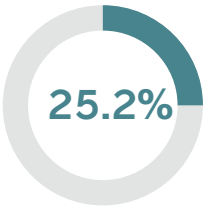
Improve **product or service quality**



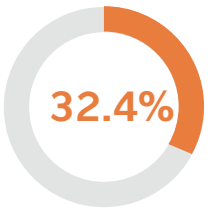
Improve **internal business productivity/** efficiency/time-to-market



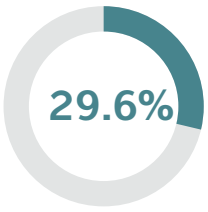
Faster/better **decision making**



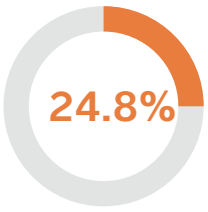
Support **sustainability** goals



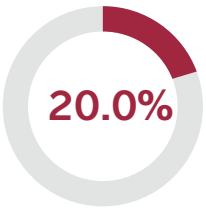
Reduce **internal operational** costs



Improve the **customer experience**



Improve **physical security**

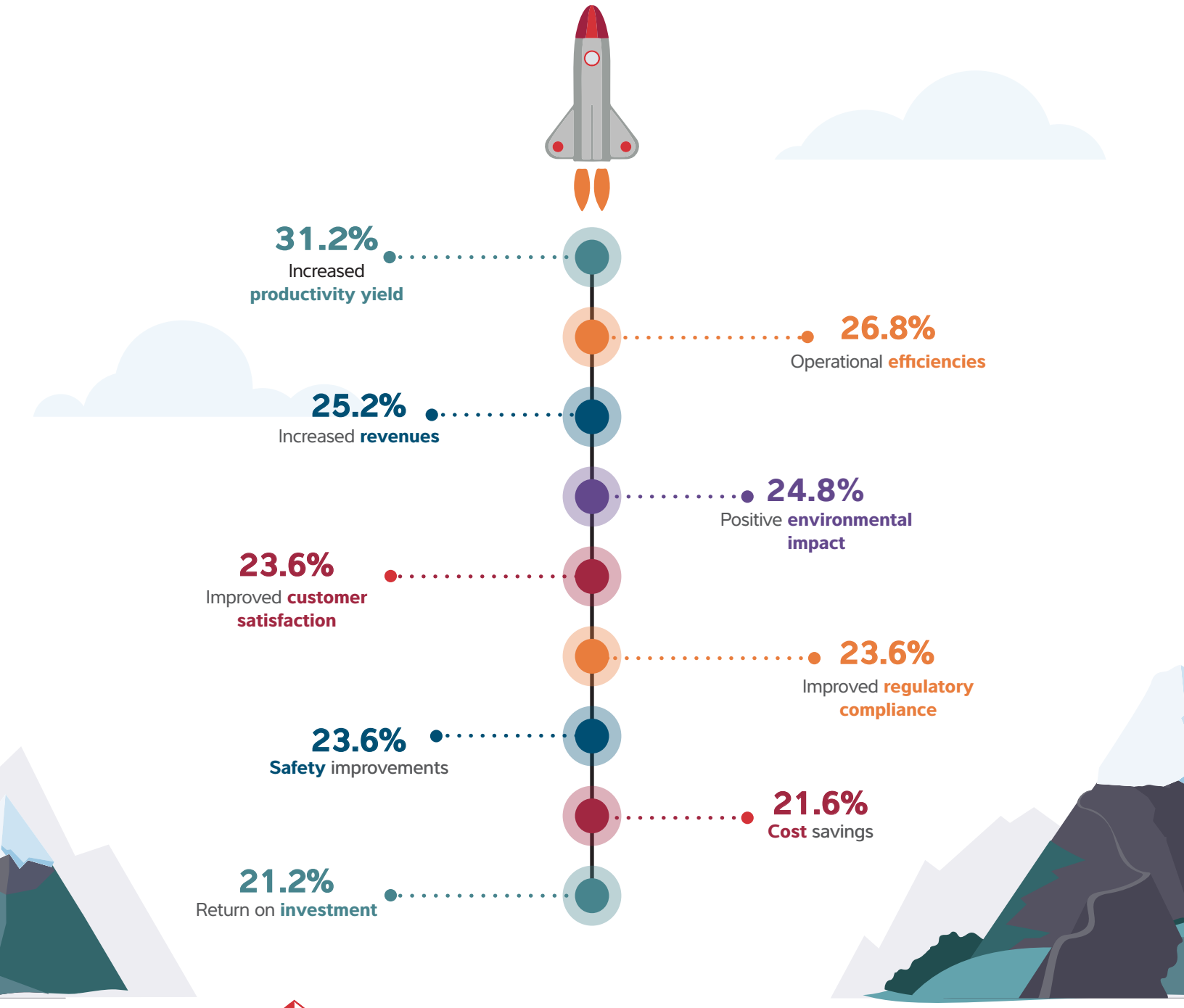


Competitive **differentiation**

We know what drives IoT investment, but what makes an IoT investment successful?

Measuring the an IoT project's success is essential to determine what is working, identify where investments are needed, and surface key areas for improvement. **Manufacturers should focus on contextualizing specific KPIs to paint a full picture of their IoT/technology investment.** According to an IDC IoT Decision Maker Survey[2], top metrics measuring the success of IoT projects include the following:

Top Metrics Measuring Success of IoT Projects



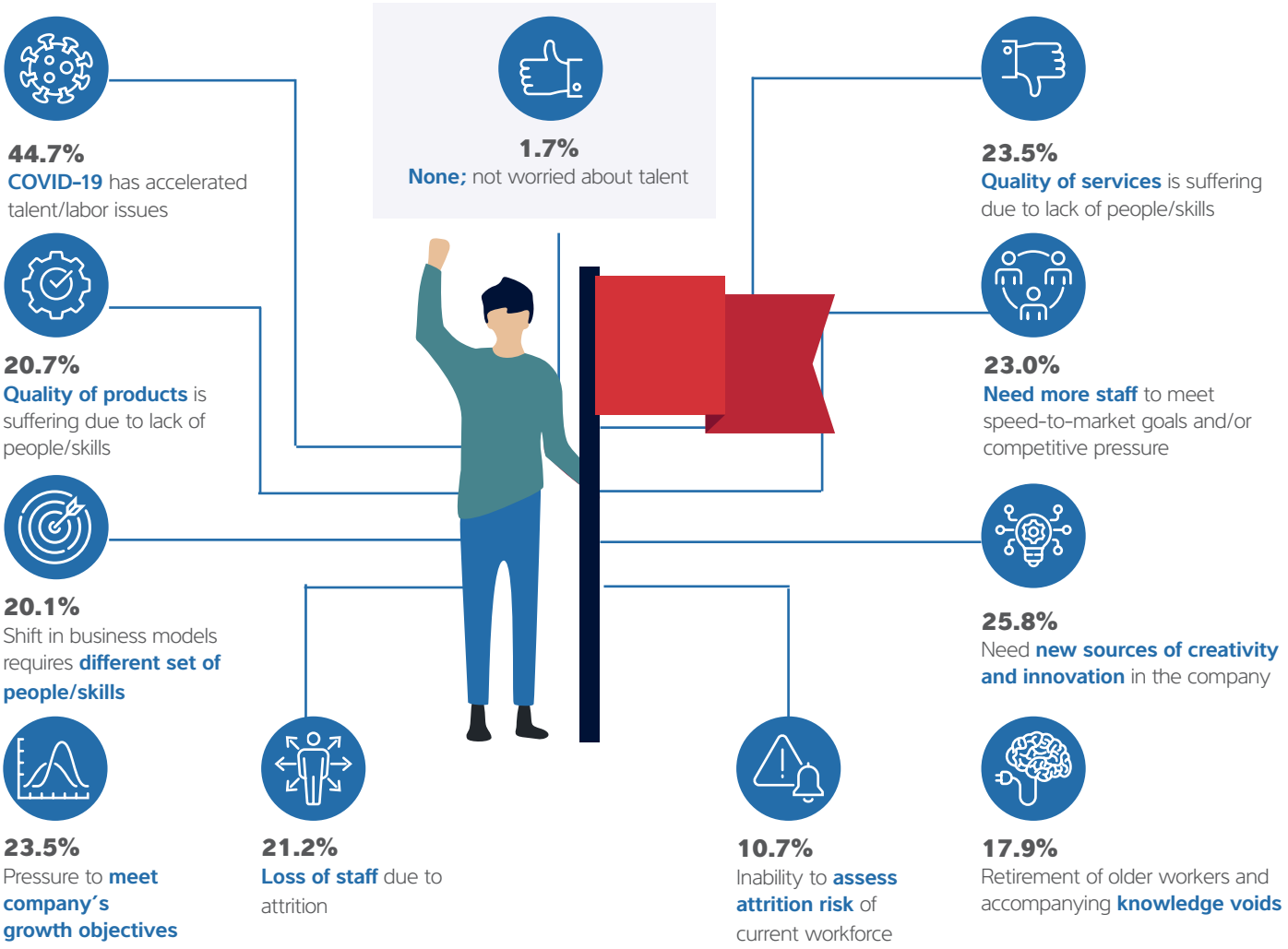
The Intensifying Focus on Talent

While headlines tend to focus on supply chain disruptions and shortages within the manufacturing sector, **the industry is suffering from a second widespread issue: a talent shortage and skills gap of monumental proportions.**

Manufacturers are unanimously focused on attracting and retaining talent, and for a good reason. The COVID-19 pandemic resulted in a talent shortage and retention of existing talent that permeates sectors, which stems from situations like employees not returning to work after being furloughed, taking advantage of early retirements, shifting careers, or making other life changes.

When asked during an IDC Talent Management Survey[3] what the top three pressures are that are driving their organization to focus on talent, respondents cited the below.

Top Three Pressures Driving Organizations to Focus on Talent

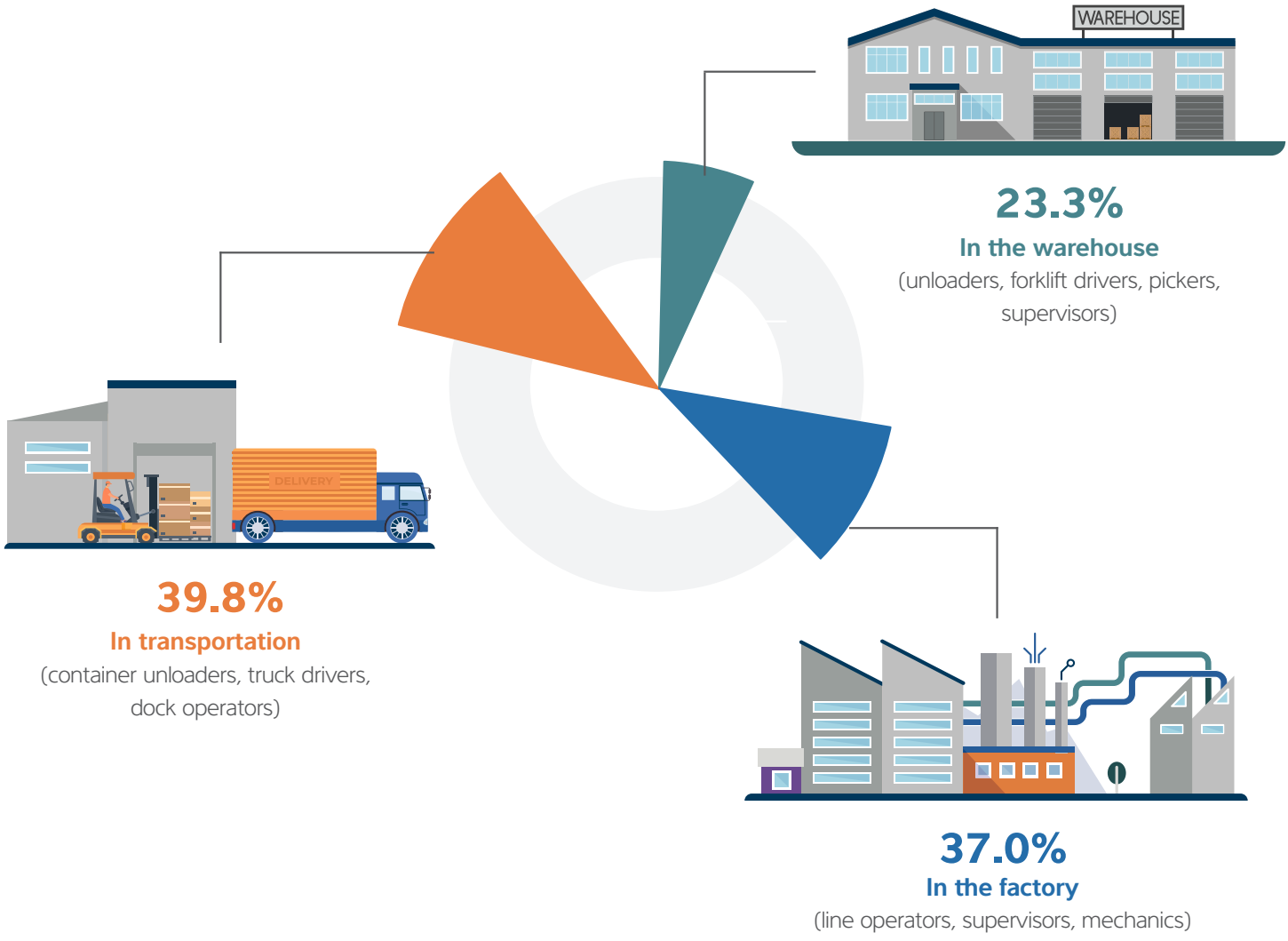


According to IDC research, **on average, manufacturers saw a ~5% decrease in employees due to COVID-related shutdowns.** But labor shortage is just one side of this coin. Manufacturers also cite lack of knowledge as a key personnel related issue, with many manufacturers simultaneously citing shortages and skills gaps.

In the IDC Talent Management Survey[4], 59.9% of respondents said that rapidly changing skills required in highly skilled positions is a top challenge factor. 52.6% said that lack of talent when hiring people is an issue, while 51.5% said that their company is unwilling to pay for talent. **The skills gap is further intensified by changing manufacturing models, which require digital skills that are even rarer.**

The worker shortage and skills gap are interrelated with supply chain challenges. 43.1% of manufacturers surveyed[5] said supply interruptions were a key impact of labor issues while 39.4% said the inability to handle manufacturing change orders. 39.0% cited the inability to meet shipping/customer service obligations, while 31.5% noted reduced product quality. Finally, 25.7% noted warehouse capacity constraints and 24.5% stated a lack of truck availability. In an IDC research survey[6], manufacturers cited where their labor/worker issues are the most urgent.

Areas Where Labor/Worker Issues are the Most Urgent



23.3%
In the warehouse
(unloaders, forklift drivers, pickers, supervisors)

39.8%
In transportation
(container unloaders, truck drivers, dock operators)

37.0%
In the factory
(line operators, supervisors, mechanics)

Addressing the Ongoing Labor Shortage

Addressing the labor shortage isn't just a lofty goal—**it's a necessity if a manufacturer wants to thrive in this complex manufacturing landscape and drive business forward.** Following are some key areas of focus to mitigate the impact of the ongoing labor shortage:

Finding & Attracting Talent

Manufacturers should first identify skills needed to support DX, streamline the hiring process, and improve the organization's attractiveness as a workplace to pinpoint and attract the right kind of talent.

Developing & Retaining Talent

Organizations should cultivate the development and retention of internal talent by enabling team members to access training and certifications, pairing experienced with less-experienced staff, starting rotation programs, introducing employee satisfaction initiatives, and using hybrid work models.

Outsourcing

Outsourcing certain functions is also a viable alternative. Specifically, organizations should define which parts of the process can be done by a third party, identifying partnerships to fill the skills gap where appropriate.

Enabling Technology

By implementing technology and automation, organizations can enhance their talent acquisition model and enable existing talent to get more done. Knowledge management systems, collaboration technologies, automation of low-value work/manual processes, and tools that enhance productivity (analytics, IoT, etc.) each play a critical role in empowering personnel and bridging the gap.

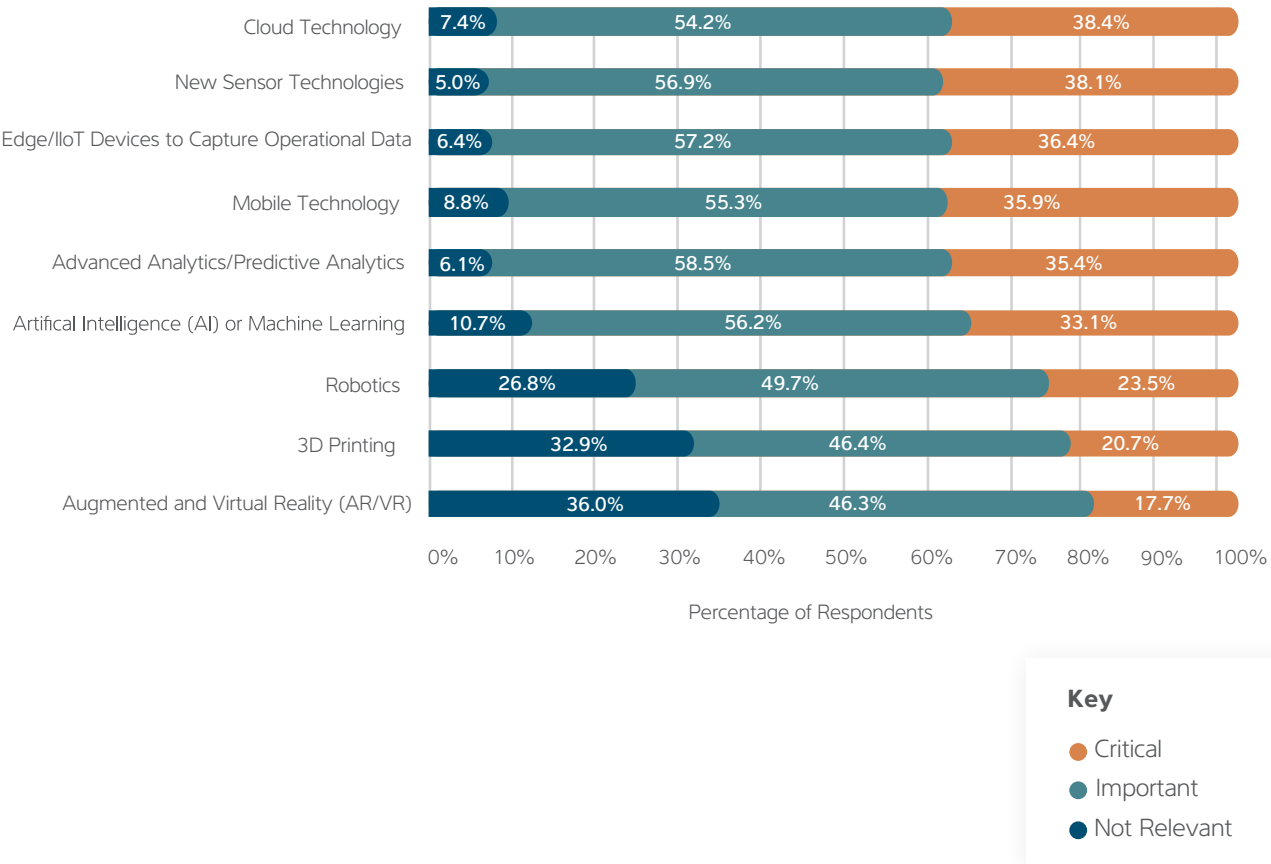
By addressing these four key areas, organizations can **gain access to a wider talent pool with higher-quality candidates.** In addition, they can enable growth and development among employees that have already committed themselves to the business.

Harnessing Technology to Overcome Labor & Supply Chain Challenges

Technology plays an important role in helping manufactures overcome talent and supply chain related challenges. Specifically, workers are looking for forward-focused, Industry 4.0-ready, and IIoT-savvy organizations where they can grow and develop their skillsets in an innovative environment. The adoption of the right technology is critical in getting the right employees in the door.

Moreover, tech adoption enables smoother operations, stronger data, enhanced quality, accelerated time-to-market, and improved visibility—all of which can help improve the supply chain. According to respondents from the IDC Future of Operations Survey[7], the vast majority of those surveyed said cloud technology was either "important" or "critical." Similarly, the majority said that new sensor technologies, Edge/IIoT devices, mobile technology, advanced/predictive analytics, and AI/ML were either important or critical.

Importance of Technologies/Tools in Achieving Opex & Resilience



The 4 Cs in Transformation Acceleration

While an organization is actively addressing its labor and supply chain shortages through technology, it should focus on the **four Cs in transformation acceleration: contextualization, configuration, cloud, and collaboration.** These four areas are essential as manufacturers work to become more efficient and profitable.

CONTEXTUALIZATION

Data is meaningless if it simply exists with no context. Manufacturers should not only ensure they gain the right kind of data but also work to contextualize it so it can be used to inform important decisions. **Transforming data into insights is crucial for today's forward-focused manufacturers.**

If you do not have a comprehensive contextualized data engine in place, then all other modernization projects for improving processes and automation will be for nothing. Not properly curating IoT data with other manufacturing data will result in incomplete and inaccurate insights. To avoid this potential problem, you should **ensure that you implement a robust data structure** where both IoT and manufacturing data can be collected, contextualized, and visualized.

With Aegis' FactoryLogix IIoT-enabled MES/MOM platform, IoT data goes through a contextualization process and is stored in a contextual ontology that can solve real challenges, such as the inadvertent shutdown of manufacturing machinery in the factory, for example. The platform can determine if there was a repair done on the piece of machinery during the data anomaly, and the intelligent blending of IoT data with other relevant data coming from the platform transforms the raw data into insights. Together, the contextualized data gives manufacturing leaders a holistic view of the overall health of their factory.

CONFIGURATION

The configuration of the MES is also important. When one thinks of customization vs. configuration one often thinks about UI (user interface), but this this concept is actually quite broader. **Adaptability, configurability, and resiliency are key.** The responsiveness of manufacturers to change and the ability to respond quickly are critical success factors, both of which necessitate a framework that can adapt.

When it comes to customization, many systems are limited to changing screens, forms, or fields. Within the right solution/platform, this concept is extended in many different areas and **enables administrators to configure every aspect of the user experience** through the graphical interface and wizards, thus defining the manufacturing process itself.

FactoryLogix offers a unique approach where system administrators can simply and efficiently configure most aspects of the user experience through graphical interfaces and wizards. From defining the functionality and layout of the factory floor production terminals to detailing the manufacturing process itself, FactoryLogix brings drag-and-drop simplicity to manufacturing execution.

COLLABORATION

Given today's talent-related challenges, **collaboration on project tasks has become more difficult**. It involves a greater number of meetings and visualization of engineering tasks, both of which contribute to bottlenecks. This, coupled with the increased workload from reshoring of projects and a multitude of ad-hoc changes, creates a capacity issue. When offshore labor is being leveraged, engineers are not able to directly interface with the shop floor on new products, product, and process changes, or deal with operator feedback on issues.

Facilitating greater collaboration must be a priority for teams. The ideal MES should include capabilities like integrated digital monitoring, task flow management, and project management, which enable the creation of workflows and task lists to ensure documents are authored and released in a way that maximizes consistency and quality. These capabilities foster greater collaboration between teams across the enterprise and empower them to align on workflows and processes.

FactoryLogix offers an exciting merging of human and machine collaboration. The platform provides a better way to train people on document standards and best practices. Meanwhile, centralized document management enables the ability to share documents within the manufacturing environment, across facilities, and between functional units. Dashboards also show the progress of each authoring job on its way to digital approval and release to the floor.

CLOUD

Cloud adoption is ever-increasing. According to IDC Research[8], top reasons for cloud adoption include data growing beyond capacity of current systems, the need to support digital initiatives, IT budgets being constrained, the need for services that are unique to the cloud, the existence of remote workers, software applications becoming outdated, and the failure to meet business demands due to legacy systems.

No matter the reason behind adoption, once cloud systems are in place, **organizations need to focus on data**—extending insights beyond the walls of the factory with cross-site analytics and harnessing data from other business systems alongside manufacturing data.

FactoryLogix offers a cloud-based enterprise hybrid solution that ties everything together, from the warehouse to the factory and beyond. The platform offers transactional data from the FactoryLogix database that is periodically summarized and optimized for reporting. This data is then warehoused in an enterprise database that sits in the cloud.

Accelerating Transformation with the Right Manufacturing Execution System (MES)

In the increasingly digital world we live in, the manufacturing industry is sometimes seen as a relic of the past, and people tend to believe that tech jobs will eventually replace manufacturing jobs. But the truth is, **as long as we need technology, we will need manufacturing.** And manufacturing itself is often a great driver for technological innovation.

FactoryLogix **enables and accelerates tech innovation through an IIoT/Industry 4.0-enabled platform** that delivers factory digitalization, offers real-time operational visibility and control, increases productivity and efficiency, enables enterprise-wide compliance and quality, maximizes uptime, and meets ever-changing customer and business demands.

FactoryLogix helps drive digital dominance. Aside from the four Cs above, FactoryLogix helps manufacturers with:

FactoryLogix®

Intelligent Guidance

Through intelligent guidance, **end users can interact with and manipulate an order** to better ascertain information about what they are building or inspecting. This enhances productivity and narrows the skills gap at scale. Any related documentation is brought within reach, eliminating the need for employees to look elsewhere for information. Through FactoryLogix, the operator always knows what to do next and there's continuous validation to ensure the right person completes the right activities at the right place and time.

Ultimate Interactivity

A **fully integrated bill of materials and design data** together enable intelligent data viewing that improves efficiency in the assembly, inspection, and processing of data. By enabling the data contextualization of all incoming measurements and attributes to the associated entity in the design itself end users can interact directly with design data, removing paper reliance and minimizing human error while improving efficiency, quality, and compliance. With smart tool integration, another layer of data can be automatically collected throughout the process, eliminating the need for time consuming manual data entry.

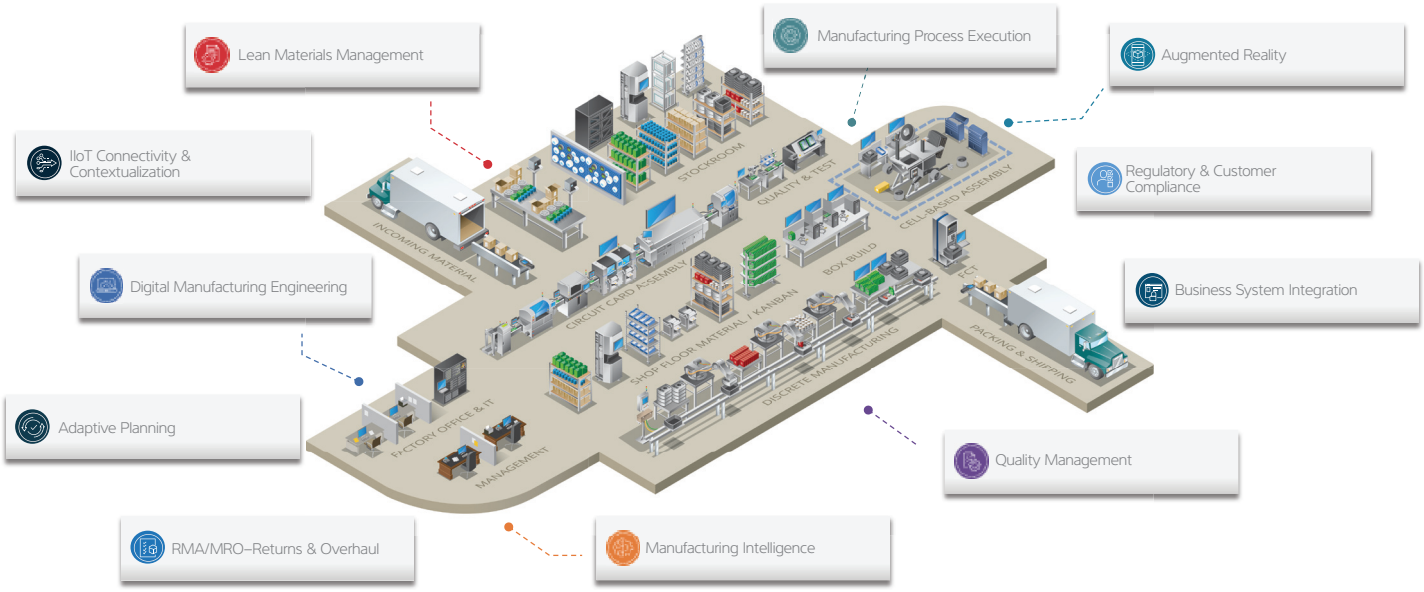
Dynamic Consistency

The term dynamic consistency refers to the **standardization of best practices throughout the manufacturing process** in a way that still enables personnel to adapt to daily demands. Smart images and smart text, for example, enable users to store content in a singular location, but dynamically alter that content as required.

Conclusion

With the use of the right tools and a dedication to digital transformation, **manufacturers can not only embrace transformation acceleration, but lead it.** To learn more about achieving manufacturing success amid today's challenges, watch our webinar "How Manufacturers Can Achieve Digital Dominance."

View Webinar



[1, 2] IDC IoT Decision Maker Survey | July 2021
[3, 4, 5, 6] IDC Talent Management Survey | March 2022
[7] IDC Future of Operations Survey | June 2021
[8] IDC CloudPath Survey | May 2021

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