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Connecting The Future

Unlocking the power of a connected workforce in Chemicals, Power, and Manufacturing industries

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Using Connectivity to Drive Agility, Resilience and Sustainability

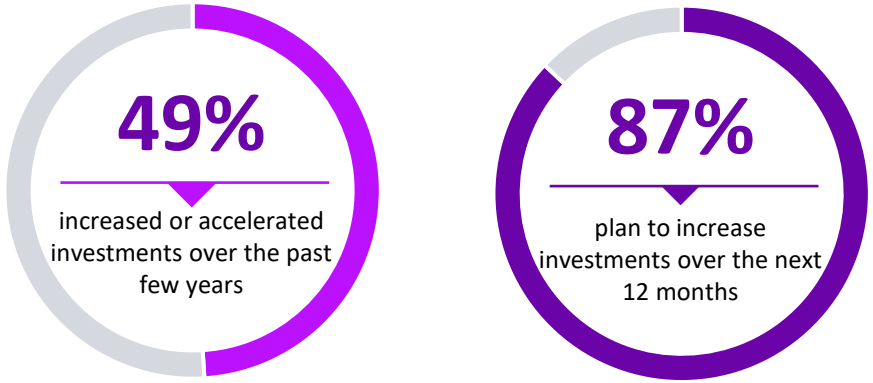
Today's global economy is facing significant challenges: fluctuating energy prices, increasing environmental regulation, supply chain disruptions, inflation, and talent shortages. Companies looking to sustain their competitive edge are turning to digital innovation to drive the efficiency, agility, and reliability they need to succeed in this environment.

In a survey of 650 leaders at companies with an annual revenue of $50M USD or more in the chemicals, power, and manufacturing industries, it's evident that in today's operating environment, success depends on advancing industrial digital technologies to enable an integrated, data-centric approach to operations.

The Need for a Data-Centric Approach

Using technology to unify real-time data and create efficient data-sharing capabilities can unlock the insights leaders need to drive smart decision-making, enabling them to engineer better and operate more efficiently, driving profitability. Yet the transition to this technology is not complete: **more than 4 in 5 executives in these industries report key business decisions are being made without full data visibility and insights from their plants and assets most of, if not all of the time.**

Investment in Industrial Digital Solutions to Continue



Understanding the Connected Industrial Economy

Across the world, industries are creating a new kind of industrial ecosystem by aggregating, analyzing and sharing data with trusted partners, which enables them to visualize their entire value chain to unlock new operational efficiencies. This integrated, data-centric future depends on a hybrid-cloud approach to data and analytics, using the scope and scale of cloud to empower teams with deeper insight to transform faster, reduce costs, and optimize engineering and operations at scale.

In parallel to the drive to digitalize to manage vast quantities of operational data, we are witnessing the rise of the Connected Industrial Economy. This integrated, data-centric future depends on a hybrid-cloud approach to data and analytics, using the scope and scale of cloud to empower teams with deeper insight to transform faster, reduce costs, and optimize engineering and operations at scale. In this way, trusted, organized, real-time data offers a path to higher quality output, reduced risk, and lower cost.

Growing Investment in Industrial Digital Solutions

In this context, it's no surprise that nearly half of the businesses have increased their investment in industrial digital solutions over the past few years, and the vast majority plan to increase their investments further over the next 12 months. Nearly all see augmenting their existing industrial engineering and operations workflows with cloud capabilities as essential. **Cloud computing, analytics and AI are the top solutions leaders are looking to leverage to help manage and organize the vast volumes of operational data they are dealing with to address the internal and external pressures they're facing.** Indeed, this research shows that over three-quarters of leaders believe the greatest impact on profitability and sustainability will be via information sharing through an open and interoperable ecosystem between teams, suppliers, customers and strategic partners.

Explore this report to learn how executives across North America, Europe and the Middle East at companies in the chemicals, power and manufacturing industries are refocusing their investment agenda and building strategies that put cloud computing capabilities and integrated data at the heart of their future vision for agility, resilience, growth and sustainability in the connected industrial economy.

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How the Chemicals Sector is Embracing Connected Worker Technologies to Shape its Sustainable Future

Driven by changing consumer demands, sustainability concerns and net zero pledges and, above all, increasingly complex supply chains and an aging workforce, the chemicals industry is embracing industrial digital solutions to remain agile and resilient.

A third of chemicals leaders view increasing environmental regulations and sustainability transitions as the most significant challenge they'll face over the next 12 months (compared to 23% across all sectors). Yet responding to these pressures requires data connectivity and insights many have not yet achieved: **nearly 9 in 10 in the chemicals industry (89%) admit they're making key business decisions without full visibility and insight from their plants and assets most of the time.** In fact, more than a quarter (28%) say they're doing this all of the time (compared to 20% across all sectors).

In this context, it's no surprise that 62% of chemicals leaders have increased or accelerated their investment in industrial digital solutions over the past few years—significantly higher than the percentage who have done so across the three industries (49%), but they're not stopping there. **65% say augmenting their existing industrial workflows (engineering, operations, etc.) with cloud capabilities will be essential to the everyday operations across all functions of their organization.**

Top Expected Benefits of Cloud and SaaS Solutions

Investment Priorities Will Ensure Internal Processes Keep Pace with the Ever-Increasing Need for Speed and Efficiency

With asset reliability a key to success in this sector, using AI-powered risk-based guidance to improve reliability and identify areas for proactive maintenance is cited by half as a top digital initiative with the ability to greatly impact profitability and sustainability. Several of the top expected benefits of cloud and SaaS solutions include this as well, such as greater IT flexibility and increased speed in accessing information (59%) and real-time data-driven insights and analytics to increase agility and reduce plant downtime (50%).

A Connected Approach to Navigating Supply Chain Challenges

Digital solutions can help manage external challenges as well. About half (49%) see supply chain disruptions among the top three challenges they'll face in the coming year. With global supply chains coming under pressure and a shift to increasing localization in response, executives have recognized that relying on technology can help. Cloud-based technology can unify data from diverse sources and provide insights leaders need to successfully navigate changing supply patterns in real time, preserving profitability and ensuring that sustainability requirements are not sacrificed in a scramble to deliver. And **90% say their strategy for managing supply chain issues over the next 12 months will rely fully or mostly on increasing or improving their industrial digital solutions.**

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Expanding Workforce Connectivity

The commitment to innovation also includes new approaches to manage the most vital resource —people. 100% are planning to invest over the next 12 months in flexible work opportunities for areas of the workforce which haven't traditionally enjoyed these benefits, such as roles on the plant floor or those involved in operations.

More than half (53%) plan to invest a great deal in this over the next 12 months to support the ability to work outside traditional locations and schedules. Using the cloud and empowering teams to collaborate using connected technologies will be essential to delivering this vision. And **the chemicals industry is at the forefront of the digital revolution – leaders here are significantly more likely to include IIoT as a priority area for investment (64%, compared to 55% across all sectors).**

Having ambitious goals doesn't mean that the transition will be seamless. Barriers to innovation remain, including security concerns (44%), digital skill gaps (40%), and workforce acceptance of new ways of working (40%). It's here, in driving adoption of new ways of working, that leaders see the need to invest in trusted partners who have expertise in driving sustainable digital transformation and who can build tools that support a connected workforce. Partnering with an experienced industrial technology partner is a fast-track to operational agility and resiliency in the new business environment. Improved collaboration is viewed as an anticipated benefit of implementing cloud and SaaS by nearly 4 in 5 (79%) in the chemical industry.

4 in 5 expect **improved collaboration** internally or with external partners from cloud and SaaS investments

Achieving Differentiation in the Chemicals Sector

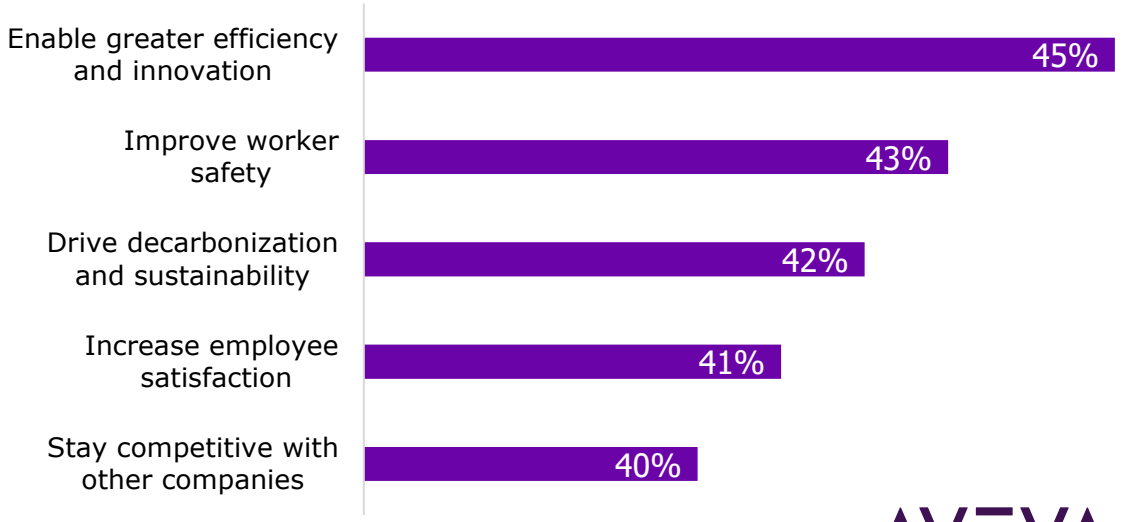
Despite this, **nearly half of companies (49%) already consider themselves to be a leader in a digital-first work environment, so getting ahead in this industry will require going a step further in digital investments to create true differentiation.** With more than half (52%) saying they would cut back mostly or completely on investments in industrial digital solutions during an economic downturn, now may be the time to gain the advantage by pushing forward in this area.

> The vast majority (77%) say enabling information sharing—between teams and with suppliers, customers and other strategic partners—through an open and interoperable ecosystem is among the top digital initiatives that offers the greatest impact on profitability and sustainability

One of the best ways to do this may be through implementing an information-sharing ecosystem for sharing data across teams and with trusted partners. 40% of executives in the chemicals industry see this as a way to stay competitive with other companies, and 45% see this as enabling greater efficiency and innovation.

Recognizing the challenges the industry is facing with environmental regulations and talent pressures, many also see creating a connected information-sharing ecosystem – the connected industrial economy of the future – as a way to drive decarbonization and sustainability (42%), improve worker safety (43%) and even increase employee satisfaction (41%).

Benefits of A Connected Industrial Economy in Chemicals



How the Power Sector is Looking to a Connected Workforce to Address Environmental Regulations and Infrastructure Challenges

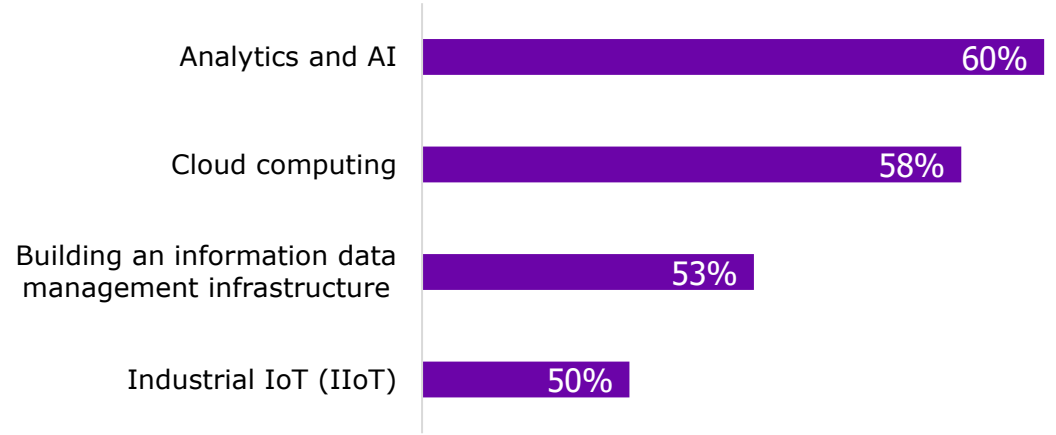
Power suppliers face a dual challenge – the need to meet robust energy supply commitments while modernizing infrastructure and, in some regions and areas, entirely shifting the energy mix.

With global disruption, ever more rigorous environmental and net zero requirements, plus geopolitics all adding pressure, digitalization is a stronger imperative than ever in the power sector. Indeed, more than half of the leaders in this industry note that fluctuating energy prices (53%), talent shortages (52%), and increased environmental regulations and sustainability pressures (51%) are among the top three most significant pressures their organization will face over the next 12 months.

Many companies face internal challenges as well. **The majority (82%) report key business decisions are being made without full data visibility and insights from their plants and assets most or all of the time.** Taking a data-centric approach to these challenges can help to manage them. Over half in the power industry (53%) have been steadily investing in industrial digital solutions over the past few years. Many (42%) have even increased or accelerated their investments over this period. And **nearly 9 in 10 (88%) plan to increase their investments in industrial digital solutions further over the next 12 months.**

Top Expected Benefits of Cloud and SaaS Solutions

Investment Priorities Will Focus on Increasing Agility and Speed



Enhancing Workforce Connectivity to Combat Top Industry Challenges

Volatility and disruption are constants in today's power industry, which may increase the appeal of cloud technology as a solution to unify data and provide holistic visualization that enables power suppliers to better understand and therefore manage fluctuating supply or potential outages. **More than half (55%) say augmenting their existing industrial workflows with cloud capabilities will be essential to the everyday operations across all functions of their organizations.** Cloud can be a true differentiator and value accelerator.

Power executives anticipate that implementing cloud and SaaS solutions will provide both greater IT flexibility and increased speed in accessing information (57%), as well as real-time data-driven insights and analytics to increase agility and reduce plant downtime.

Complying with rigorous environmental and safety regulations is another reason why leaders need access to accurate, timely data, and why they benefit from being able to share it across the team and with key partners and organizations. **More than half in the power industry (53%) cite building an information data management infrastructure as a top investment priority for the next 12 months.** Leaders anticipate that this requirement will span on-premise, cloud and hybrid cloud deployments, as this integrated approach will result in improved collaboration based on data-led insights.

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Indeed, 74% say enabling information sharing—between teams and with suppliers, customers and other strategic partners—through an open and interoperable ecosystem is a top digital initiative. This is also seen to have a direct impact on profitability and sustainability. Building an open data ecosystem founded on an integrated, agnostic technology stack is the key step to achieve this kind of insight.

With the need to respond quickly and accurately to the torrent of challenges facing the industry, using technology to connect the workforce and deliver actionable real-time data and insights is key. **Yet just 35% describe themselves as a leader in a digital-first work environment.**

Over half have prioritized investments planned for analytics and AI (60%) and cloud computing (58%), and more than three-quarters (78%) point to cloud and SaaS solutions as offering improved collaboration within the company or with partner organizations. Implementing cloud-based solutions that enable real-time data access and efficient information-sharing with internal and external entities can be a true differentiator of those prepared for success and those who will struggle.

4 in 5 expect **improved collaboration** internally or with external partners from cloud and SaaS investments

Achieving Differentiation in the Power Sector

For an industry facing rigorous environmental and net zero requirements, implementing cloud-based solutions that enable real-time data access and efficient information-sharing can be a true differentiator of those companies prepared for success and those who will struggle to keep up.

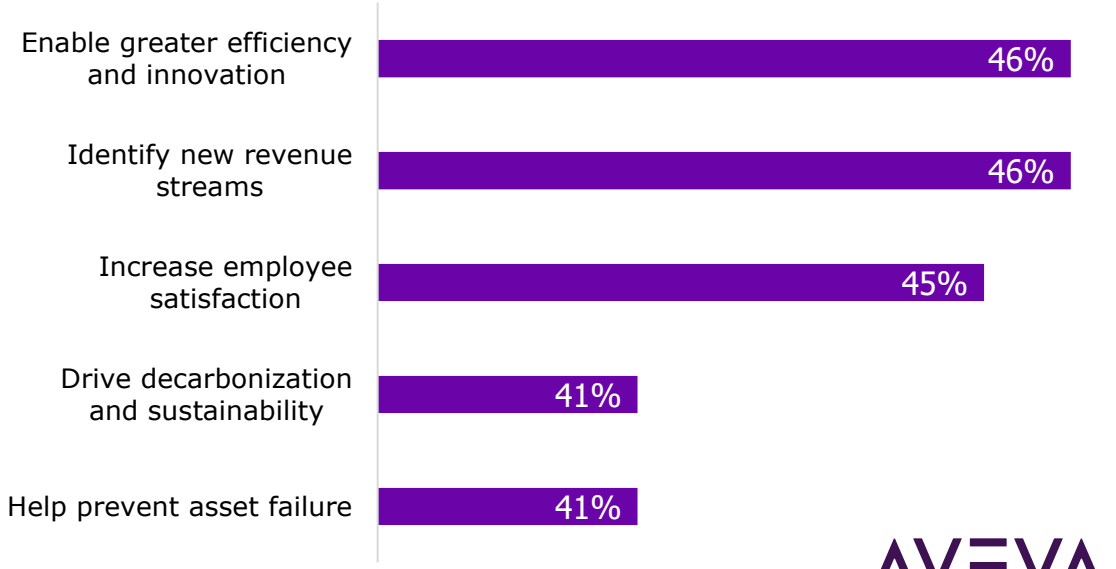
The best way to do this is through implementing an open and agnostic information-sharing ecosystem, which nearly half believe will provide the key benefits of enabling greater efficiency and innovation (46%) and identifying new revenue streams (46%). **Creating a connected industrial economy is seen as beneficial for combatting many of the industries' top challenges**, including increasing employee satisfaction (46%), driving decarbonization and sustainability (41%), and helping prevent asset failure (41%).

> The vast majority (74%) say enabling information sharing—between teams and with suppliers, customers and other strategic partners—through an open and interoperable ecosystem is among the top digital initiatives that offers the greatest impact on profitability and sustainability

While many power leaders see skill gaps (49%) and security concerns (43%) as key barriers to further digitalization, by working with trusted partners they can leverage technology to unify and organize data, derive meaningful insights from it and in so doing free up their teams to work on higher-order activities that drive profitability and sustainability.

Partnering with industrial digital transformation experts and building tools that support a connected workforce are key to enabling businesses to be agile, resilient and competitive in the sector for the foreseeable future, even in times of continued disruption and change.

Benefits of A Connected Industrial Economy in Power



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How Manufacturing Leaders are Embracing a Connected Workforce to Revolutionize the Industry

Manufacturing executives are recognizing the power of using industrial digital solutions beyond just managing disruptions. The strategy can also position companies to better transition from traditional product-centric business models to a customer-centric, increasingly personalized approach to unlock greater efficiency, enable sustainability and drive growth.

Accelerated Digitalization Required in Today's Environment

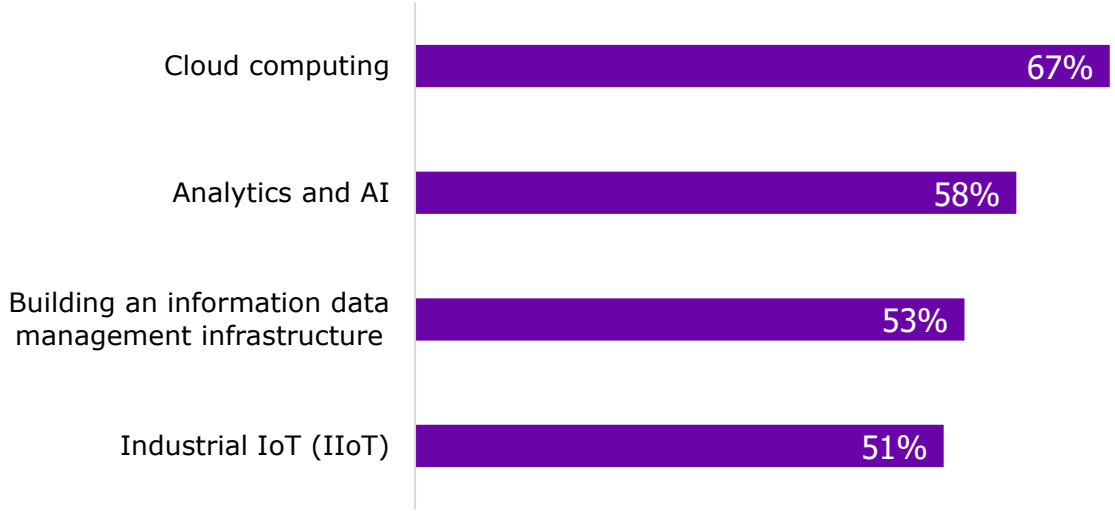
Today's environment is providing the catalyst many manufacturers have been looking for to drive accelerated digitalization. With inflation, volatile buyer behaviors, and supply chain disruption, companies are under pressure to streamline processes, manage cost and drive efficiency. Over the past two years, over half (53%) say they have kept their investments in industrial digital solutions steady. But many now we see a need for change: **nearly three in five (57%) say augmenting their existing industrial workflows with cloud capabilities will be essential to improving operations throughout their organizations.**

In addition, **more than 4 in 5 (83%) are looking to increase their investments in industrial digital solutions - even if the economy continues to tighten.** In this, the manufacturing industry is significantly less likely than other sectors to cut back mostly or completely on digital investments, even in times of economic downturn (28%, compared to 41% across all industries). This drive for digital efficiency reflects a deeper concern – nearly 4 in 5 (79%) admit that key business decisions are being made without full data visibility and insights from their plants and assets most or all of the time.

A Connected Approach to Managing Supply Chain Challenges

Further compounding the drive to digitalize is the fact that leaders aren't expecting current operational pressures to ease in the short-term. Supply chain disruption is the second-highest anticipated challenge for the next 12 months – second only to fluctuating energy prices, and most organizations are looking to address these challenges using industrial digital solutions. **Nearly 9 in 10 (87%) say their strategy for managing supply chain issues over the next year will rely mostly or completely on industrial digital solutions.**

Investment Priorities Target Current Challenges as Well as Infrastructure Growth for the Future



Strong Data Management Infrastructure Needed to Support Connectivity

For more than three-quarters of manufacturers (78%), implementing cloud and SaaS solutions is expected to result in improved collaboration within the company and with partner organizations. As the need for increased visibility and collaboration across the organization and more efficient information-sharing with partners and suppliers grows, **more than half (53%) are looking to prioritize building a digital information data management infrastructure using cloud-based solutions.**

The top expected benefit of implementing cloud and SaaS solutions is greater IT flexibility and increased speed in accessing information (64%). A majority (55%) also anticipate benefiting from real-time data-driven insights and analytics to increase agility and reduce plant downtime.

Top Expected Benefits of Cloud and SaaS Solutions

The collaboration that improved data sharing provides could launch a new era of success for these companies. In fact, more than three-quarters (77%) say using an open and interoperable ecosystem to enable information sharing within the organization and with suppliers, customers and other strategic partners outside the organization is among the top digital initiatives with the potential to produce the greatest impact on profitability and sustainability.

Achieving Differentiation in the Manufacturing Sector

While just 34% in the manufacturing industry currently describe themselves as a leader in a digital-first work environment, the importance placed on increased investment in industrial digital solutions is clear.

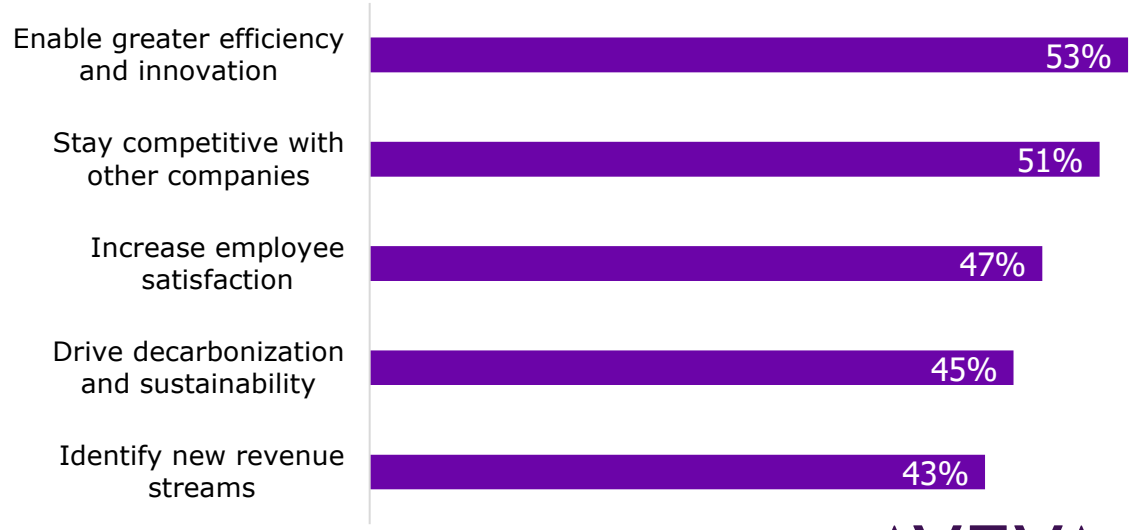
Given the focus within the industry on increased investment in industrial digital technology, it's no surprise that **more than half (51%) see implementing an open and interoperable information-sharing ecosystem as important to helping them stay competitive.** In addition, many see this as beneficial for offering key business benefits like enabling greater efficiency and innovation (53%) and driving decarbonization and sustainability.

The vast majority (77%) say using an open and interoperable ecosystem to enable information sharing within the organization and with suppliers, customers and other strategic partners outside the organization is among the top digital initiatives with the potential to produce the greatest impact on profitability and sustainability

Leveraging the power of data to connect teams, suppliers, partners and even customers is also cited as increasing employee satisfaction (47%), improving worker safety (43%), and helping to prevent asset failure (35%).

Working with trusted partners who have expertise in driving sustainable digital transformation in industrial organizations and building tools that connect teams thus helps businesses remain agile, resilient and efficient. Leaders in the manufacturing industry have recognized the power of using technology to harness their data, connect the workforce and drive real-time insights. This is the power of the connected industrial economy at work.

Benefits of A Connected Industrial Economy in Manufacturing



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Methodology

The AVEVA Survey was conducted by Wakefield Research (www.wakefieldresearch.com) among 650 Executives in North America (US, Canada), UK, Nordics (Sweden, Denmark, Norway, Finland), France, Italy, Germany, Middle East (KSA, UAE) with the following title or role requirements: C-Levels, VP+ Engineering/IT, VP+ Operations, Plant Managers, at companies with a minimum annual revenue of $50m USD, between August 16th and August 29th, 2022, using an email invitation and an online survey. All respondents work in one of the following industries: Power, Chemicals, Manufacturing.

Results of any sample are subject to sampling variation. The magnitude of the variation is measurable and is affected by the number of interviews and the level of the percentages expressing the results. For the interviews conducted in this particular study, the chances are 95 in 100 that a survey result does not vary, plus or minus, by more than 3.8 percentage points from the result that would be obtained if interviews had been conducted with all persons in the universe represented by the sample.

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ABOUT AVEVA

AVEVA is a global leader in industrial software, driving digital transformation and sustainability. By connecting the power of information and artificial intelligence with human insight, AVEVA enables teams to use their data to unlock new value. We call this Performance Intelligence. AVEVA's comprehensive portfolio enables more than 20,000 industrial enterprises to engineer smarter, operate better and drive sustainable efficiency. AVEVA supports customers through a trusted ecosystem that includes 5,500 partners and 5,700 certified developers around the world. The company is headquartered in Cambridge, UK, with over 6,500 employees and 90 offices in over 40 countries.

Learn more at www.aveva.com