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Manufacturing Emerging Technology Priorities and Progress by Use Case

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Initiatives: Manufacturing General IT Initiatives

As manufacturers continue on their path of digitization, leveraging the right combination of technologies and use cases is essential in optimizing IT spend for maximum productivity. Manufacturing CIOs should use this survey analysis to identify some of the most adopted technology use cases.

Overview

Key Findings

- Eighty-one percent of manufacturing leaders surveyed say that data and analytics (D&A) for process improvement is their most important technology use case, followed by the Internet of Things (IoT) for predictive maintenance.
- The most deployed technology use case is data and analytics for process improvement, with 72% currently deploying or having already fully deployed, closely followed by IoT for predictive maintenance.
- D&A for sustainability tracking and automated guided vehicles (AGVs) for operational improvement gain importance, even though their adoption rates are relatively lower (with 64% and 57%, respectively) than data analytics for process improvement.

Recommendations

Manufacturing CIOs driving, orchestrating or supporting digitalization initiatives should:

- Prioritize technology investment business cases — particularly in D&A and predictive maintenance by comparing their organizations' specific business and technology goals to the technology deployments and relative success metrics of peers.
- Improve their institution's performance with top priorities such as operational excellence by investing in "high-importance," "high-deployment" technologies.

- Mitigate barriers with “high-importance,” “low-deployment” technologies by thoroughly assessing their feasibility, setting appropriate timelines for deployment, allocating resources and engaging with organizational leaders to ensure their support.

Data Insights

Manufacturing CIOs Prioritize D&A Initiatives to Meet Business Goals

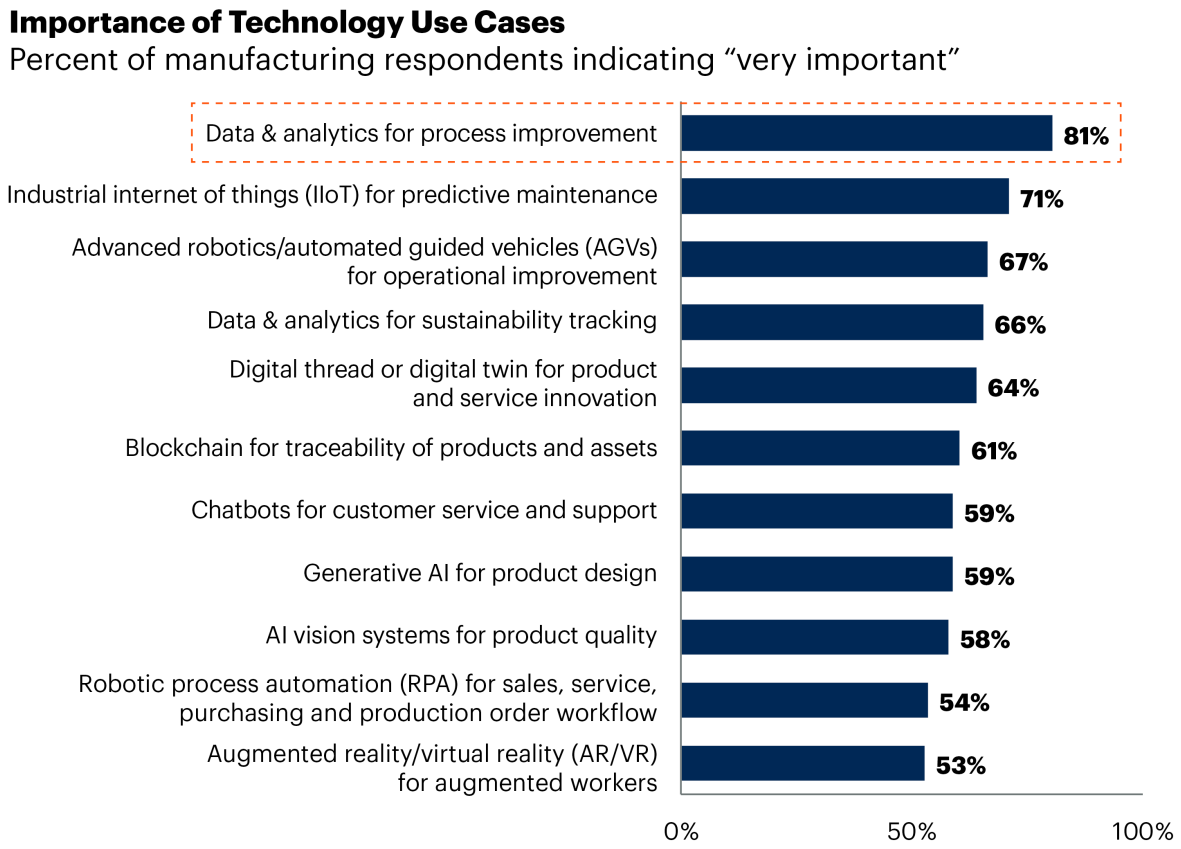
Manufacturing CIOs face multiple competing demands from business and IT leaders. The 2023 Gartner Business Outcomes of Technology by Use Case Survey explored technology areas that see the most investment, their relative importance and the potential business outcomes that manufacturers can derive from them.

Manufacturers are at an inflection point where data and analytics underpin almost all technology decisions. This is because manufacturers generate large amounts of data, operational technology (OT) data is now more accessible through IoT and data has been reidentified as fundamental to utilizing technologies such as AI and generative AI (GenAI). Manufacturing CIOs should use this data to benchmark against their peers and refine the prioritization of their investments, specifically focusing on data and analytics.

Most Important Technology Use Cases: D&A for Process Improvement

Eighty-one percent of manufacturing leaders report that data and analytics for process improvement are very important to their organization’s goals (see Figure 1). Manufacturing organizations continue experiencing pressures from the triple squeeze of continued high inflation, scarce and expensive talent and global supply chain challenges, so automation and improvement/redesign of core processes is still important.

Figure 1: Importance of Technology Use Cases, IT and Business Leaders at Manufacturing Organizations

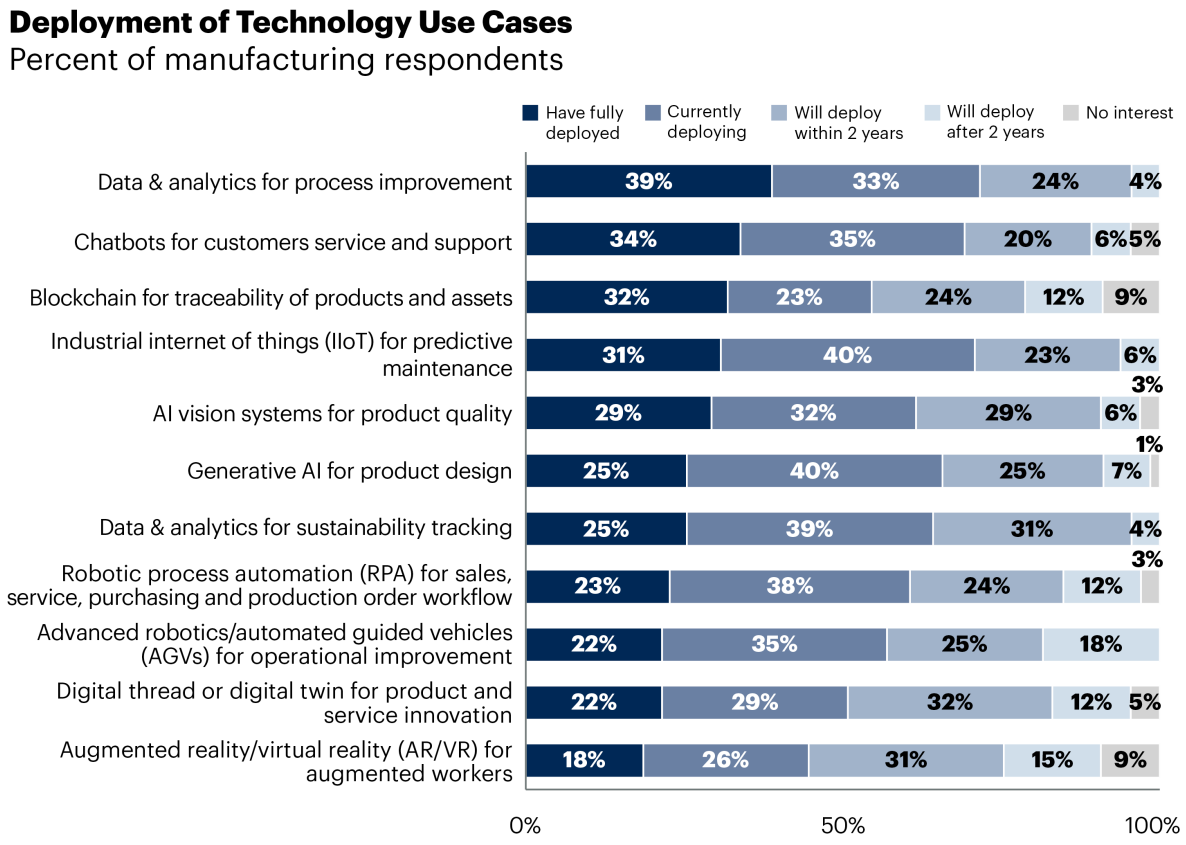


Other important technology use cases include industrial IoT for predictive maintenance (71%), advanced robotics/automated guided vehicles for operational improvement (67%), data and analytics for sustainability tracking (66%) and digital thread or digital twin for product and service innovation (64%). Much of this is likely due to the high priority for process improvements in the value chain, especially production.

Most Deployed Technology Use Cases: D&A for Process Improvement

Figure 2 shows the deployment of technology use cases by manufacturing respondents. The most deployed technology use cases (already and currently deployed) are D&A for process improvement (72%) and IoT for predictive maintenance (71%). Following close behind are chatbots for customer service and support, with 69% deployment. Notably, blockchain for traceability of products and assets has been deployed by 32% of respondents, but only 23% currently deploy, and 21% have no immediate plans to deploy it. The reason why 9% have little interest is likely due to lack of skills, integration standards, availability of the other lower cost technologies like RFID tags and QR codes that could create similar outcomes.

Figure 2: Deployment of Technology Use Cases, IT and Business Leaders at Manufacturing Organizations



n = 66-67 manufacturing IT and business leaders

Q: Please choose whether you have deployed, plan to deploy or have no interest in deploying these technologies coupled with the use cases.

Source: 2023 Gartner Business Outcomes of Technology Survey

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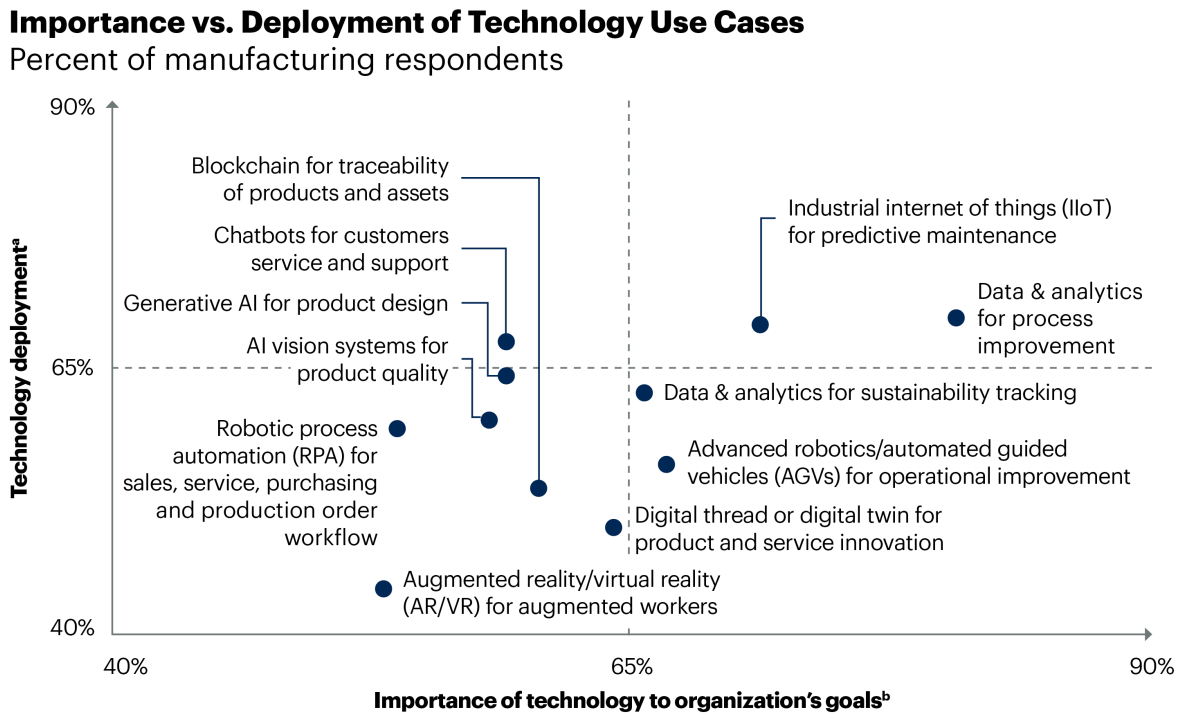
High Priority: Sustainability Tracking & AGVs

Figure 3 summarizes the technology use cases by importance to organizational goals and frequency of deployment. The top right quadrant, D&A for process improvement and industrial IoT for predictive maintenance, signals higher importance and higher deployment. These use cases should be protected and continued.

Importantly, the bottom right quadrant — which shows low deployment of technology that is important to an organization's goals — should be increased and accelerated in terms of investments. D&A for sustainability tracking is important, while adoption of this technology is relatively low. This is presumably due to different pressures from external stakeholders in different manufacturing subindustries and regions, and difficulties in obtaining greenhouse gas (GHG) emissions data from suppliers and customers/end users for data analysis. Advanced robotics/automated guided vehicles (AGVs) for operational improvement is also a challenge due to the technical maturity of AGVs, but also because of the integration complexity of supply chain execution systems and AGVs.

Figure 3: Importance vs. Deployment of Technology Use Cases, IT and Business Leaders at Manufacturing Organizations



n = 66-67 manufacturing IT and business leaders (importance); 65-67 manufacturing IT and business leaders (deployment)

Q: How important is each of these to meeting your enterprise's overall goals and objectives?

Q: Please choose whether you have deployed, plan to deploy or have no interest in deploying these technologies coupled with the use cases.

[a] Fully deployed or currently deploying percentage of respondents.

[b] Percentage rating 6/7 on a scale of 1-7.

Source: 2023 Gartner Business Outcomes of Technology Survey

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The top left — showing high deployment of technology that isn't important to an organization's goals — could be assessed or reduced in investments, and the bottom left be evaluated again or deliberated for alternatives. Before that, manufacturing leaders should enable or create a technology adoption roadmap to achieve their most critical business objectives. Assessing the current level of maturity in your organization by comparing the situation in your IT organization would be useful to identify your investment priority (see Roadmap to Assess and Advance IT Maturity in Manufacturing).

Evidence

2023 Gartner Business Outcomes of Technology by Use Case Survey. This survey investigates how organizations leverage industry-specific technologies, including generative AI, for particular use cases. Business outcomes are explored utilizing a "Fundamental Five" stakeholder framework to show the impact of technology investments on customers, employees, partners, funders and society. Factors influencing positive and negative business outcomes are also assessed. The survey was conducted online during June through August 2023. In total, 624 director-level or above respondents representing 10 industries participated (n = ~60 per industry). Qualified respondents were associated with either a business or IT function (~50% each) and either influenced or had the final say in technology investment decision making for their organizations. Qualifying organizations were from North America, Western Europe and the Asia/Pacific region, and reported enterprise wide annual revenue of at least $50 million or the equivalent.

Disclaimer: The results of this study do not represent global findings or the market as a whole, but are a simple average of results for the targeted countries, industries and company size segments covered in this survey.

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