

DIGITIZING HEALTHCARE SUPPLY CHAINS FOR END-TO-END VISIBILITY



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Strategies and Practices for Digital Transformation

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Strategies and Practices for Digital Transformation



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# Executive Summary

Healthcare supply chains are catching up to other industries in their digital transformations, providing new opportunities for greater efficiency, better forecasting, more accountability, and end-to-end visibility. But barriers to operationalizing these capabilities remain. Issues with interoperability and serialization are consistent struggles for many pharmaceutical and medical device manufacturers, and internal supply chain teams must be able to prove or realize ROI to justify important technology investments.

These issues become especially challenging as manufacturers finalize preparations for the requirements of the 2023 Drug Supply

Chain Security Act (DSCSA), which call for the serialization and tracking of individual healthcare products. According to Healthcare Packaging, “Some difficult and costly requirements are behind us, but the most complex requirements are coming in the near future.”<sup>1</sup>

This guide identifies opportunities for medical and pharmaceutical manufacturers to achieve a future state for their supply chains, including end-to-end visibility, better forecasting, and easier compliance with oncoming industry regulations.

<sup>1</sup><https://www.healthcarepackaging.com/logistics-distribution/logistics-supply-chain/blog/13701998/dscsa-where-are-we-and-where-are-we-going>

## Key Findings

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- **25%** of the respondents claim they **have end-to-end visibility** into their supply chains and can leverage predictive analytics. However, over one-third (36%) claim they have only a moderate amount of visibility.
- **49%** of organizations in the study **struggle to integrate legacy systems** while 45% struggle with poor user experiences when using new solutions.
- **39%** of healthcare manufacturers **struggle to scale up digital initiatives** beyond the pilot phase.
- **68%** of organizations have **deployed compliance automation as a procurement technology**, but most organizations haven't deployed other procurement technologies, such as mobile-first digital procurement platforms, blockchain, and robotic process automation (RPA).
- **Competitive pricing, good promotions, and/or good offers** (47%); **great network coverage** (39%); and **easy and intuitive package tracking** (34%) are the top three most important factors for organizations when **selecting a courier shipping partner**.
- **51%** of organizations have **deployed automated identification and data capture** (AIDC) as an inventory management technology, but most organizations haven't deployed other inventory management technologies, such as radio frequency identification (RFID) inventory systems, cloud-based warehouse management systems (WMS), and real-time tracking systems.
- Nearly half of the respondents (47%) claim the **COVID-19 pandemic** has impacted their organizations' ability to **prepare for requirements of the Drug Supply Chain Security Act (DSCSA)**.
- **74%** of organizations will include **real-time product humidity** in their product pipelines even though 61% do not believe the industry is moving toward regulatory control of product humidity.
- **Non-competitive pricing or poor promotions or offers** (31%); **difficult-to-use websites, shipping platforms, or systems** (29%); and **inadequate IT support** (28%) are organizations' top-three biggest challenges when selecting a courier shipping partner.

# The evolution of healthcare supply chain management in Canada

The growth of virtual care and the future of medical equipment and medical supplies delivery

## Healthcare in Canada has evolved rapidly over the last year

With the acceleration of telehealth in Canada, virtual care has become a central part of the healthcare experience for many Canadians. Healthcare delivery to patients – including medical tests for self-testing, prescriptions and supporting medical devices – has become commonplace over the last year. Given the time-sensitivity to medical testing or medication delivery, air-tight logistics becomes essential to Canadian's health. As the new virtual care hub model grows, so does the need to deliver the critical physical components that support it.

## What's changing in healthcare?

- Collaborative care model
- Shifting patient expectations
- Digital therapeutics
- At-home medical testing
- Aging population

## Patients' needs and expectations have changed

The trend towards a more patient-centric model means that Canadians have come to expect a quick, simple and seamless healthcare experience. Fifty-nine percent of consumers want their digital healthcare experience to mirror their retail experiences. And for patients who are elderly, have mobility limitations or live in remote areas, medical delivery has improved their access to quality healthcare.

Given Canada's geographical size, customized solutions are necessary to overcome the challenges in delivering a high level of healthcare to remote communities. Supply chain and logistics are evolving quickly to match the new reality.

These supply chain essentials make meeting needs easier on providers and those who rely on them.

- ✓ Total visibility of shipment journey
- ✓ An extensive and scalable delivery network
- ✓ Online tools for customs paperwork and commodity classification
- ✓ Import/export specialists available for support
- ✓ Customizable and flexible delivery preferences
- ✓ Special attention to sensitive shipments
- ✓ Urgent delivery services to support time-sensitive shipments
- ✓ Variety of pick-up options and drop-off locations
- ✓ An efficient and flexible return process

The future of healthcare in Canada is full of challenges. That's why it's essential to work with the right partners to ensure healthcare services continue to become more convenient, efficient and available for all.

## Ready to ensure your supply chain strategy is future-proof?

An expert is ready to answer your questions to help you deliver care from hospital to home.

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Purolator has been progressively expanding its reach in Canada for decades. We're proud to serve 99.9 percent of all Canadian postal codes.<sup>1</sup>

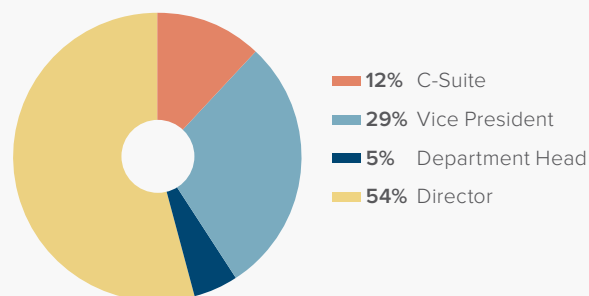


# About the Respondents

The WBR Insights research team surveyed 100 procurement and supply chain professionals from across the U.S. and Canada to generate the results featured in this report.

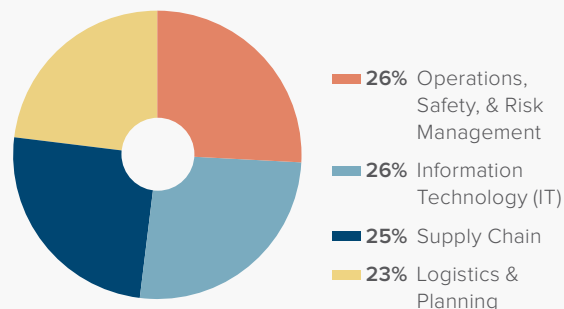
At 54%, most of the respondents are directors. Among the remaining respondents, 29% are vice presidents, 12% are C-suite executives, and 5% are department heads.

## What is your seniority?

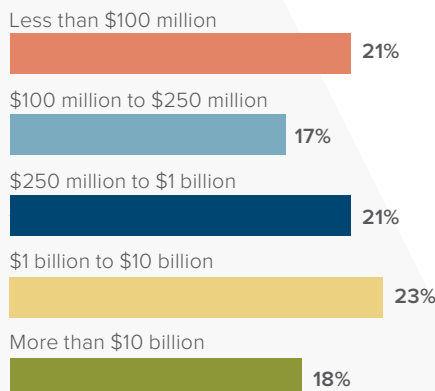


Most of the respondents occupy a role in either operations, safety, and risk management (26%) or information technology (26%). The remaining respondents occupy a role in the supply chain (25%) or logistics and planning (23%).

## What is your role?



## What is your company's annual revenue?



The respondents are from organizations of a variety of sizes. Most of the respondents represent organizations that make more than \$250 million in annual revenue (62%) with 18% representing a company that makes more than \$10 billion in annual revenue and 23% representing a company that makes \$1 billion to \$10 billion in annual revenue.

## What type of company do you represent?



Half of the respondents are from a pharmaceutical manufacturer and half are from a medical device manufacturer.

# Medical Manufacturers Are Taking Big Steps Toward Supply Chain Digitization and Visibility

Pharmaceutical and medical device manufacturers have made significant progress in digitizing their supply chains and procurement departments. Even during 2020, with the COVID-19 pandemic in full swing, many organizations in the medical supply chain were able to pivot quickly to address shifts in demand and disruptions from suppliers. It's thanks to their investments in technology and new processes that these organizations were granted this type of agility.

But not every medical manufacturer has reached a significant level of maturity in their digital transformation. These organizations must digitize their operations and implement tools that give them end-to-end visibility into their supply chains, as this capability will be crucial for rapid adaptation during future disruptions.

## How would you rate your organization's current visibility into its supply chain?

We have complete visibility end-to-end and can leverage predictive analytics for decision-making



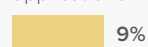
We have strong visibility across the supply chain



We have a moderate amount of visibility into function-based alerts and events



We have some visibility into the status of projects and applications



Thankfully, 55% of pharmaceutical and medical device manufacturers responding to this study have at least “strong” end-to-end visibility across the supply chain. Exactly a quarter of the respondents say they have “complete” visibility and can leverage predictive analytics for decision-making.

Still, that leaves 45% of the respondents with only “some” visibility (36%) or “little” visibility (9%). These respondents represent the minority of medical manufacturers who are still working toward full digitization.

## With which of the following have you struggled in digitizing your procurement function and the supply chain?

Complications when integrating legacy systems



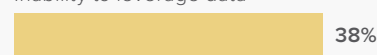
Poor user experience with new solutions



Difficulty scaling up digital initiatives beyond the pilot phase



Inability to leverage data



Trouble communicating and collaborating with partners in the supply chain



Wasted software spend



To understand why some organizations are ahead of others with the digitization of their procurement function and supply chains, researchers asked the respondents to identify their most common challenges. In each case, almost half of the respondents say complications when integrating legacy systems (49%) and poor user experiences with new solutions (45%) were challenges they've struggled with.

Based on these results, we can surmise that pharmaceutical and medical device manufacturers struggle most with internal adoption and implementation of new technology solutions.



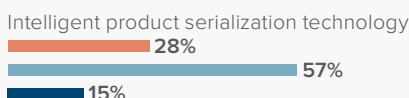
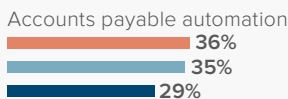
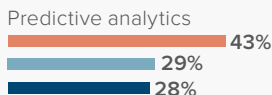
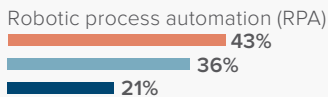
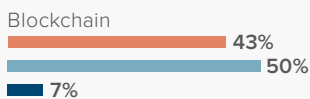
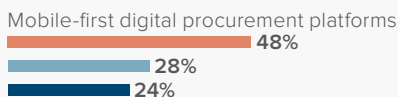
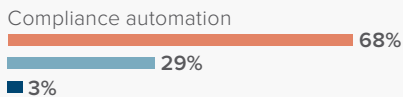
Often, legacy systems can't be replaced and must be integrated with new solutions, even if they aren't compatible. In some cases, suppliers, distributors, or others in the supply chain might onboard new solutions that don't integrate with the manufacturer's, or vice versa. When data can't flow from one end of the supply chain to another, it limits the visibility of all parties.

Building an integration internally is often a challenge. Manufacturers can work with third parties to build integrations or implement APIs to allow for data to flow through legacy systems. This is often the best way to avoid disruptions during implementation as well.

Regarding user experiences, it helps to incorporate professionals who will be using technology products into the decision process when selecting new tools. Change management and training can also help users ease into new technologies, even if they have spent years using outdated systems and processes. Many vendors account for these challenges and offer programs to help companies manage these changes.

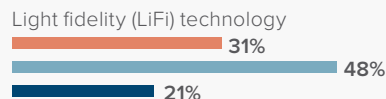
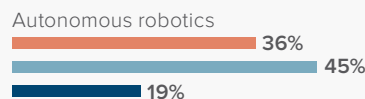
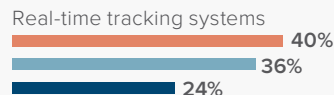
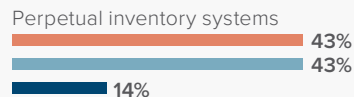
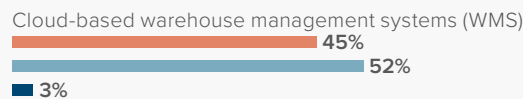
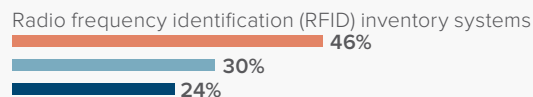
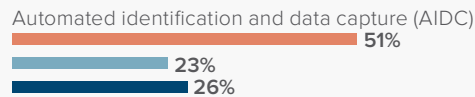
### What procurement technologies have you deployed or are you planning to deploy in the next 12 months?

■ Already deployed  
■ Planning to deploy in the next 12 months  
■ No plans to deploy in the next 12 months



### What inventory management technologies have you deployed or are you planning to deploy in the next 12 months?

■ Already deployed  
■ Planning to deploy in the next 12 months  
■ No plans to deploy in the next 12 months



The survey results also reveal that many medical manufacturers will be adopting new procurement technologies in the next 12 months. Although 68% of respondents say their companies have already adopted compliance automation, this is the only technology presented that a majority of the respondents are already using. Meanwhile, 57% of the respondents plan to deploy intelligent product serialization technology in the next 12 months, and 50% plan to deploy blockchain.

Blockchain and serialization technologies will be integral to companies' ability to gain visibility across the supply chain. Based on the responses illustrated here, most of the organizations represented in this study will improve their supply chain visibility within the next year.

Similarly, 51% of the respondents have already deployed automated identification and data capture (AIDC) technologies, but this is the only inventory management technology that a majority of respondents have deployed. Almost half of the respondents will deploy cloud-based warehouse management systems (WMS) (52%), light fidelity (Li-Fi) technology (48%), and autonomous robotics (45%) in the next 12 months.

These investments represent a significant change in how inventories and warehouses are being managed across the supply chain. The introduction of Li-Fi technology and autonomous robotics, for example, will dramatically change how inventory management works at an operational level, and these technologies could introduce unprecedented levels of efficiency.





# Most Medical Manufacturers Are Almost Prepared for Compliance with the Drug Supply Chain Security Act (DSCSA)

The Drug Supply Chain Security Act (DSCSA) amends the Federal Food, Drug, and Cosmetic (FD&C) Act, granting the FDA more authority to regulate and monitor drug manufacturers. Ideally, the Act should protect consumers from counterfeit drugs, as well as drugs that have been contaminated or are otherwise harmful.

Although complying with the law is relatively straightforward, it has been a challenge for some organizations to put into practice. For some, that challenge was exacerbated by the COVID-19 pandemic.

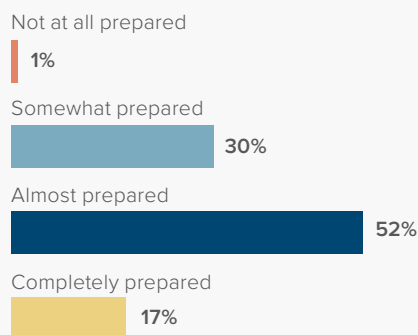
**Has the COVID-19 pandemic impacted your organization's ability to prepare for the requirements of DSCSA?**



At 47%, almost half of the respondents say the pandemic impacted their organizations' ability to prepare for the requirements of DSCA. Likely, this is because pharmaceutical and medical device manufacturers had to adapt quickly to overcome economic challenges brought on by the pandemic, but it could also be due to challenges in working with other parties in the supply chain.

According to the law, manufacturers and all their trading partners, including repackagers, wholesale distributors, dispensers, third-party logistics providers, and others, must comply with several aspects of the law. For example, most parties must provide product tracing information that is trackable across the supply chain, and most must also confirm authorized trading partners as defined by the FD&C Act.

**The entire pharma supply chain must be compliant with the Drug Supply Chain Security Act (DSCSA) by November 27th, 2023. How would you rate your organization's preparedness to comply with DSCSA?**



The entire pharma supply chain must be compliant with the DSCSA by November 27th, 2023. Thankfully, most organizations say they are either "almost prepared" (52%) or "completely prepared" (17%) for the legislation. Another 30% say they are "somewhat prepared" (30%).

**Since you said you are "not at all prepared" to comply with DSCSA, what challenges are causing you to struggle?**

- ☒ A lack of information or guidance from the FDA
- ☒ Organization and time issues caused by COVID-19

Only 1% of the respondents say they are "not at all prepared" to comply with the DSCSA. Not surprisingly, they cite "organization and time issues caused by COVID-19" as a primary challenge, as well as "a lack of information or guidance from the FDA."

Although organizations still have over two years until compliance becomes mandatory, any future disruptions could make it more difficult to reach compliance. These organizations will likely need to make significant changes to their technologies, processes, and supply chain relationships in the next 12 months to make headway.

# Medical Manufacturers Place Importance on Courier Shipping Relationships and Real-Time Shipping Controls

Many pharmaceutical products and medical devices require strict temperature and humidity controls to remain viable after being shipped from one fixed point to another, and after being provided in retail or clinical settings. Spoiled drugs and malfunctioning medical devices can be dangerous for patients. Degradation and loss in the supply chain can mean significant monetary losses for manufacturers.

Enhanced regulations have made it imperative that pharmaceutical companies, medical manufacturers, and their distributors invest in temperature-controlled logistics. Often, this requires organizations to have real-time temperature and humidity data on products in transit. They also need robust analytics and reporting tools.

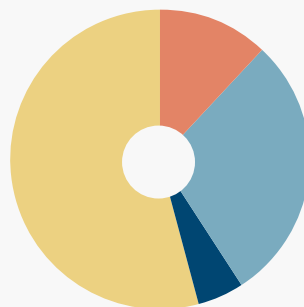
In written responses, the respondents agree that AI technology and detailed reporting will all be key supporting capabilities for their active temperature-controlled container qualification processes.

“Manufacturing containers with AI technology will provide real-time monitoring with greater accuracy and efficiency,” says a director of operations, safety, and risk management at a medical device manufacturer. “The AI integration could be like a black-box in planes.”

Similarly, a supply chain director at a medical device manufacturer says, “Lane and route corridor management with AI and live external distribution control” will be important tools for their processes.

Meanwhile, a supply chain vice president at a pharmaceutical manufacturer says, “We would like “continuous transport monitoring capabilities for our active temperature-controlled containers.”

**Is the industry moving toward regulatory control of real-time product humidity; and how will real-time product humidity impact your product pipeline?**



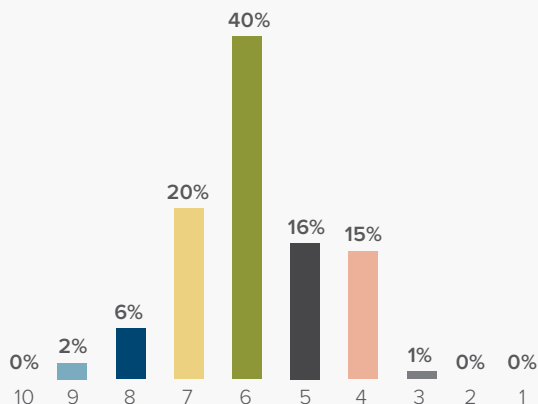
- **11%** It will become a regulatory requirement, but we will not include it in our product pipeline
- **28%** It will become a regulatory requirement, and we will include it in our product pipeline
- **46%** It will not be a regulatory requirement, but we will include it in our product pipeline
- **15%** It will not be a regulatory requirement, and we will not include it in our product pipeline

Real-time container performance reporting was perhaps the most-mentioned capability in the respondents' written responses, second only to AI-powered route planning.

And implementing these capabilities will be important, not only for organizations' ability to mitigate risk and ensure the quality of their products, but also to prepare for potential future legislation. Although most respondents (61%) don't believe the industry is moving toward regulatory control of real-time product humidity, 74% of the respondents say they will include real-time product humidity as part of their product pipeline.

Medical manufacturers will also be partnering with a range of shipping and logistics organizations to help facilitate these capabilities, comply with regulations, and keep their supply chains agile.

On a scale of 1 to 10, 10 being “essential” and 1 being “not important at all,” please rate the importance you place on courier shipping transportation logistics for your business.



These types of partnerships are often necessary to help manufactures with last-mile delivery of their products as well as to augment their own logistics operations.

On a scale of 1 to 10, with 10 being “essential” and 1 being “not important at all,” 68% of the respondents rate courier shipping transportation logistics at a 6 or higher. They believe these relationships are at least somewhat important to their business.

Medical device and pharmaceutical manufacturers are also discovering additional operational benefits in their selection of courier partners. However, the respondents appear to place importance on the value and ease-of-use of courier services over other factors. The top three most important factors for the respondents in their selection of courier shipping partners are competitive pricing (47%), an extensive network of coverage (39%), and package tracking that is both easy and intuitive (34%).

Which of the following are important factors when selecting your courier shipping partner?

They offer competitive pricing, good promotions, and/or good offers



They have great network coverage



Their package tracking is easy and intuitive



They provide excellent customer service



They have courteous courier drivers



They are a reliable company I trust



They have a variety of products and services that meet my needs



They offer flexibility in pick-up and drop-off times



They offer easy-to-use technology websites and shipping platforms



They provide the best overall value for my money



They provide an easy returns process



They provide relevant and timely proactive notifications on shipments



## What challenges do you face with your existing courier shipping partner?

Their pricing is not competitive/they do not have good promotions or offers



Their website, shipping platform, or system is not easy to use



Their IT support is inadequate



Their products or solutions do not meet my business needs



They provide poor customer service



They have invoicing or billing issues



My shipments are not picked up and/or delivered on time



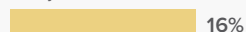
Their pick-up and drop-off times do not meet my business needs



It is difficult to track and trace their shipments



They are not a reliable courier company I trust



Their courier drivers are not courteous or helpful



Their returns process is difficult



Their network coverage does not meet my needs



They often damage and/or lose my shipments



They do not proactively notify me of shipment delays or issues



They are not a premium courier service provider



Similarly, 31% of the respondents say a lack of competitive pricing is one of their top three biggest challenges when selecting a courier shipping partner. Meanwhile, 29% of manufacturers say systems that are difficult to use are a top-three challenge and 28% say inadequate IT support is a top-three challenge.

Ideally, manufacturers would be able to partner with courier shipping organizations that give them a good deal on their services and make it easy for them to track products wherever they need to go.





# Conclusion: Creating a Flexible Supply Chain That Adapts in Real-Time

In their final line of questioning, researchers asked the respondents to describe how their organizations plan to improve their supply chain strategy with digitization in 2021 and beyond. Based on their responses, medical device and pharmaceutical manufacturers are pursuing digitization mainly for “control,” “efficiency,” and “predictability”.

“Digitization will provide us with cost management and avoidance strategies which will help us use the saved amounts for additional digital integration beyond 2021,” says a C-level IT executive at a medical device manufacturer.

Similarly, a department head of logistics and planning at a pharmaceutical manufacturer says, “Creating a more prepared supply chain from 2021 and beyond is the ideal goal, with digitization in our mind and the pipeline.”

Other respondents say the past year has taught them that many of their supply chain processes need to be more efficient. They believe that adding additional automation capabilities will be key to moving forward.

“Up until last year, there were processes that need to be streamlined or fine-tuned further,” says an IT director at a medical device manufacturer. “From this year on, we should be able to do this with additional assistance from digitization.”

Another IT director says, “Digitization will provide a certain level of accurate predictability that we don’t possess right now. In 2021, we may get closer to this predictability.”

Other respondents are interested in digitization’s potential to help them with “risk management,” or at least “reduce risks” in the supply chain.

If there is a central theme in these responses, it’s that most medical manufacturers hope to use digitization to create a flexible supply chain that can adapt in real-time. Based on previous responses, many of the respondents’ organizations aren’t yet at the point where these capabilities are possible. But there is also plenty of evidence that companies in the space will make significant investments and process changes in the coming months to make this happen.





## Key Suggestions

- Before investing in any other technologies, **focus on gaining visibility into your supply chain**, both upstream and downstream. Many medical device and pharmaceutical manufacturers are pursuing solutions like blockchain, intelligent product serialization, and even IoT technology to gain visibility.
- **Work with your supply chain partners to integrate your systems.** Visibility can only be attained when data can flow from one end of the supply chain to another. If you rely on legacy systems that are difficult to integrate, don't hesitate to bring in outside help to augment your internal IT teams.
- **Take steps to come into compliance with the DSCSA**, especially if you suffered setbacks due to COVID-19. Many medical manufacturing organizations are already confident in their ability to comply with the regulations, so rely on industry best practices to see your way forward.
- Search for **courier supplier relationships that offer wide coverage, competitive prices, and compliance with your organization's standards.** Many services now incorporate temperature and humidity controls, tracking, and real-time reporting, to specifically serve the medical manufacturing industry.
- Consider adopting cloud-based warehouse management systems, automated identification and data capture (AIDC) systems, radio frequency identification (RFID) inventory systems, and light fidelity (Li-Fi) technology as part of your inventory management strategy. **These are some of the most popular technologies for inventory management among the respondents.**



