Has medtech entered the era of digital innovation?

Deloitte survey reveals how medtech companies are using (and not using) digital technologies to transform their businesses.

Deloitte Center for Health Solutions

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Table of contents

02 . . . The state of digital innovation in medtech

05 . . . How medtech is using digital technologies across key functions

08 . . . Using digital technologies to transform the medtech business

10 . . . Investments in digital business models do not keep up with ambition

11 . . . Where is digital innovation headed next?

16 . . . Endnotes

Manufacturing has long been at the center of medtech. The industry is known for designing and mass-producing high-precision equipment, devices, and other hardware to meet clinical needs. While this approach has generally served the industry well, cost pressures, evolving provider and consumer needs, and competition from new entrants are prompting medtech companies to change how they operate and how they go to market with their products and services.

To help understand how medtech companies are employing digital technologies to grow, innovate, and develop a competitive edge, the Deloitte Center for Health Solutions surveyed 100 executives from large medtech companies across the United States, Europe, and Asia in May 2023. The survey findings surfaced three main themes:

1. **Measuring digital innovation[1] maturity:** Understanding how medtech companies are thinking about using digital technologies and where they are now on the maturity spectrum.

2. **Modernizing operations, products, and customer experiences:** Exploring how the different functions at medtech companies use digital innovation to maximize impact.

3. **Adopting digital business models:**[2] Learning how medtech companies plan to leverage digital capabilities to drive growth.

With the survey themes in mind, we'll explore how the medtech industry can move forward with its digital innovation plans despite industry leaders' reservations and the challenges that stand in the way.

The state of digital innovation in medtech

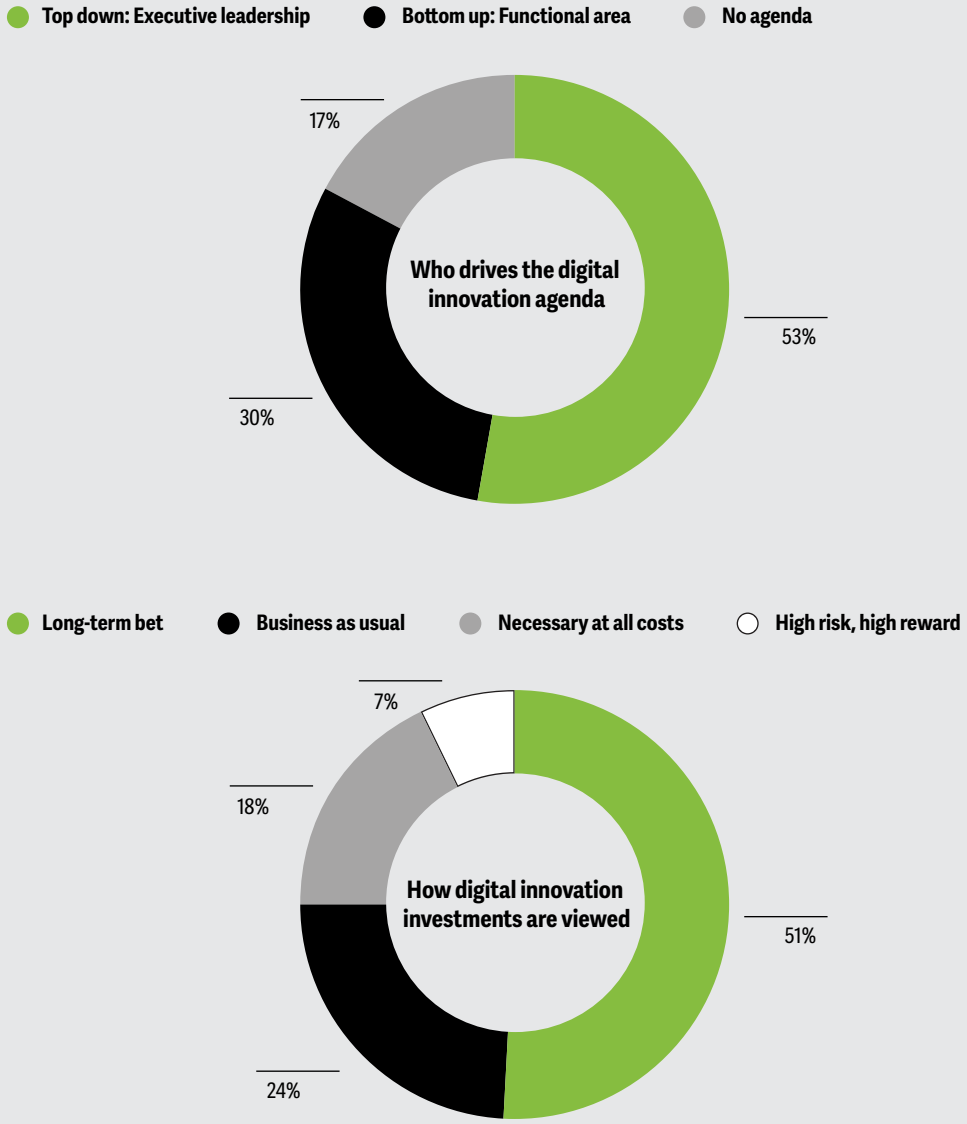
As with any major organizational change, leadership support and a defined way forward are two big prerequisites of potential success. Relatedly, the survey was designed to understand whether medtech organizations are prioritizing digital innovation and where they fall on the adoption scale. We found that 51% of the surveyed medtech leaders see digital innovation as a long-term bet and 18% consider it necessary at all costs.

While 17% of the surveyed medtech leaders said their organizations lack a defined plan, 53% said they are guided by a strong, leadership-driven digital innovation agenda (figure 1).

Of those who described their organizations as "early adopters" of technology, 85% reported having a top-down approach to digital innovation, highlighting the importance of executive involvement.[3] For context, the early adopters represented 20% of our sample. Twenty-six percent of the respondents' organizations

Figure 1

Digital innovation agenda drivers and investment perspectives



Survey questions: Who is driving your organization's digital innovation agenda? How does your organization view digital innovation investments? (Complete response options are shown in Appendix I)

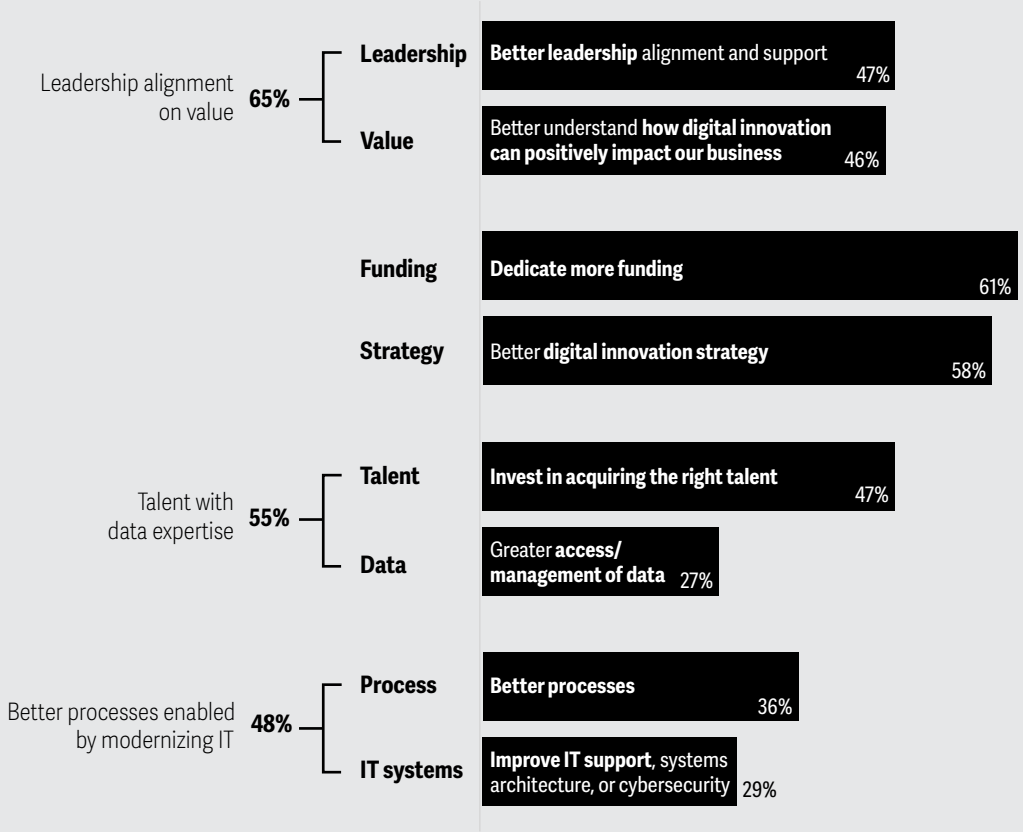
Source: Deloitte Life Sciences Digital Innovation survey 2023.

are laggards, or "slow to adopt" innovative technologies, and 54% of respondents describe their organizations as "fast followers" (see Appendix II for complete response options). Interestingly, leaders from these two types of organizations also report having a leadership-driven digital agenda but with less frequency than early adopters: 35% among laggards and 50% among fast followers.

Almost all respondents identified multiple gaps that their organizations need to fill to become more digitally mature and keep up with market leaders (figure 2). We used factor analysis to group responses based on association.[4] The analysis showed that **leadership alignment** (47%) and **understanding how digital innovation can impact the business** (46%) belong in the same category, suggesting that leadership alignment is contingent on understanding the specific value that digital innovation can deliver.

Figure 2

The gaps medtech companies need to fill to be more digitally innovative



Survey question: What gaps does your organization need to fill to improve its digital maturity and be on par with the most digitally mature medical technology organization? Choose all that apply.

Sources: Deloitte Life Sciences Digital Innovation survey 2023 and Deloitte analysis.

As a combined category, **leadership alignment around value** (65%) is the No. 1 gap preventing medtech companies from achieving digital maturity. The next two gaps have to do with **funding** (61%) and **needing a better digital innovation strategy** (58%), and are each their own distinct category, according to our analysis. When it comes to talent, medtech leaders believe they need experts who can help their organizations get a handle on data access and management. And when it comes to process, their response patterns suggest they look to their IT organizations for better processes around digital innovation.

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How medtech is using digital technologies across key functions

In addition to understanding whether medtech companies are prioritizing digital innovation and where they fall on the adoption scale, the survey findings reveal how medtech leaders are using digital technologies to maximize impact across three business functions:

- Innovation and product development
- Manufacturing and supply chain
- Marketing and commercial

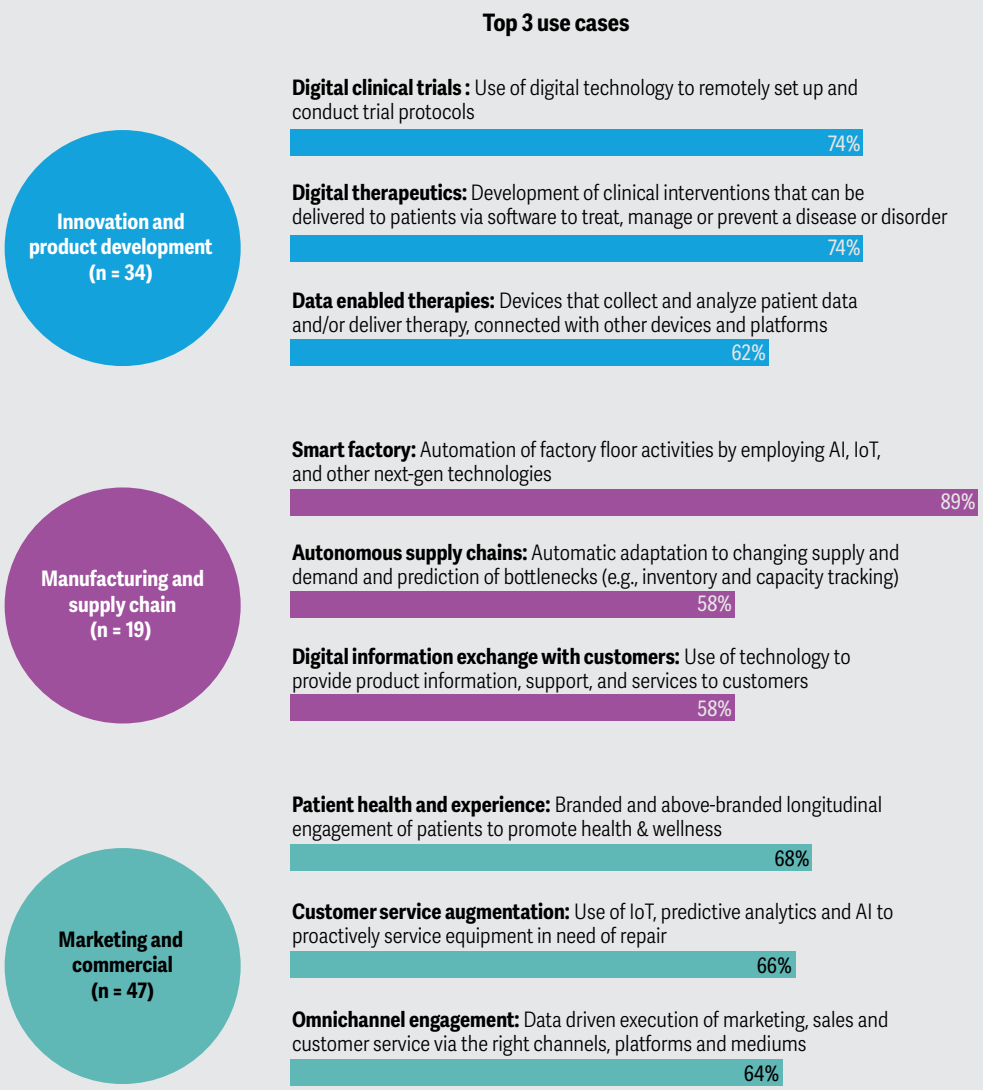
Digital clinical trials and digital therapeutics were among the top three use cases for the **innovation and product development** function (figure 3). This represents a contrast to the findings of our 2021 study on digital therapeutics, which did not show much emphasis on innovation around these products (digital therapeutics can be characterized as either software as a medical device [SaMD] or software in a medical device [SiMD] at traditional medtech companies). That research showed that opportunities in SaMD are much more limited than opportunities in SiMD. While developing SiMD should be a sweet spot for medtech companies given their specialization in hardware, developing these products involves building software capabilities. The options include doing it in-house, pursuing acquisitions or licensing deals with digital therapeutic developers (such as MedRhythms or NightWare), or partnering with digital health specialists (like Omada Health) or consumer tech companies (like Apple Inc.).[5]

Within the **manufacturing and supply chain** function, building smart factories was by far the No. 1 use case, selected by 89% of respondents. It is possible that respondents anticipate the greatest ROI from smart factory investments given the response options in the survey. Indeed, of the 17 respondents who identified building smart factories as a top use case, 14 respondents (82%) said improving asset and process efficiency is the top value lever.

Two of the top use cases in the **marketing and commercial** function are not surprising: patient health and experience and omnichannel engagement. But the third use case selected, customer service augmentation, is surprising: It involves the use of Internet of Things (IoT), predictive analytics, and AI to proactively service equipment in need of repair. This activity crosses the functional

Figure 3

How medtech companies can capture more value from digital innovation



Survey question: Please rank the top three use cases you believe are best positioned to be positively impacted by innovative technologies. (Complete response options are shown in Appendix III)

Source: Deloitte Life Sciences Digital Innovation survey 2023.

boundaries between medtech's commercial and supply chain functions and generally involves close coordination and smooth information flow between the customer and the sales support and supply chain teams.

Across all the business functions, more than 80% of the surveyed leaders said their organization's largest digital investments go toward AI. Cloud was the second highest area of investment, with more than 70% of the surveyed leaders' organizations identifying it as an area of interest. A small proportion of organizations (<10%) have made investments of more than US$5 million in these technologies, according to those surveyed.

Sixty-eight percent of leaders who work in manufacturing and supply chain are exploring the use of IoT more so than leaders in other business areas. For example, only 44% of innovation and product development leaders and 43% of marketing and commercial leaders said they were thinking about using IoT. The survey results also indicated that technologies like augmented reality/virtual reality, wearables, digital twins, and quantum computing are emerging to varying but lesser degrees across the organizations.

We also asked medtech leaders about their familiarity with generative AI (gen AI). Fifty-six percent of respondents said they had a basic understanding of gen AI and 23% had more than a basic understanding of the technology. When it comes to the value that gen AI can deliver, opinions varied: Thirty-three percent of respondents said they see some potential in gen AI but don't consider it transformative, and 20% said they believe that gen AI has the potential to revolutionize both their organization and the industry overall. Twenty-three percent of respondents said they are not in the position yet to form an opinion, and 24% believe that gen AI will only serve as a tool to improve productivity.

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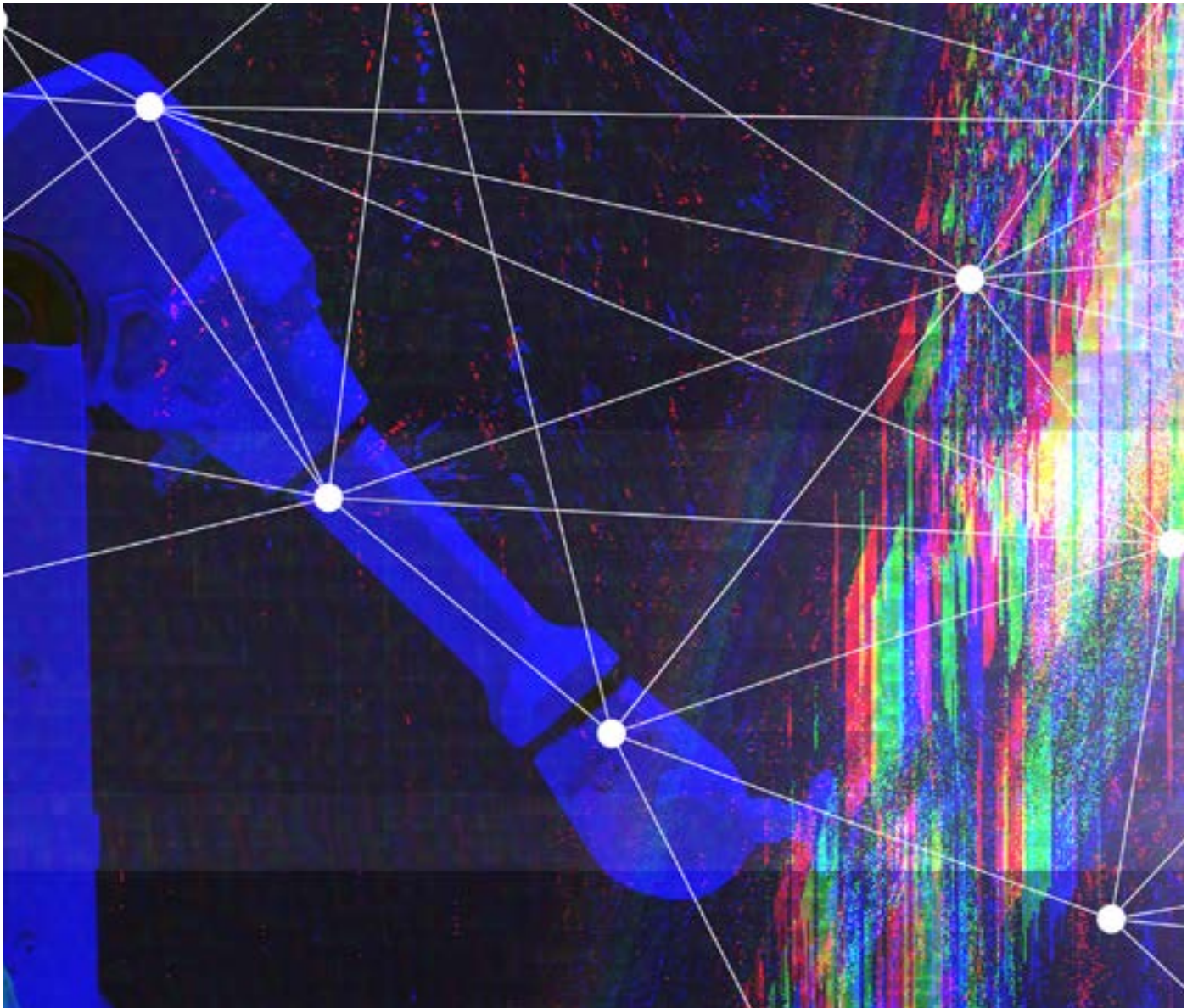


Using digital technologies to transform the medtech business

The survey data shows an overall commitment to exploring digital investments in the medtech industry today. When asked to describe their organization's strategic intent for digital innovation and transformation, 44% said **transforming the business**, which involves using digital technologies to collect and analyze data, build agility, and expand existing revenue streams. One in five respondents said they intend to **reimagine their businesses** through new digital products and services or through new revenue streams. One-quarter of respondents said their organization intends to **optimize the business**, which entails modernizing the infrastructure, streamlining capabilities, and building cash reserves.

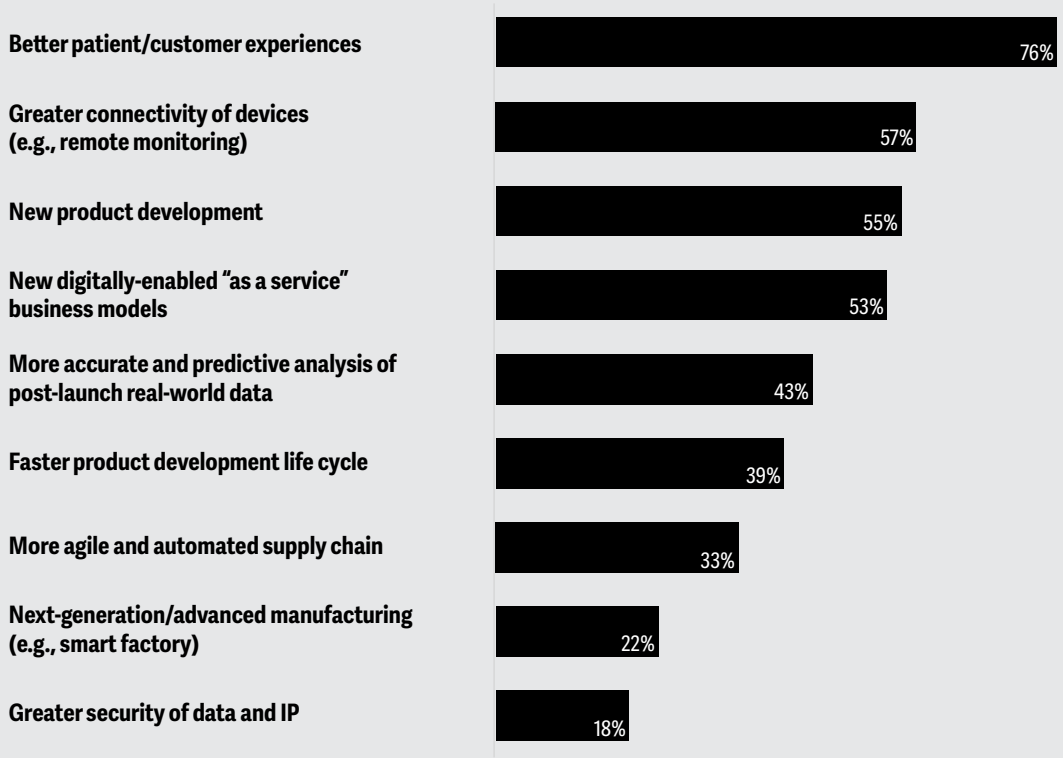
The overall importance of leveraging digital technologies to enhance business operations and offerings was apparent to the medtech leaders we surveyed. When asked to identify innovative technologies' greatest value, 76% said **enabling better patient/customer experiences**, 57% said **enabling greater connectivity of devices**, and 55% said **development of new products** (figure 4).

One response, in particular, points to a potential disconnect between the organizations' goals and their operational execution. For example, 46% of leaders said **digital health**—which involves leveraging technology to deliver new digital products, therapies, or services to engage with patients—is their most important area of technological focus. However, only 16% of respondents said that they are contemplating more business-to-consumer (B2C) approaches in addition to the more traditional business-to-business (B2B) model.

Fifty-three percent of surveyed leaders also ranked "as-a-service" business models among the biggest opportunities to stem from digital technologies (figure 4). Seventy percent of respondents are interested in investing in digital business models to target new markets and customers, 69% to increase operational margin, and 60% to diversify revenue streams (See sidebar, "Medtech could use new digital business models to build integrated offerings," for more information).

Figure 4

How innovative digital technologies could benefit medtech



Survey question: Where does your organization see the greatest value-add for innovative digital technologies? Please rank from highest to lowest.

Source: Deloitte Life Sciences Digital Innovation survey 2023.

Investments in digital business models do not keep up with ambition

While many medtech companies are exploring digital business models—50% of surveyed leaders said their organizations are thinking through where to focus efforts—only 21% have made significant investments into growing other services: software as a service (SaaS), hardware as a service (HaaS), data as a service (DaaS), and subscriptions. Notedly, 29% of the surveyed leaders said their organizations are singularly focused on selling products through traditional channels and do not intend to pursue new business models.

MEDTECH COULD USE NEW DIGITAL BUSINESS MODELS TO BUILD INTEGRATED OFFERINGS

Pursuing new as-a-service business models can help organizations build more integrated offerings that are a combination of devices, data, hardware, and software—all in one. The **everything as a service (XaaS)** model involves the bundling of products (such as hardware, devices, equipment, and consumables) with value-added services.[6] Some of these solutions could leverage real-time connectivity, data analytics, and artificial intelligence to enhance patient care, streamline processes, and optimize outcomes. One example is connected medical devices that continuously collect and interpret data, predict events and behaviors, and perform or recommend personalized next-best-actions that incorporate real-time insights and predictions. Five potential advantages to having XaaS business models include:

- **New profit pools**: Medtech companies can expand their reach in B2B and B2C markets with newly configured, integrated solutions and services. By orienting themselves to consumer needs, medtech companies can potentially expand beyond traditional buyers in the market. And democratization of technology could grow the total market, creating more downstream demand for medtech products, services, consumables, and accessories.
- **Predictable revenue and improved margins**: By shifting from significant upfront investments to recurring fee payments, medtech companies can take advantage of continuous, more predictable revenue opportunities while potentially driving higher volume and margins.
- **Enhanced offerings**: Whether it's offering new digital features that create customer stickiness or personalizing devices for patients, medtech companies have an opportunity to reimagine what has become a commodity product and compete on product differentiation.
- **Maximized customer lifetime value**: By pursuing recurring revenue streams via XaaS, medtech companies can maximize customer lifetime value by extending their interactions with customers as they continue to use services and solutions.
- **Data-enabled, value-based care**: Medtech companies can help enable health care providers to leverage next-generation data to deliver better health outcomes more effectively.

A few companies have recently built integrated offerings all-in-one. BD Biosciences' FlowJo™ flow cytometry platform, for example, includes cloud-based software tools that enable collaboration and data management. Thermo Fisher's InstrumentConnect is a device monitoring application that allows instruments and equipment to share data. And, Intuitive's acquisition models offer direct financing options, including lease-to-purchase and usage-based models to meet customers' shifting surgical needs and resources.

When we asked medtech leaders which are the most promising of the as-a-service options, 55% selected SaaS, followed by subscriptions (47%) and DaaS (36%). This sentiment is also reflected in current and projected software spending: Thirty-five percent of the respondents said their organizations have increased spending on software and 66% expect the amount allocated to software technology will increase in the next three years. Among respondents who ranked SaaS as the most promising as-a-service business model, 90% expect their organizations to spend more on software in the next three years.

Where is digital innovation headed next?

Our respondents recognize that digital innovation is a long game for their organizations, and one that is necessary to keep pace with the competition. Success likely requires implementing a comprehensive strategy that spans the organization's various business functions. It also calls for a willingness to invest time and allocate funding. Here are a few ways that medtech leaders can begin to think about adopting digital technologies both across their organizations and to support new business models for growth:

- **Align on the business case and value proposition to customers.** While relative margins may be higher today on sales, parts, and maintenance of high-per-unit-price legacy equipment, volume could be considerably greater from smaller, portable, point-of-care technology that is far less expensive on a per-unit basis. In absolute terms, this could be beneficial to an organization's bottom line and growth potential. The value proposition to customers could be the reduced use of capital equipment and facilities, and more efficient labor utilization (if the technology does not require technicians or highly specialized clinicians to perform a procedure, operate a device, or interpret the data).

- **Experiment with new business models.** One of the biggest potential benefits of investing in digital technologies and data is enabling new business models. One opportunity for medtech companies is identifying piloting opportunities with small investments to test the waters (see sidebar, "Medtech could use new digital business models to build integrated offerings," for more information).

- **Modernize the organization's operating capabilities.** Leading companies are borrowing business and operating models from disruptive technology or software companies to stave off competitive threats. This means that companies should adopt agile models with adaptable operating structures and should do so quickly.

- **Invest in new capabilities.** Because digital health technologies serve multiple users, they should be designed accordingly. This approach will likely involve new ways of thinking about who the customer is, gathering new insights about the customer, and establishing new skillsets to design solutions flawlessly.

Innovating via digital technologies and transforming traditional business models may be essential for long-term success, and the second can't happen without the first. Despite the challenge, medtech organizations can unlock new growth opportunities, deliver better patient experiences, and stay ahead in an ever-evolving health care environment by shifting to digital solutions.

By playing to their strengths, including deep clinical expertise, cutting-edge medical knowledge, and established customer relationships and trust, medtech companies may be in a strong position to keep digital disruptors at bay. Incorporating data and evidence-based insights into decision support can help providers deliver high-quality, efficient care, and help patients with self-care and prevention—ultimately improving health care outcomes.

APPENDIX

This section includes survey questions and complete response options:

Appendix I: Who is driving your organization's digital innovation agenda?

- Top-down: My organization's executive leadership drives our digital innovation agenda.
- Bottom up: Each functional area is responsible for developing their own digital innovation agenda.
- Neither: My organization lacks a defined digital innovation agenda.

Appendix I: How does your organization view digital innovation agenda?

- High risk, high reward: We don't expect the majority of investments to pay off, but those that do will yield significant benefits.
- Necessary at all costs: We need to make these investments in order to compete, regardless of their costs.
- Long-term bet: We expect that the majority of investments will pay off, but not in the near term.
- Business as usual: We view digital innovation projects in the same way as other investments.

Appendix II: Which of the following best describes your organization's current approach to adopting innovative technologies?

- Early adopters: We are visionaries that quickly adopt innovative technologies and set the pace for the industry.
- Fast followers: We tend to follow the path of our competitors after they have proven the value of innovative technologies.
- Laggards: We are slow to adopt innovative technologies and do so years after our competitors.

Appendix III: Please rank the use cases that you believe are best positioned to be positively impacted by innovative technologies.

Innovation and product development:

- Precision patient recruitment: Data-driven analysis of clinical, real-world data, and socioeconomic information to precisely target and recruit patients
- Digital clinical trials: Use of digital technology to remotely set up and conduct trial protocols
- Regulatory intelligence: Monitoring and analyzing regulatory changes and requirements to ensure compliance for products
- Digital therapeutics: Development of clinical interventions that can be delivered

to patients via software to treat, manage, or prevent a disease or disorder

- Data-enabled therapies: Devices that collect and analyze patient data and/or deliver therapy, connected with other devices and platforms

Manufacturing and supply chain:

- Smart factory: Automation of factory floor activities by employing AI, IoT, and other next-generation technologies
- Net-zero and sustainability: Tracking emissions data, and employing AI and analytics to drive efficiencies
- Autonomous supply chains: Automatic adaptation to changing supply and demand and prediction of bottlenecks (e.g., inventory and capacity tracking)
- Supplier risk management: Understanding and predicting supplier risk to mitigate the effects of global/geopolitical events (e.g., pandemics)
- Digital twin: Digital models of plants or warehouses that leverage RWD to simulate operations and generate insights
- Digital information exchange with customers: Use of technology to provide product information, support, and services to customers

Marketing and commercial:

- Next-best engagement: Employing dynamic, AI-based recommendations to optimize engagement of health care providers and patients
- Omnichannel engagement: Data-driven execution of marketing, sales, and customer service via the right channels, platforms, and mediums
- Patient health and experience: Branded and above-branded longitudinal engagement of patients to promote health and wellness
- Content velocity: Automation of marketing content development and regulatory review
- Gross to net or revenue cycle management: Data- and analytics-driven optimization of sales and market access data to drive pricing and go-to-market strategies
- Customer service augmentation: Use of IoT, predictive analytics, and AI to proactively service equipment in need of repair

Endnotes

1. "Digital innovation" is broadly defined as the application of digital technologies to address business needs and create value for patients, the enterprise, and its partners. The technologies include, but are not limited to, cloud computing, Internet of Things, quantum computing, artificial intelligence, wearables, augmented reality and virtual reality, and digital twins.
2. Digital business models are strategic approaches to leveraging digital technologies and platforms to create, deliver, and capture value in innovative ways. They typically involve the integration of digital tools, data, and processes to transform traditional business operations, create new revenue streams, and provide unique customer experiences. Digital business models can enable organizations to adapt to changing consumer behaviors and technological advancements.
3. Tim Smith, Brenna Sniderman, and Diana Kearns-Manolatos, *How to lead digital transformation from the top*, Deloitte Insights, August 31, 2022.
4. We used SPSS statistical software to perform the analysis. First, dichotomous variables in the multiple response question (selected, not selected) were standardized. The standardized values were then used as inputs in principal components analysis with Varimax rotation. Three, four, and five-factor solutions were tested. A five-factor solution was chosen given its better interpretability. The solution accounted for 77% of the total explained variance and corresponded to eigenvalue of 0.896. Percentages in figure 2 for combined categories reflect the share of respondents who chose either one of the response options within the combined category.
5. Our 2021 study offered a taxonomy of startups and technology companies active in the digital medicines space. "Digital therapeutic innovators" are niche players with deep clinical and technological expertise. "Digital health specialists" are medium-size companies, with brand recognition and expertise in care management and population health that have established relationships with commercial payers and providers. For more, please see. *("Has medtech entered the era of digital innovation?" is an independent article and has not been authorized, sponsored, or otherwise approved by Apple Inc.)*
6. Deloitte, "Beyond the device: Medtech's expansion into everything-as-a-service," accessed October 11, 2023.

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