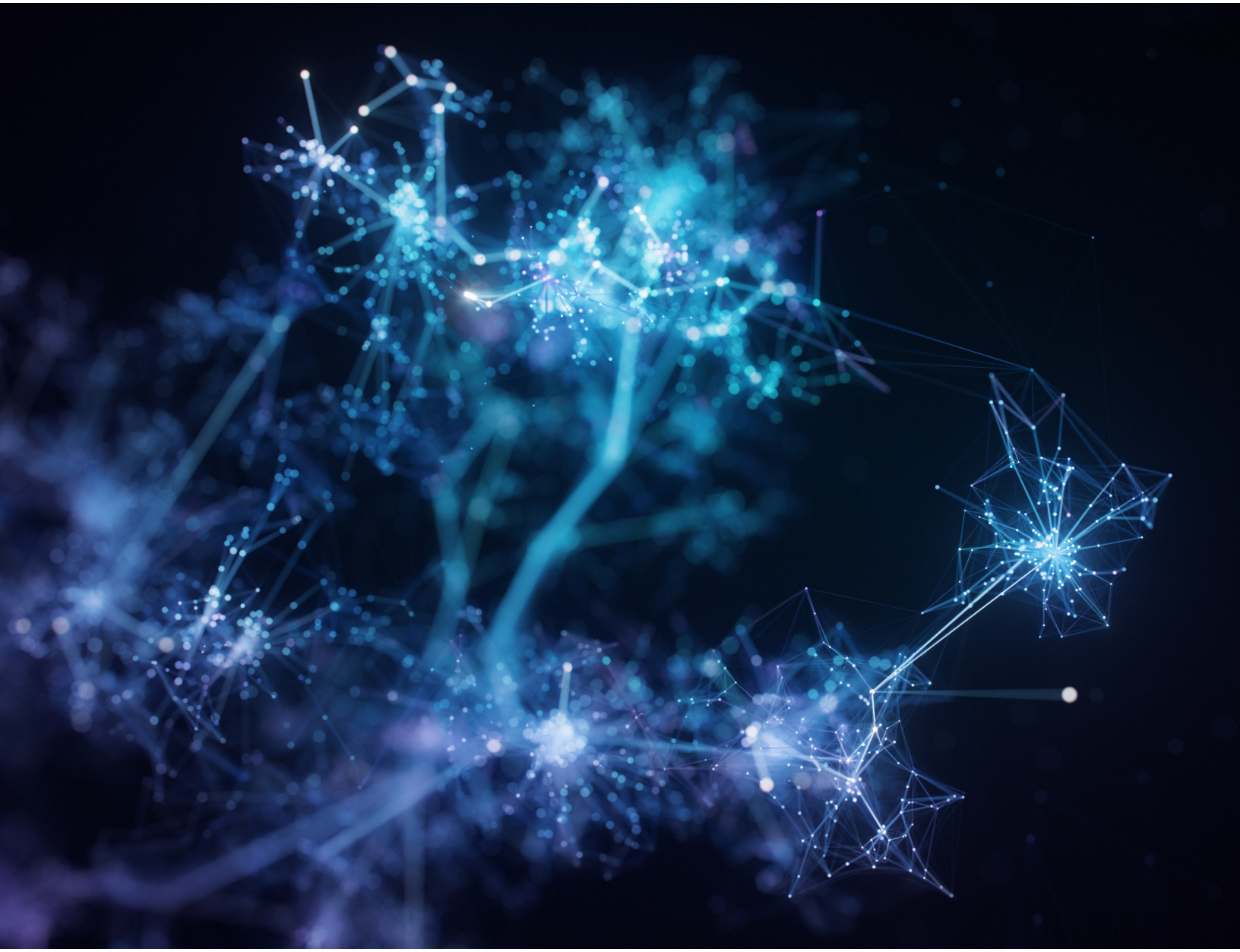
WHEN AND WHERE THE MACHINE SHOULD RULE

How Leading U.S. Healthcare, Financial Services and Transportation Companies are Getting Ahead with AI-infused Products



By: Derek Perry, Zain Naboulsi, Ian Fox, Ingrid Curtis, and Scott Monnig

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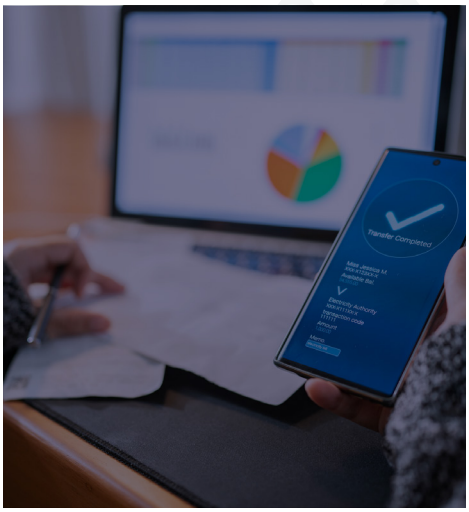
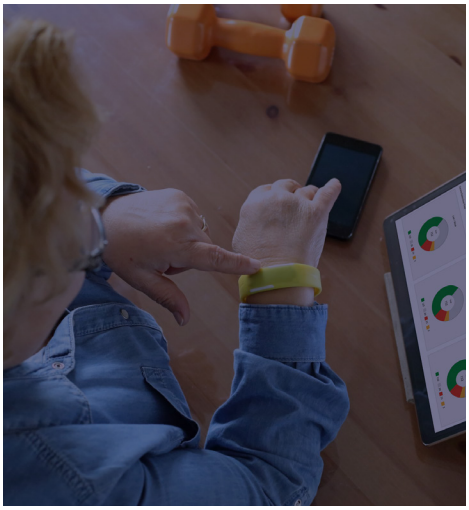
EXECUTIVE SUMMARY





With accelerating advancements in artificial intelligence (AI), digital sensors, big data analytics and cloud computing, businesses have begun an epic shift: using digital technology to advise employees on making decisions, and in some cases making decisions for them. Our study this winter of 310 U.S. companies in financial services, transportation and healthcare found many are using AI to guide sales, service, marketing, and other employees on how to deal with customers. Some even give AI-generated advice directly to customers themselves.

And more than a few companies have developed systems that act on behalf of employees or customers who don't act quickly enough. These AI-infused systems, as we refer to them, take control.

After surveying these companies in January and February of this year, these were among our biggest learnings:

- **AI-infused systems represent seven out of 10 applications implemented in the last three years.** For the average company, 71% of all applications software they implemented from 2020 to 2023 used AI to provide advice, issue alerts or take control of user decisions. That is up sharply from 55% prior to 2020. What's more, companies expect that percentage to grow to 76% of all applications implemented in 2024-2025.
- **They're spending, but cautiously.** The average spending per company in 2023 on AI-infused systems was $14.1 million, or 0.1% of average revenue (which was $12.3 billion). Healthcare services and health insurance companies led the way, spending an average $23.4 million. Across the three sectors, companies expect their investments in these applications to rise to $20.9 million per company in 2024-25. The average company implemented five AI-infused applications in 2023, and they plan to implement another seven over this year and next.
- **The majority (55%) said their most successful AI-infused application generated strong or extremely strong benefits.** On average, those whose most successful application was in the sales function reported a 32% increase in revenue; those who said it was in finance and accounting reported an average 32% cost reduction; and those in customer service said service quality improved

an average 27%. Companies whose most successful AI system was in strategic planning reported an average 34% reduction in the time it took to develop and implement a new plan.

- **The most successful companies in developing AI-infused systems are more likely to design them to take control – if necessary — of user decisions.** On average, 29% of the AI systems they're building in 2024-25 will act on behalf of users. In contrast, of the companies whose most successful AI-infused application generated only moderate, minor or no benefits, on average only 24% of their AI-infused systems will be able to take control of user decisions.

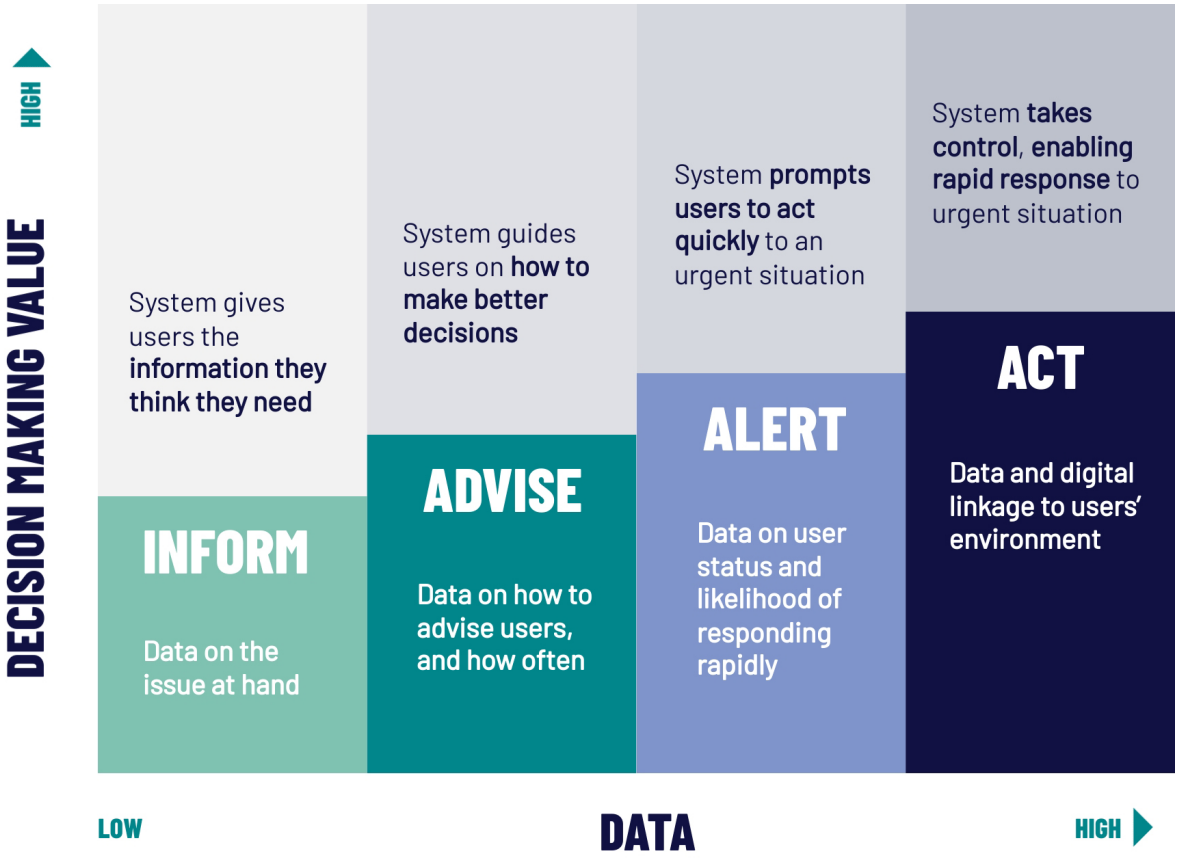
In this report, we will refer to the most successful companies in leveraging AI-infused systems as "Leaders." These companies said their most successful such application generated extremely strong benefits. Overall, they were 21% of the companies that had developed AI-infused systems since 2020. We compare the Leaders' survey responses to companies whose most successful AI-infused system produced zero, minor or only moderate benefits. We refer to them as "Laggards" in this report, which comprised 45% of the sample.

In looking at how Leaders, Laggards and the rest of our survey respondents answered our questions, the following became clear to us: Moving to more advanced AI-infused systems that can take control isn't easy. It requires pristine data and enormous computational power to train AI models to deliver insights on demand. Moreover, companies must master algorithmic thinking. That starts with deeply understanding the business rules of a business process – rules necessary to provide meaningful, timely advice that users will embrace. It also requires making a rapid but informed decision of determining when the machine must act on behalf of the user.

Given the sizable complexities to overcome – especially employee resistance to having AI make decisions for them – the challenges are daunting. This report provides insights based on best practices on how to overcome the challenges and gain substantial benefits from AI-infused systems.

SHIFT RIGHT

As AI-infused systems become more capable (from left to right), they require vast amounts of clean and accessible data



Degree to Which the Machine Needs High-Quality, Current and Extensive Digital Data

FROM INFORMING TO ACTING: TODAY'S INFORMATION SYSTEMS ARE INCREASINGLY TAKING CONTROL

In the first quarter of 2024, we surveyed senior executives in seven subsectors of three industries. (See Methodology, page 31):

- Financial services and insurance
- Healthcare and life sciences
- Transportation (distribution and logistics, airlines, and railroads)

We wanted to understand just how much they had woven artificial intelligence into their applications software. But how could we discern this?

We did so by categorizing information systems as serving four historical roles since they began populating the workplace in the 1960s: informing, advising, alerting, and acting. The earliest systems merely informed. They captured information and made it accessible to employees with permission to access it. But with the introduction of primitive artificial intelligence in the 1980s and 1990s, more of those systems not only provided information, they advised users on what to do with it. "Such and such a customer is 60 days late in paying; time to call them" was the type of reminders that enabled computers to not only inform but also advise.

In the last two decades, these systems became "smarter" and more capable of acting on users' behalf. The advent of powerful yet affordable technologies such as digital sensors that could track a user's conditions came into being. Automobile blind spot alerts and automatic braking systems are great examples. They alert you when you're about to pass with a car in the passing lane. And some cars can act on your behalf – e.g., hitting the brakes for you to make a panic stop.

Using the framework of inform > advise > alert > act, we say that more corporate AI applications have been following this same evolution. (See Figure 1.) Understanding what companies' AI-infused systems can do beyond "inform" also provides more clarity on the benefits of those that not only advise but alert and act on users' behalf. Moreover, by categorizing AI-infused systems in this way, we were able to understand the challenges for companies building systems that can alert and take control.

In providing these categories to our survey respondents, we wanted them to tell us how their application portfolios had changed on these four fronts:

- "inform" vs.
- "inform > advise" vs.
- "inform > advise > alert" vs.
- "inform > advise > alert > act"

What did their portfolios look like before 2020? What about over the last three years? And what do they project for this year and 2025?

A QUICK HISTORY OF INFORMATION SYSTEMS

Artificial intelligence has been around since the early 1950s, starting with Alan Turing's "Turing Test" for measuring machine intelligence vis-a-vis human beings.[i] In the early days, achieving machine intelligence required supercomputers that could only solve distinct problems.

Over time, business computers have evolved from merely informing users of possible answers and responses to queries (1960s to early 2000s) to advising them of next best action (early 2000s to mid 2010s), to alerting users to take actions (mid 2010s to earlier this decade), to taking actions on behalf of users when they can't respond fast enough.

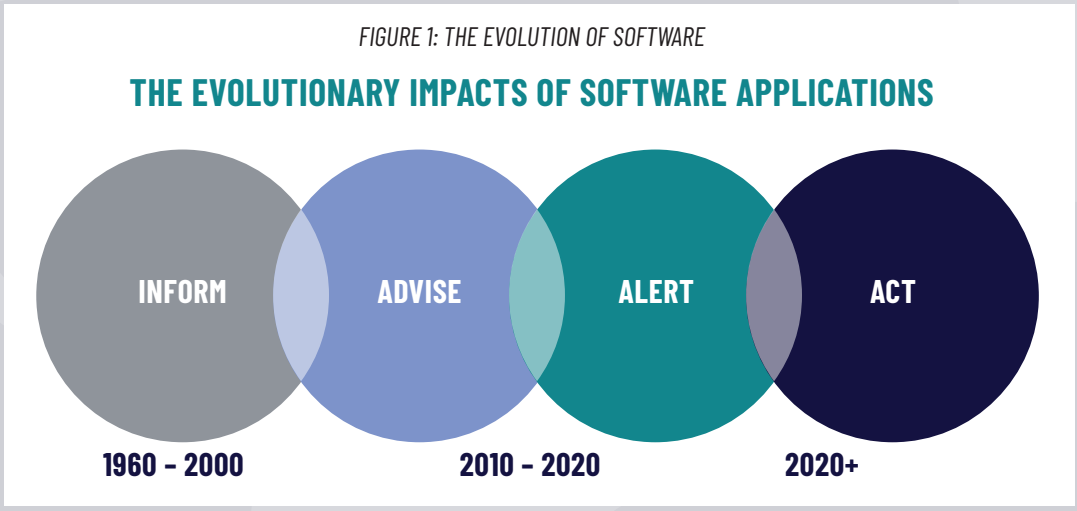
This trend began long before generative AI entered our collective consciousness with the release of OpenAI's ChatGPT in November 2022. In fact, AI-infused products and services first emerged decades ago in military technology (e.g., air defense alerting systems and self-guided missiles) and more recently over the last decade in consumer devices.

A great example of a consumer technology that advises and alerts is the Apple Watch. Sensors inside the watch monitor the wearer's physical activity and encourage them to move if they've been idle for too long ("Time to stand!") And coming sometime this year, according to companies that follow Apple Inc., is an AI-powered health coach that will use Apple Watch data to advise customers on improving their exercise, sleeping and eating habits. [ii]

Yet AI-infused products and services that advise, alert and act are still in their early days in most companies. According to McKinsey research, 55% of 1,684 executives said their organizations have adopted AI. Yet less than one-third said that their organizations have adopted AI in more than one business function. [iii]

Nonetheless, the speed at which companies can make decisions – large (e.g., a change in company strategy) and small (e.g., whether to give a customer her money back on a certain product issue) – is becoming ever more important. And doing so without increasing headcount is crucial. Since AI-infused products and services operate at a speed and scale that human beings can't approximate, they allow businesses to make major service, cycle-time and quality improvements.

FIGURE 1: THE EVOLUTION OF SOFTWARE



With the advent of generative AI (machine intelligence that can generate text, audio, images and video in response to user prompts), interest in AI-infused products and services has exploded. But budgets haven't. According to our research, the average company spent $14 million on AI-infused products and services in 2023. They plan to spend about $21 million on these products and services over 2024-25. (See Figure 2.)

Yet these averages obscure the fact that the largest companies we surveyed spent more much: $37 million apiece last year. As Figure 3 shows below, the bigger the company, the greater the spending. Those with $30 billion or more in revenue spent nearly eight times that spent by companies between $500 million and $2.5 billion.

The same spending pattern showed up for future investments in AI-infused systems: Bigger companies plan to carve out bigger budgets than smaller ones. (See Figure 4.) But the spending gap between the biggest companies ($30 billion or more in revenue) and the smallest ones ($500 million to $2.5 billion in revenue) was smaller: about five times.

FIGURE 2: HOW MUCH THE AVERAGE COMPANY SPENDS ON AI-INFUSED SYSTEMS

AVERAGE SPENDING ON AI-INFUSED APPLICATIONS: 2023 AND 2024-25
(IN $ MILLIONS)

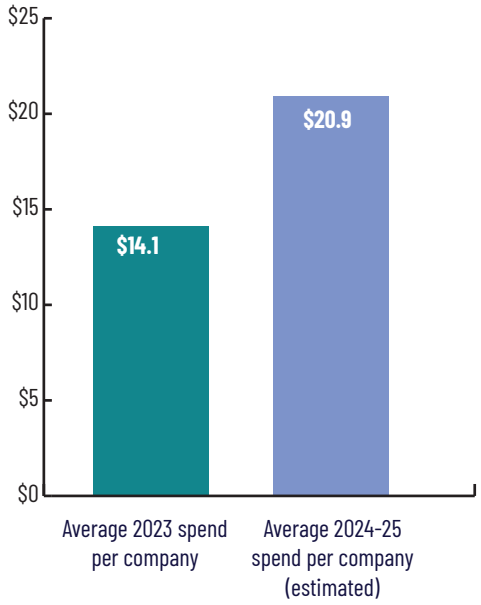
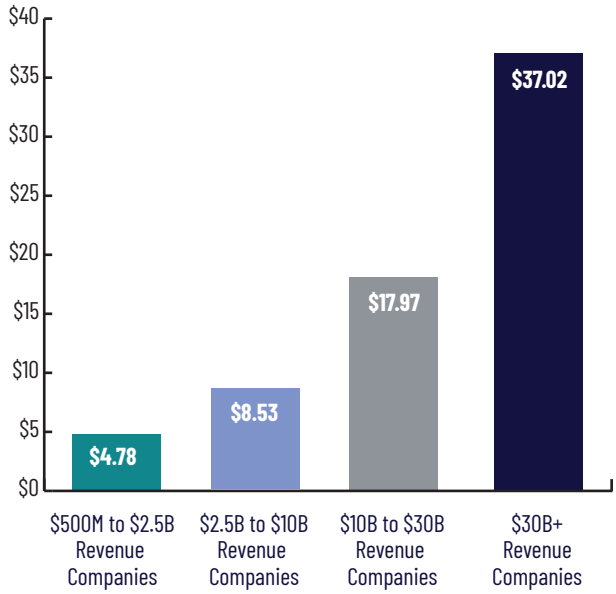


FIGURE 3: BIGGER COMPANIES SPENT MUCH MORE IN 2023

AVERAGE 2023 SPENDING PER COMPANY ON AI-INFUSED SYSTEMS
(IN $ MILLIONS)



Do the best companies at leveraging AI-infused systems (our "Leaders") also spend more than the companies that generated smaller benefits (our "Laggards")? Yes, indeed. Leaders across the three broad industry sectors invested an average $17.3 million in these systems in 2023. Laggards spent an average of $14.7 million. In 2024-25, the average leader plans to spend $34.4 million vs. $24.0 million for the average laggard. (See Figure 5.)

FIGURE 4: THE BIGGEST COMPANIES PLAN TO SPEND MORE IN 2024-25

AVERAGE PLANNED SPENDING IN 2024-25 PER COMPANY ON AI-INFUSED SYSTEMS
(BASED ON COMPANY SIZE, IN $ MILLIONS)

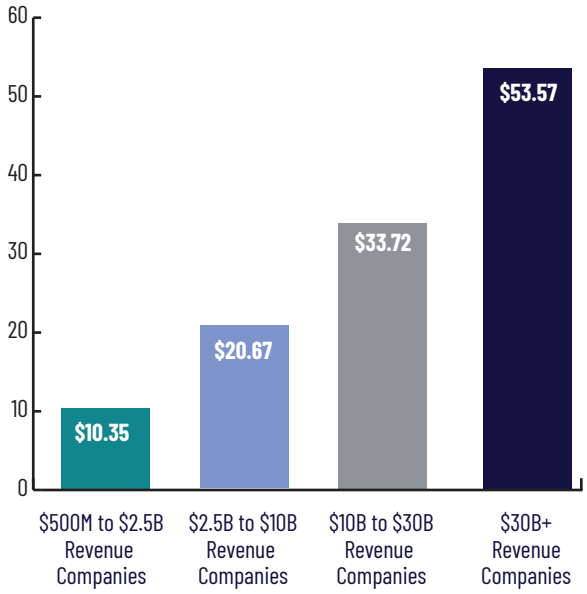
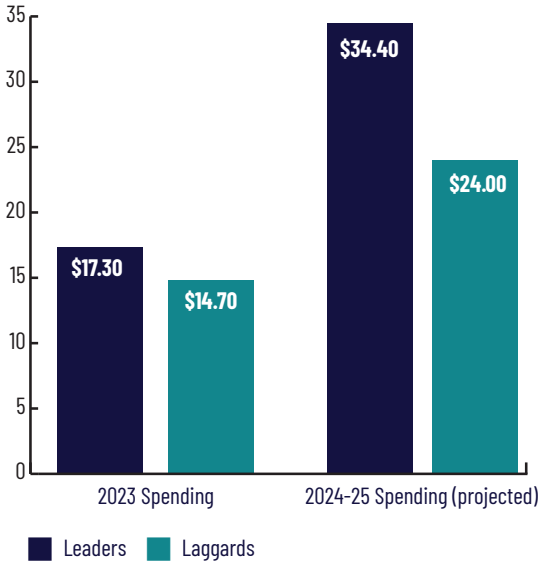


FIGURE 5: LEADERS SPEND MORE THAN LAGGARDS

HOW LEADERS AND LAGGARDS COMPARE IN INVESTMENTS IN AI-INFUSED SYSTEMS
(AVERAGE PER COMPANY, IN $ MILLIONS)



Looking across the three industry sectors that we studied, healthcare services (including health insurance) led the way in 2023 with an average of $23.4 millions spent on AI-infused products and services. (See Figure 6.) The distribution and logistics sector was second with $18.7 million spent per company last year. One reason that applies to both industry sectors since the Covid pandemic began in 2020: AI is an answer to industries with overworked employees. Healthcare companies have been treating sicker patients, and logistics firms have been delivering an increasing number of packages.

What functions inside these companies are using these systems? AI-infused products and services are most widely found in IT, R&D, service, marketing and sales environments. (See Figure 7). They are most often used by a company's employees but are becoming more prevalent among its customers, business partners and other outsiders that it serves. (See Figure 8).

FIGURE 6: HEALTHCARE COMPANIES SPENT THE MOST IN 2023

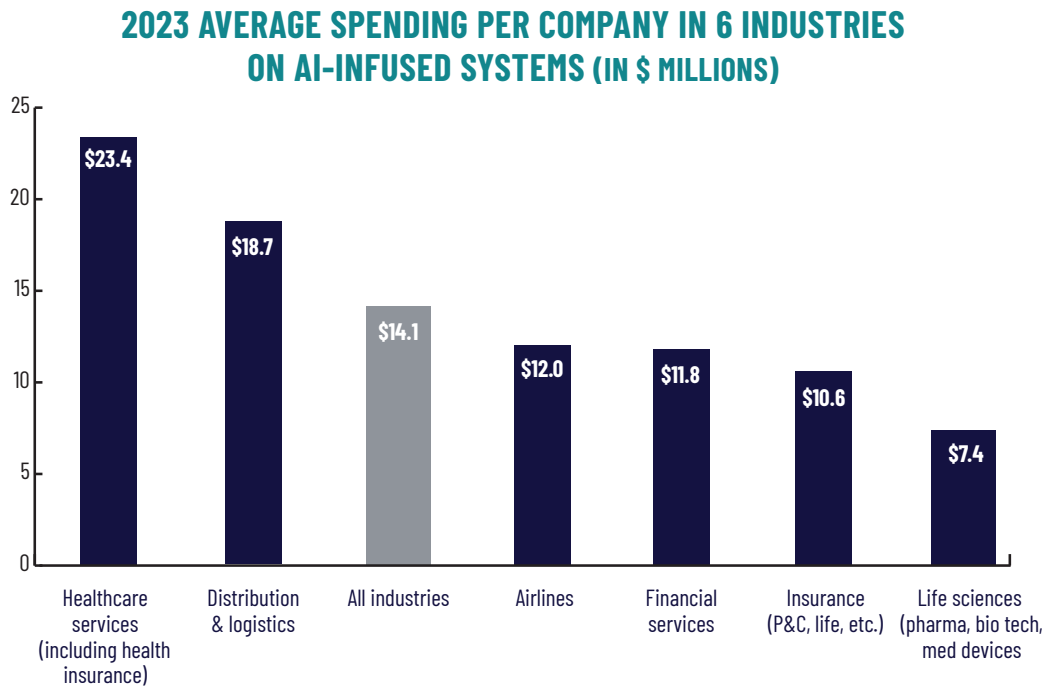


FIGURE 7: IT, R&D AND SERVICE ARE THE MOST FREQUENT USERS

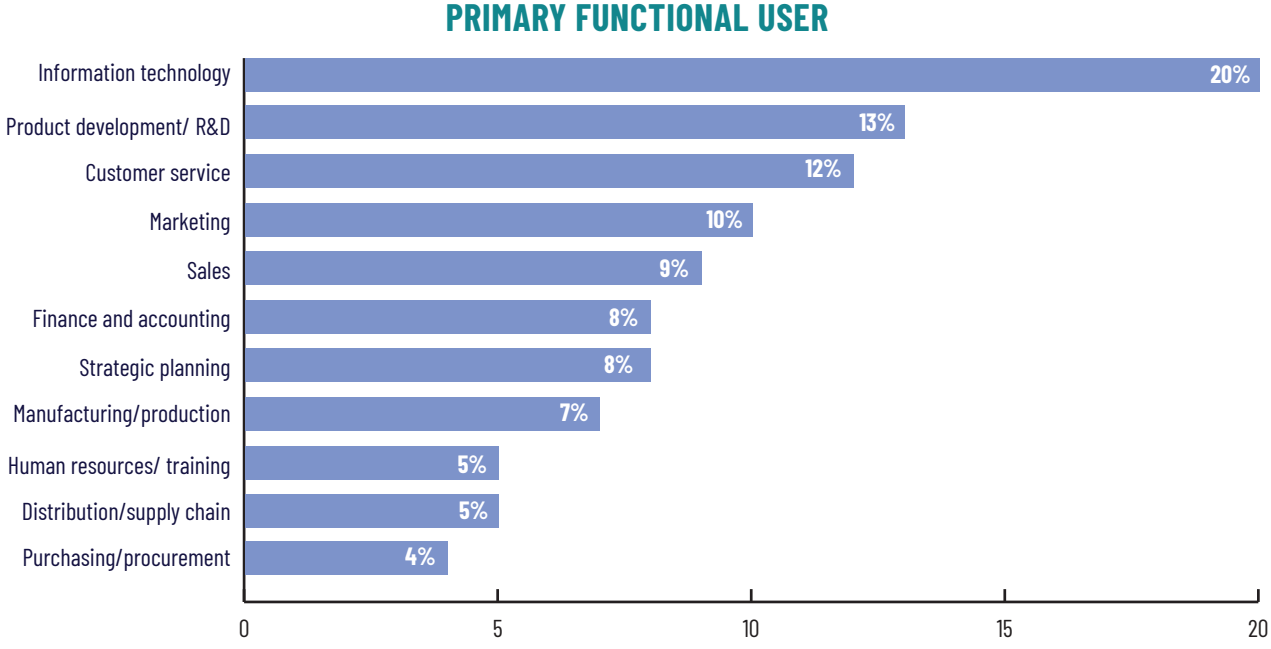
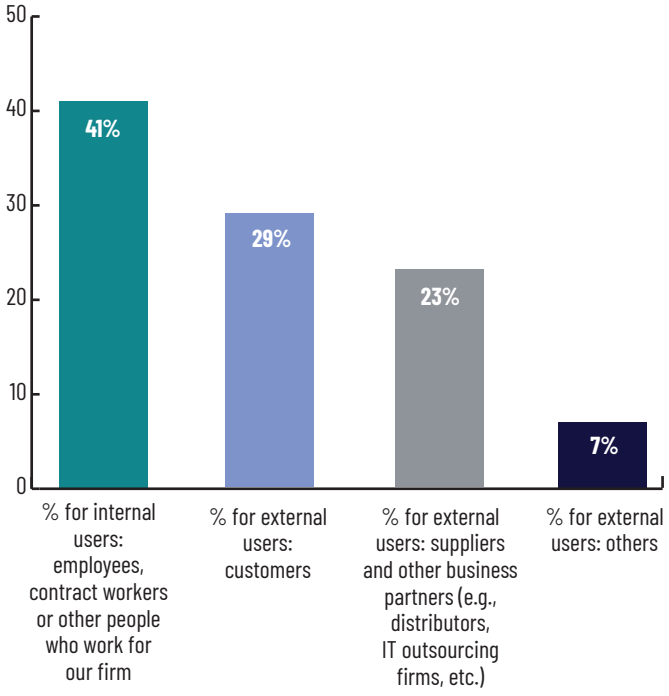


FIGURE 8

TARGET USERS: WHO ARE COMPANIES DEVELOPING THESE APPS FOR?



HOW THE APPLICATION PORTFOLIO HAS CHANGED

Not surprisingly, most companies (61%) across the sectors we studied have already implemented AI-based systems that provide advice. Meanwhile, a higher percentage (71%) plan to do so in the future. Respondents told us their companies have implemented an average of five AI-infused applications between 2020 and 2023. They plan to implement an average of seven such applications across their organizations in 2024-25.

For example, for the average company surveyed, 45% of its application portfolio prior to 2020 were categorized as "informing." Some 25% provided advice capabilities; 18% offered alerts; and only 12% were capable of taking action. (See Figure 9.)

The mix has shifted considerably during the last three years. The average applications portfolio has 29% of systems that inform users. Software that advises users was 34% of the total – the largest of all four categories. Meanwhile, in the average application portfolio, AI-infused products and services that alert and take action were 20% and 16%, respectively. (See Figure 10.)

This year and next, companies plan to shift their focus to AI-infused products and services that alert (21%) and act (25%). However, AI-infused products and services that advise will remain the largest category (30%). Software that merely informs is expected to decline to 24% of the total. (See Figure 11.)

Interestingly, the companies that generated the greatest benefits from their most successful AI-infused app (Leaders) are more likely than those that produced the least benefits (Laggards) to design systems that take control. In fact, 35% of the best companies said their AI-infused products and services took action, compared with 28% of laggard companies.

FIGURE 9: THE APPLICATIONS PORTFOLIO PRE-2020

HOW COMPANIES CATEGORIZE SOFTWARE APPLICATIONS IMPLEMENTED BEFORE 2020

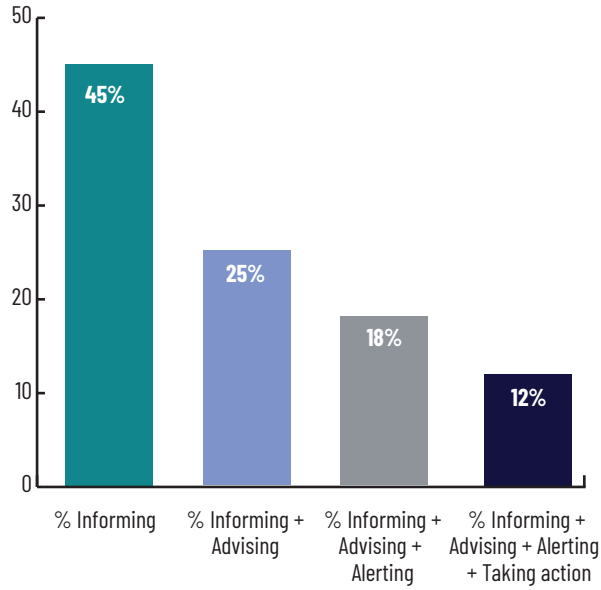


FIGURE 10: THE APPLICATIONS PORTFOLIO 2020-2023

HOW COMPANIES CATEGORIZE THEIR SOFTWARE APPLICATIONS IMPLEMENTED FROM 2020-2023

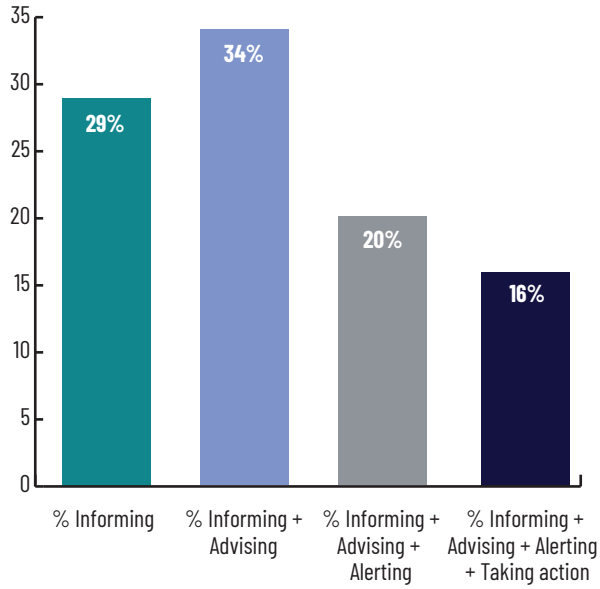
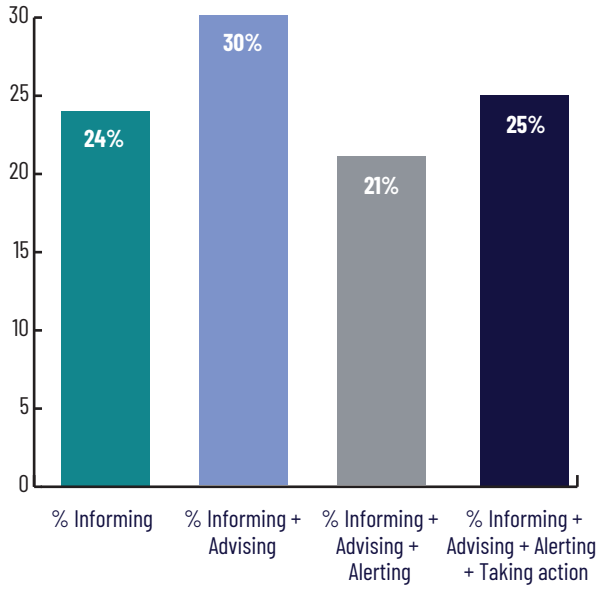


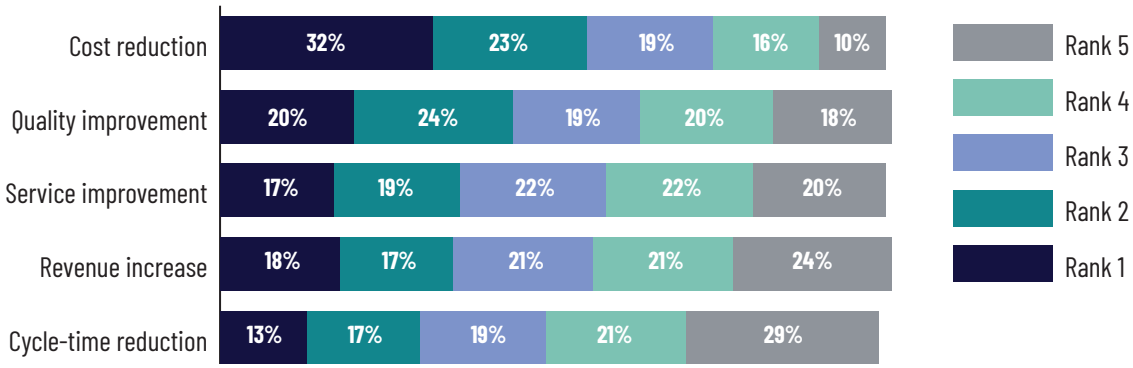
FIGURE 11: THE APPLICATIONS PORTFOLIO 2024-25

HOW COMPANIES CATEGORIZE THEIR SOFTWARE APPLICATIONS TO BE IMPLEMENTED IN 2024-25



Why are companies turning to AI-infused products and services? Primarily to cut costs, and secondarily to improve quality. In fact, cost reduction was rated the primary or secondary reason (out of five options) by 55% of respondents. Quality improvement was rated first or second by 44% (See Figure 12).

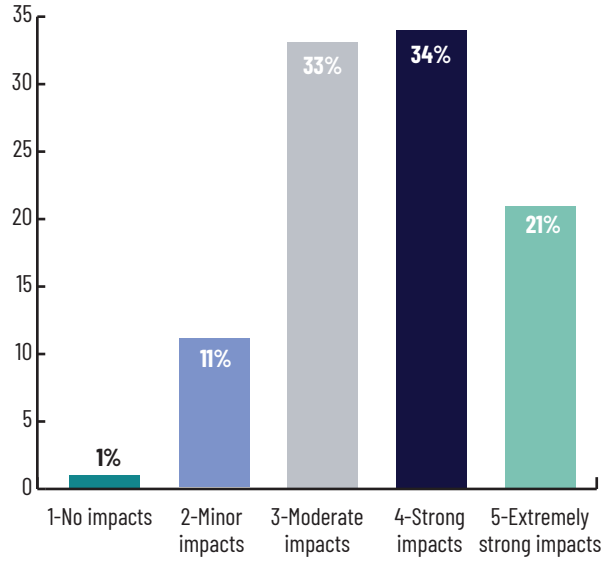
FIGURE 12: RANKING THE GOALS FOR AI-INFUSED SOFTWARE



Moreover, a majority (55%) of respondents categorize the impact of AI-infused products and services as strong or extremely strong. In fact, only one-third said the impact was "moderate"; an even smaller percentage (11%) said their benefits were "minor." Only 1% said these products and services had no impact. (Figure 13.)

FIGURE 13: GAUGING THE BENEFITS

IMPACTS OF THE MOST SUCCESSFUL AI-INFUSED APPLICATIONS SINCE 2020



AI IN USE AT UPS, PROGRESSIVE INSURANCE AND EXPEDIA

AI's growing influence on intelligent vehicles and telematics-monitored driving is a great case in point. Many of today's vehicles alert drivers who appear to be distracted to take a break or to focus on the road. Using machine vision and sensors, they also take action by nudging wandering cars back into marked lanes to avoid accidents. Some brake if the vehicle is moving dangerously close to one in front of them. There were 31 million cars worldwide in 2019 with some level of driver automation; that figure is expected to surpass 54 million this year, according to Statista.[iv]

In package delivery, logistics companies for years have relied on a mix of GPS data and intelligent logistics analytics to configure delivery routes. Now with the use of AI and machine learning, UPS is advising small and medium-sized businesses on how to reduce the chances of theft in locations with high rates of theft. (See sidebar, page 19.)

The influx of telematics devices in automobiles allows property and casualty insurance firms such as Progressive to reward safe drivers with lower premiums and other benefits.[v] Progressive has gone one step further with its Accident Response service, which is contained in the firm's Snapshot app.[vi] If the app detects a policyholder's vehicle has been in a crash, it notifies the Progressive contact center, which the can contact dispatch medical emergency services if necessary. (See sidebar on page 18).

In travel, AI is being infused into travel reservation systems. Online booking site giant Expedia, for example, rolled out generative AI chatbots (based on ChatGPT) in April 2023 to iPhone users. The bot answers questions, provides travel advice and books reservations based on a customer's past travel histories and preferences. (See sidebar, page 17.) This advice is informed by more than 70 petabytes of data collected on customer travel habits and preferences since Expedia's founding in 1996.[vii]

WHAT THE BEST COMPANIES AT AI-INFUSED SOFTWARE DO DIFFERENTLY

When comparing Leaders vs. Laggards, we found the benefits depend on where an AI-infused application is used. For example, in strategic planning, the companies with the greatest benefits said their most beneficial AI-infused product or service delivered a 20% cost reduction (e.g., from pointing out flaws in the strategy, and thus which investments to end or curtail) vs. a 12% cost reduction reported by Laggards. Leaders also reported a 17% revenue increase vs. an 8% increase for Laggards, and a 33% cycle-time reduction in developing and instituting a plan vs. 19% for Laggards.

In marketing, Leaders claimed a 34% revenue gain from AI-infused products and services (e.g., from advice on improving marketing campaigns) vs. a 28% revenue boost for laggards. Leaders also reported a 39% average cycle-time reduction (e.g., in creating campaigns) vs. a 29% reduction for Laggards.

In sales, Leaders estimated a 34% cycle-time reduction (e.g., from advising on how much time to devote to each prospect) vs. a 21% cycle-time reduction for Laggards. In customer service, Leaders pointed to a 25% reduction in cycle time (e.g., problem resolution) vs. a 14% reduction for Laggards.

The charts below show that Leaders outshone Laggards in most functions and in achieving higher percentage cost, revenue, cycle time and quality improvements. (See figures 14 and 15.)

FIGURE 14: HOW LEADERS AND LAGGARDS COMPARED IN MARKETING, SALES, STRATEGY AND FINANCE & ACCOUNTING BENEFITS

LEADERS CONSISTENTLY REPORT ADVANTAGES ACROSS NEARLY ALL DOMAINS

Please indicate whether your system helped your company achieve benefits in cost, revenue, cycle time and quality across different functionalities. Estimate the improvement in percentage terms.

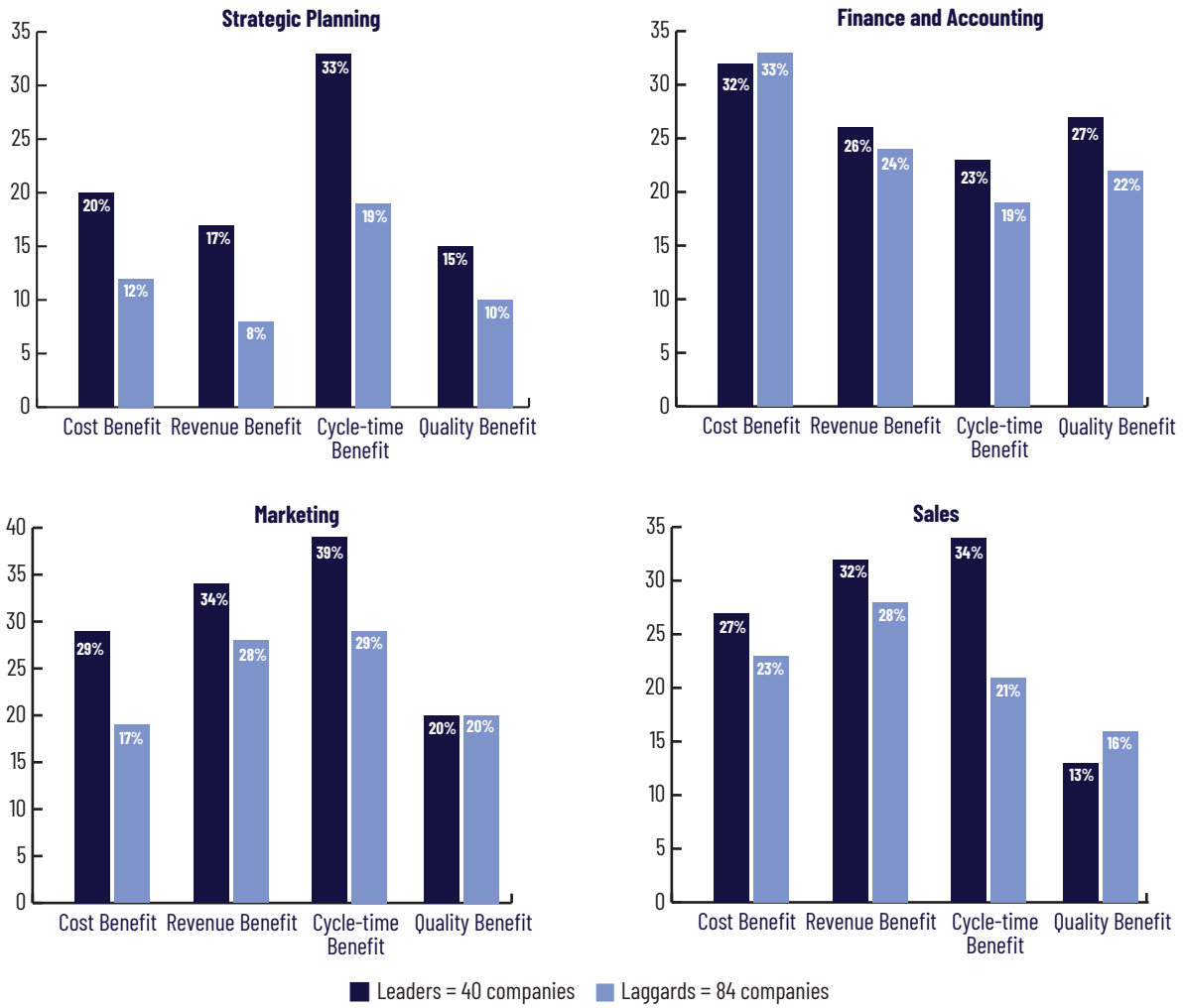
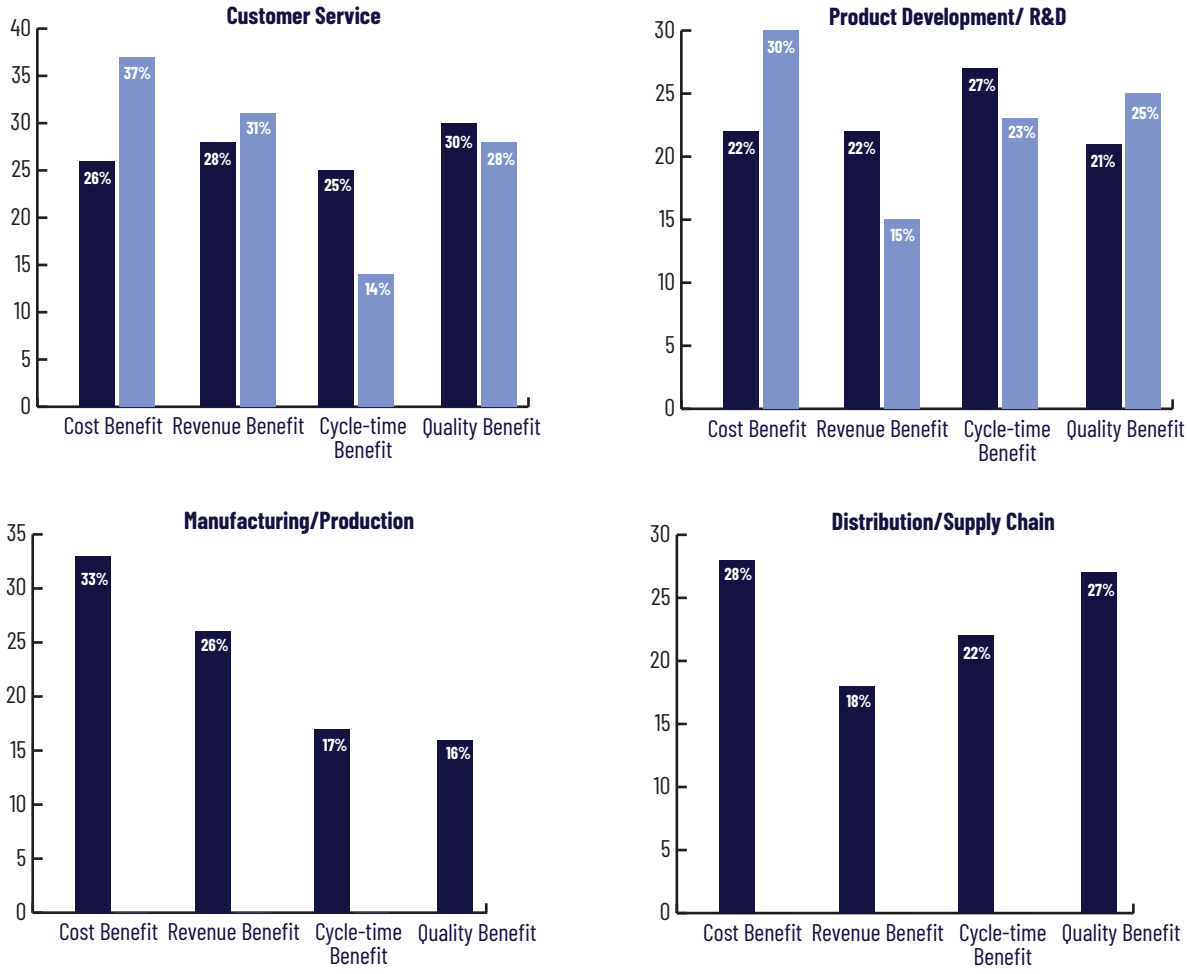


FIGURE 15: HOW LEADERS AND LAGGARDS COMPARED IN SERVICE, R&D, PRODUCTION AND SUPPLY CHAIN BENEFITS

LEADERS CONSISTENTLY REPORT ADVANTAGES ACROSS NEARLY ALL DOMAINS

Please indicate whether your system helped your company achieve benefits in cost, revenue, cycle time and quality across different functionalities. Estimate the improvement in percentage terms.



Note: No respondent in Manufacturing/production or Distribution /supply chain responded with "extremely strong impacts."

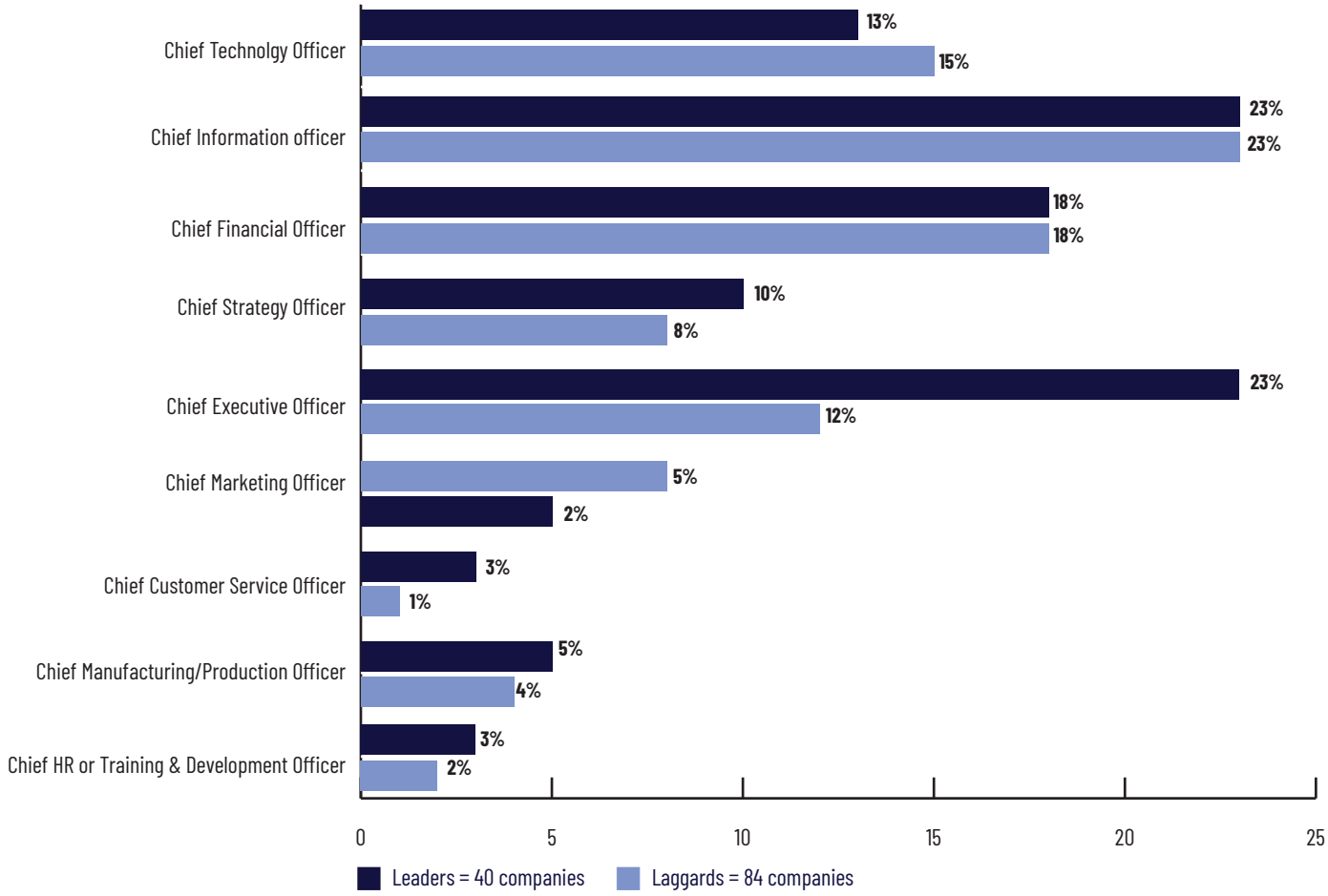
Why are leaders generating bigger benefits than Laggards from AI-infused systems? Our research revealed several reasons. For starters, Leaders either implement these systems faster or work on more of them at the same time. They launched an average of eight AI-infused products and services in 2023 compared with six for Laggards. Looking ahead, Leaders plan to implement an average 10 such systems this year and next year, compared with 7 for the average laggard.

Another key factor is CEO support, as it is with most business-technology initiatives (see Figure 16). We found the CEO is more likely to be the key decision-maker at Leaders than

FIGURE 16: CEOS INVOLVEMENT IMPORTANT HERE (TOO)

C-SUITE INVOLVEMENT IS A KEY MARKER OF SUCCESSFUL AI DEPLOYMENT SUCCESS AMONG LEADERS

For the AI-based advisory application, which one of the following functional executives was the key decision-maker on the initiative (the initiative "owner"/leader)?



at Laggards. Some 23% of Leaders said this was the case compared with only 12% at Laggards. In our experience, CEO-led initiatives are better at getting internal stakeholders to agree on the most important parameters (both business scope and technical specs). And CEO involvement typically increases the likelihood that key stakeholders are involved early and throughout system design and development.

Moreover, Leaders at developing AI-infused systems are better at determining what advice to give users (and not). Some 85% said they understand in advance what advice to provide and how frequently to provide it vs. 66% of the laggard firms.

As well, Leaders typically have more of the right data, and permission to use it than Laggards. For example, 93% respondents from Leaders said their firms had the right data compared with 69% of respondents from Laggards. Nearly nine-tenths (85%) of Leaders

said their companies had acquired the rights to use external data in their AI engines compared with only 71% of Laggard firms. And 93% of Leaders had clean data to work with compared with 69% of Laggards.

Equally as important, Leaders appear to have a better understanding of what AI can – and can't – do. In fact, 98% of Leaders said their organizations understood the capabilities and limitations of AI compared with only 74% of Laggards. Having such clarity increases the chances they don't pursue AI-infused systems that turn out to be technologically infeasible or rejected by users.

AT A GLANCE: DO'S AND DON'TS WITH AI SYSTEMS

Comparing the best companies at developing AI-infused systems with the worst ones provides great advice on what to do, and not to do:

- Have faith that AI-infused products or services can provide a strong or extremely strong competitive advantage: 95% (Leaders) vs. 61% (Laggards).
- Earmark a sufficient budget: 91% (Leaders) vs. 63% (Laggards) did so.
- Intimately understand user requirements and business objectives: 85% (Leaders) vs. 64% (Laggards).
- Bring users (internal or external) in early into the systems development process: 91% (Leaders) vs. 62% (Laggards) did so.
- Make sure you have sufficient computational resources: 96% (Leaders) vs. 67% (Laggards). That most likely will require tapping cloud computing vendors.
- Measure the effectiveness of your user training: 98% (Leaders) vs. 64% (Laggards). If your employees aren't using the system well, you may not be training them well.
- Convince users of the product or service benefits: 85% (Leaders) vs. 66% (Laggards). If you can persuade them the software will help them, they're much more likely to use it.
- Refine your AI-infused product or service to make it more effective at helping users: 90% (Leaders) vs. 76% (Laggards). Be prepared for continually improving the software.
- Use machine learning to continually improve the apps' advice: 88% (Leaders) vs. 64% (Laggards). Let the AI figure out how to improve itself.
- Determine what metrics are most useful: 86% (Leaders) vs. 69% (Laggards). Not all of what you measure will be useful, but some will be critical.
- Develop your AI-infused product or service through Agile approaches: 96% (Leaders) vs. 63% (Laggards). So-called "waterfall" systems development methods with long, sequential phases are not likely to work. You must be able to test and make changes in iterations.

EXPEDIA GROUP

WHERE THE VIRTUAL RUBBER MEETS THE CONCRETE ROAD

AI-infused products and services are moving from inform and advise, to inform, advise, alert and take action where necessary. Here is a cross-section of best-practice case examples that we uncovered in our desk research.

How Expedia Ramped Up AI to Personalize Travel Advice to Millions of Customers

Expedia Group was one of the first Web-based travel agencies, launched by Microsoft Corp. in the mid-1990s.[viii] (The software company spun off Expedia in 1999 as a public company.) Today, the $12.8 billion revenue, Seattle-based firm[ix] uses generative AI chatbots and other technologies to automate and personalize the advice it gives customers on their travel bookings.

"What we have to do is use everything we can to take the worry out, make it personalized so you're not fishing around in the dark," then-CEO Peter Kern told the *Wall Street Journal* this February.[x]

Kern, who stepped down in May, was asked on an earnings conference call what aspect of Expedia's product roadmap he was most excited by. His answer: using AI to personalize advice at scale to hundreds of millions of customers. "It's really machine learning and AI plumbed into essentially the entire product experience," he told investors on the firm's Q4 2023 investor call. "What that gets you is effectively a personalized experience for every customer. … Now that we can use that data to give them the best experience, we're seeing some of our best wins now."[xi]

Expedia has a big advantage on this front: a treasure chest of digital customer data – some 70 petabytes on travel habits and preferences dating back to the company's founding in 1996. That data includes 300 million customer data profiles, which in recent years the firm brought into one common platform.[xii]

In the Q4 2023 earnings call, Kern said the company had five strategic priorities. One is serving highly profitable travelers. Expedia's One Key customer loyalty program has more than 100 million members. Expedia has been using AI and machine learning to advise customers on complementary items they might be interested in while booking a trip.

There's a sizable amount of technology talent at Expedia to make these things happen. Shiyi Pickrell, senior vice president of data and AI, runs an 800-person group that has built 300 machine learning prediction models. Another thing they developed using generative AI (including Open AI's ChatGPT) is a system to summarize service agent calls. In addition, the company uses the technology to recommend travel plans for vacations, she told trade publication *Fierce Network* this March.[xiii]

PROGRESSIVE INSURANCE

ONEUNITED BANK

Overall, by using AI and other technologies that customers can use without needing agents, Expedia says its EBITDA margins have increased more than 300 basis points since 2019. Its Net Promoter Score rating has also increased.[xiv]

How Progressive Insurance's Smartphone App Can Take Control After a Crash

Progressive Insurance, the second-largest U.S. automobile insurer (with $61 billion in total revenue), since 2023 has had a feature on its telematics smartphone app (called Snapshot) that can take control of customer communications following a crash.

The Accident Response feature uses the digital sensors in customers' smartphones to determine when they've been in a major accident. If the customer doesn't respond to a text notification from a Progressive agent within two minutes and a follow-up call from an agent, the feature will alert local emergency medical services and towing. The feature can also file a claim within 10 minutes after substantiating an accident.

In a company quarterly earnings conference call in early 2023, a Progressive leader recounted the story of a customer whose vehicle hit ice and then slid into several barriers on a city street. The customer didn't respond to the text or to a call from a Progressive agent less than five minutes later. The agent then called an ambulance and tow truck. Both arrived on the scene – determined by the customer's smartphone geolocation technology – in minutes.[xv]

Progressive's 2023 annual report indicated the company continues to roll out the feature.

How a Boston Community Bank is Using AI to Help Customers Manage Their Money

Since its founding, OneUnited Bank, the largest Black-owned FDIC-insured bank in the U.S. with $755 million in assets, has sought to make financial literacy a core value in the communities it serves.[xvi] It's now turning to an AI-powered money management environment, "WiseOne Insights," to help deliver on this laudable goal.[xvii]

The 56-year-old Boston-based bank, which operates as a Community Development Financial Institution (CDFI),[xviii] serves low to moderate income people via six branches in Massachusetts, California and Florida. It also operates 100,000 surcharge-free ATMs. (Banking services are available within Chase, Citibank and US Bank ATMs, as well as at dedicated ATMs within some 7-11, Walgreens, CVS, Target and Costco outlets.)

Launched last October within OneUnited Bank's mobile app, WiseOne Insights gives customers personalized suggestions on how they can improve their financial health. For example, WiseOne Insights' machine learning algorithms scour a customer's account activity, transaction history, and spending and savings patterns. As the AI learns and refines its understanding of a customer's financial needs, it delivers:

- Alerts on how far their savings could go if they lost their job.
- Prompts on when to move excess money from their checking to savings account.

- Recommendations on personalized debt-reduction strategies.
- A heads up if they've been billed more than once on a product or service.
- Alerts if they've received a higher-than-normal bill on a recurring expense.
- Suggestions on money management, particularly when it sees many purchases under $10 (which can add up).

Money management advice is critical to the communities OneUnited Bank serves. As of 2021, White households in the U.S. held 80% of all wealth but constituted only 65% of the total number of households, according to the U.S. Census Bureau.[xix] Black households were estimated at 13.6% of all U.S. households but held only 4.7% of the country's wealth. Moreover, Blacks' median wealth of $24,520 was roughly 10% of White households, which was pegged at $250,400.

The release of WiseOne Insights is timely. A summer 2023 study by Credit Karma, a financial management tools provider owned by Intuit, found 43% of Americans would use AI for financial management if it reduced their money problems.[xx]

However, OneUnited Bank believes customers are best served when AI is used with other forms of advice. For example, Chairman and CEO Kevin Cohee told The Ascent (a personal finance website operated by The Motley Fool) that consumers should always consult a financial professional to ensure that an AI-informed recommendation (such as timing for paying off a mortgage) is right for them.[xxi]

Nevertheless, getting and staying ahead with AI is critical to banks across sectors. In an interview on CNBC *Squawkbox* earlier this year, Cohee said the entire banking industry is undergoing a "wholesale" technology-powered overhaul.[xxii] Although not commenting specifically on WiseOne Insights, he noted that AI is essential to making the transition to the next generation of banking products and services.

For OneUnited Bank, shifting from a community model to a fintech approach is critical. The reason, as Cohee glibly noted on CNBC, is that "people are not going to go stand in line no matter how good your doughnuts are."

UPS

How UPS Reduces Package Theft

UPS, the 117-year-old, $91 billion revenue global logistics giant, is delivering on its "better and bolder" strategy by injecting artificial intelligence/machine learning algorithms into its budding "network of the future." One goal: help package senders prevent porch piracy at high-theft customer addresses. [xxiii]

Package theft is a huge problem for the logistics industry, shippers and their customers. It exploded following the online shopping blitz sparked by the Covid-19 pandemic.[xxiv] Porch poachers stole roughly $8 billion worth of packages in 2023, according to Security.org.[xxv] Meanwhile, 79% of Americans were victimized by porch pirates in 2022, according to a study by Safewise.[xxvi]

Porch package theft is especially concentrated in certain locales. Some 30% of losses occur at only 2% of addresses, according to UPS.[xxvii]

To thwart theft, some logistics services offer guaranteed timeframes to ensure that someone is home when they deliver a package. Or they suggest that the package recipient use a lockbox or retrieve deliveries from a safe location (e.g., a friend's residence or a store location). Sadly, these mechanisms (including camera-equipped doorbells) have done little to reduce package theft.

UPS, which moves 5.7 billion packages annually,[xxviii] is addressing the porch piracy challenge head on. It launched its AI/ML-powered DefenseDelivery initiative last October to alert customers (initially small and medium-sized businesses) on the safety of packages it will deliver to a particular location before those customers print the shipping label. Customers connect to DefenseDelivery via an application programming interface. Once inside the system, they punch in the delivery coordinates. The system then analyzes the address characteristics using two years' worth of UPS delivery data on delivery location attributes, including past incidences.[xxix] DefenseDelivery then generates a "confidence score" on a scale of 1 to 1,000 -– the higher the score, the less likely the package will be pilfered.[xxx] UPS says DefenseDelivery can reduce package theft up to 40%.[xxxi]

For senders, it's not about delivery cost, noted Bala Subramanian, UPS's EVP, chief digital and technology officer, in an interview on the podcast *Technovation.* "It's that they don't lose the product since product costs are always higher than delivery costs – and that's what is extremely exciting for them," Subramanian said.[xxxii]

This point was reinforced at UPS's recent Investor Day, where the company replayed a CBS News story that chronicled the use of DeliveryDefense by Texas Precious Metals, a shipper of gold and silver.[xxxiii] Company President Tarek Saab told the new organization, "We realize it's tech versus criminals" and that DeliveryDefense helps the company eliminate lost or stolen shipments.[xxxiv]

Using AI and RFID digital sensors, UPS creates so-called digital twins of all packages that move across its logistics network. These technologies are accelerating UPS's transformation from a "logistics provider to logistics orchestrator," Subramanian told *Technovation.* UPS's fully integrated network helps customers make decisions digitally and take action physically, he added.

MEDTRONIC

How Medtronic is Using AI to Enhance Colorectal Cancer Detection

Medtronic, a $32 billion global healthcare technology company, is infusing AI into a variety products and services. Among the highest profile is Medtronic GI Genius™ Intelligent Endoscopy Module. It produces enhanced imagery that helps physicians detect colorectal polyps during colonoscopy screenings. [xxxv]

Early detection is critical since colorectal cancer isn't easy to spot. The polyps are exceptionally small and very difficult to recognize – even for experienced physicians. Approximately 153,000 new cases of colorectal cancer are expected in the U.S. this year, which will lead to about 53,000 fatalities, according to the National Cancer Institute.[xxxvi] However, the disease is treatable if caught early. Having a second set of eyes with x-ray vision is therefore critical.

GI Genius Intelligent Endoscopy Module – the first FDA-approved AI-powered polyp detection device – has a "99.7% sensitivity rate with less than 1% false positives," said Medtronic's CEO & Chairman Geoff Martha in a recent LinkedIn article he published.[xxxvii] Such detection accuracy is critical because when polyps are spotted early, the colorectal cancer cure rate is in "the high 90%," noted Ha Hong, the chief AI officer at Medtronic Endoscopy on a recent podcast.[xxxviii]

To get physicians on board, Medtronic paid attention to user experience and applied a "less is more" design approach, Hong told the podcaster. For instance, Medtronic didn't want to "bombard" physicians with too much information when the device communicates and explains endoscopy results. It worked closely with medical experts to understand how and where GI Genius Intelligent Endoscopy Module fits into the endoscopy workflow. "If the system does not know how to communicate effectively with the human user, then they are not going to use it … and they are not going to use your product in an effective way," Hong said on the podcast.

In his LinkedIn article, Martha said Medtronic's goal with AI is enhancing the patient experience, improving health and reducing costs. As a result, the company focuses attentively on AI's risks, particularly patient safety, medical technology integrity and personal data protection. The firm sees AI as a tool that helps physicians provide "insight-driven care" that results in "high-quality, personalized treatments that lead to improved outcomes," Martha said. "Realizing this vision won't be without its challenges, but then again, the most worthwhile endeavors never are," he concluded.

EMBEDDING AI INTO MANUFACTURING PROCESSES TO IMPROVE QUALITY AND INCREASE OUTPUT

Infusing manufacturing control systems with AI can increase output, increase quality, and standardize production processes while reducing overhead.

AS THE SYSTEM GETS SMARTER, MORE DECISIONS WILL MOVE TO THE MACHINE. EVENTUALLY, ALL DECISIONS COULD BE MADE BY THE MACHINE.

A manufacturer with whom we work is doing exactly this. It has 50-plus sales engineers that review order accuracy and manually adjust shop orders. The company also has independent contractors who generate sales requests, which often results in a lack of order standardization. For example, a business partner company may call a part a "roller bearing," and another might call it a "race bearing." The AI system will standardize orders by sorting through the chaos.

In its current state, the system uses a rules-based tool to see if the company has all the right parts in inventory and drawings (stored as images with metadata on parts specifications) to produce a finished product. If the system spots an error, it first alerts and then advises the engineers of a solution. They can revise the production process.

The company wants to eliminate the first two steps (advise and alert) and go straight to "acting," because it trusts the AI to deliver the right results. For instance, the company builds some of its components; it also orders a lot of off-the-shelf components. With many vendors, lead times can vary significantly. The manufacturer tries to build from inventory on hand. But if it can't, the AI can order the parts, or offer alternatives. Potentially, the AI can make production change requests so the manufacturing line is not waiting on delivery of raw materials.

As the AI continuously learns, it increases production accuracy. As the system gets smarter, more decisions will move to the machine. Eventually, all decisions could be made by the machine.

The company is using a large language model to do most of the data cleansing (creating a consistent data taxonomy). The model is working with 20 years' worth of data. However, the older the data is, the worse it is. The company is working with Sparq to use AI to standardize parts. Obsolete components that are no longer available must be removed. Cross-references to replacement parts must be created to clean up the order accuracy process.

Today, it takes the manufacturer six weeks just to determine if it has the right drawings and parts in inventory. With this system, the company expects to cut that down to just a couple of days, including inventory replenishments. Once the AI gets smart enough, the firm will be able to do this in minutes, and everything will be validated automatically. The system will eventually track change orders. Moreover, the plan is to use cameras on the crating dock to make sure what is built and put into a box to be shipped to a customer is exactly what was ordered. And since these products cost between tens and hundreds of thousands of dollars, order accuracy improvements will have major impacts, not just on shipment times, but also on customer satisfaction.

PULLING AHEAD WITH AI-INFUSED SYSTEMS

With so many companies racing to embed AI in their software applications and products, now is the time to learn from organizations that are ahead of the pack. That was our very goal with this study: to understand what healthcare, transportation and financial services companies in the forefront with AI are doing differently than their competitors.

From our survey research, interviews with executives, and analysis of what other companies have said publicly about their initiatives, we see six practices as being crucial to generating high returns from AI-infused systems. We summarize these practices this way: The more that a company moves to the right on the Advise > Alert > Act spectrum, the bigger the benefits to be had. However, those benefits also come with bigger risks and bigger investments. (See Figure 17.)

FIGURE 17: MOVING TO THE RIGHT INCREASES THE BENEFITS

SPARQ: MAKING AI-INFUSED SYSTEMS MORE VALUABLE

ROI, risk and investments all increase as companies build and deploy systems whose capabilities go from left to right.

	INFORM ▶	ADVISE ▶	ALERT ▶	ACT ▶
INTERACTION WITH USER	User gets the information they ask for.	System gives users the information they need (but don't ask for) to make key decisions.	System tells users to act quickly to address opportunities or problems.	System take control from users to address pressing opportunities or problems.
ORGANIZATIONAL BENEFITS	• Ability to store large volumes of data • Easier user access to data • Easier to share data across functions	• Better decisions and responses based on those decisions (to customers, partners, suppliers, employees, etc.) • Higher productivity (service agents, sales people, etc.)	• Faster responses • Lower-cost responses	• Instant responses (e.g., on sales leads and service demands) • More responses (e.g., more sales opportunities) • Major cost reductions (e.g., via customer self-service)
DATA REQUIREMENTS	Data on the issue at hand	Data on how to advise users, and how often	Data on user status and likelihood of responding rapidly	Data and digital linkage to users' environment
TECHNOLOGY TO CAPTURE DATA	Data entry software	Audio transcription, data entry and other technologies.	Embedded sensors (in equipment); GPS; etc.	Embedded digital sensor (in equipment); GPS; on-board control systems; etc.
TECHNOLOGY TO PROCESS DATA	On-premises computing	On-premises and cloud computing	Cloud computing for real-time monitoring of user environment	Hyper-scaler cloud computing to take real-time control for user

HERE ARE THE SIX PRACTICES:

1. **Design your AI-infused systems to take control of executing decisions that have great consequences and must be made in extremely short time windows.** If designed well, these systems can recognize and seize business opportunities – and identify and avert problems – far faster than humans can. The companies that generated the greatest benefits from their most successful AI-infused app are more likely than those that produced the least benefits to design systems that take control. (In fact, 29% of the best companies did this vs. 24% of the worst companies.) The more that companies let the application take control, the faster it made the right decisions (in strategic planning, marketing, sales, customer service and R&D). This helped the best companies achieve larger revenue gains and cost reductions than the Laggards in every function but two: cost reductions in customer service and R&D. The Laggards outshone the Leaders here. This suggests that if you make cost reduction your primary goal in using AI-infused systems in your contact centers and product development function, it could have an unintended side effect: generating less revenue than you should in these areas.

   Think high frequency equities trading. The capital markets companies that infuse AI built on predictive models into their trading systems. They can make split-second transactional decisions accessing huge data stores on historical trends to gauge where the markets are heading and autonomously execute trades well before other financial institutions and retail investors. These systems move so fast that they can cause the flash crashes, cascading automated high-frequency trading crashes.

2. **The more you design the system to take control, the more, more types and higher-quality data it needs to make rapid but excellent decisions.** Leaders were far more likely than Laggards to say that having the right data and clean data were key to success. In addition, the best firms more strongly valued gaining the rights to use external data. They also were more likely to believe in having sufficient but affordable computer processing power at hand to process all the data. They know that tapping cloud services on demand can get quite expensive.

   This means understanding where your organization wants its AI-infused system to land on the advise, alert and act continuum. Think hard about purpose and potential, and consider the talent, funding and infrastructure resources needed to get there. If the ultimate objective is a system that takes action, you'll need to design it to recognize business opportunities – not just take action when problems are imminent. For example, you'll want to design the system to take action if sales leads or opportunities are spotted that human sales agents may be too slow to recognize – even if they were previously advised and alerted. This way your firm can respond to leads and opportunities in seconds rather than minutes, days, weeks, or never.

3. **The more you rely on the system to make and execute key decisions, the more your C-suite must be involved in system design (so that top management fully appreciates and reduces the risks of transferring tasks from people to machines).** This will reduce the risk of disempowering humans who must still be kept in the work loop. A key risk is disenfranchising employees (especially senior executives) who reject decisions that are taken away from them. If you don't want to alienate the top management team and the managers that report to them, it follows that the higher up the organization chart you go in pushing decisions to machines, the more convincing those people will need from the top of the organization. Perhaps this is where they will need to be reassured their jobs aren't at risk – unless they continue to oppose the argument that the machine can make certain decisions far better than they can.

In the sales example, a chief sales officer (CSO) may recognize the need to autonomously act on leads faster than even their best salesperson. However, they might not be willing to go there, and will need to approach this in stages, fearing the disempowerment of their sales agents. CSOs want to understand what data the team needs to spot meaningful sales opportunities. Add that data and, at some point, let the system loose to pursue them.

AI's impact is initially on the rank and file. As automation becomes more prevalent, each layer of management must become more engaged. By the time we get to the C-suite, AI has been embedded deeply into the organization.

Therefore, as AI progresses and the organization becomes more confident that it can deliver (as data quality improves and advice and alerts get better), it becomes easier to engage employees. They better understand the implications. Even at a senior management level, if they've already seen the organization going from inform to advise to alert and are considering taking that next step to action, it isn't as much a leap. They're already have gone down this path. And it's a shorter leap than going from inform to action.

However, resistance builds as you go up the organization chart. At the top level, we believe it will multiply exponentially. AI champions will face the "We've always done it this way" syndrome. "Why change?"

The higher up the organization, the louder voice and the push-back against change. The C-suite, the CEO in particular, must have strategic vision – whether pursuing new opportunity or improving organizational efficiency. AI-infused products and services must align to that vision. And with it, there needs to be an understanding of the impact of change on the organization.

Therefore, the CEO will need to know what is possible and prepare the organization

for what is to come. If this spadework isn't done, some may throw brickbats at it. The more you try to take tasks away from humans and give them to the machine, the more pushback the CEO should expect if they don't point out how important the machine is to the company's strategy.

4. **Focus on cycle-time reduction more than on cost reduction.** The best companies at using AI-infused apps don't center on cost reduction. The less-successful companies at leveraging AI, in fact, achieved higher cost reductions in customer service and product development than the companies with the greatest benefits from AI-infused systems. In contrast, the best companies focus more on ***cycle-time*** reductions – the time it takes to make and execute consequential decisions. These decisions could be ones like (in sales) which leads to pursue (and not pursue) in force; in customer service, enabling employees to quickly answer complex questions; and in strategic planning, rapidly understanding the demand and competitive dynamics of new markets before competitors understand them.

5. **Bring users early into system design to intimately know what advice they need and how frequently they'd like to get it. However, don't let them dictate what decisions the machine gets to make.** Realize that for self-preservation, they won't want to abdicate control to the machine. The best companies value bringing users (employees, customers and others) into the design process more highly than companies with mediocre results from these systems. Yet the best companies also have more AI applications that can take control from users. Also, the best companies put more emphasis than the worst ones on understanding AI's limitations. With that knowledge, they better know which decisions and actions still should be made by humans rather than by machines.

6. **Stop referring to AI-infused systems as the latest wave of *"information systems"* (the historical term for computer applications).** These systems do much more than *"inform"*; they take over what a user does when they need to. Factories for years have referred to such applications "manufacturing control systems." The AI-infused applications we're talking about should be seen as knowledge workers and executive control systems.

BEST PRACTICES FOR BUILDING BETTER AI-INFUSED PRODUCTS & SERVICES

To build and deploy meaningful AI-infused products and services, organizations must conquer key challenges that span data, system design, system development, user acceptance, user mastery and system evolution challenges. Here's a look at how we see this evolving across the software development life cycle based on our work and conversations with clients across industries.

DATA QUALITY: IT MUST BE SUPER CLEAN

Although this is an age-old challenge, organizations need clean data (as well as the right data) to separate signal from noise. This will allow them to build a semantic layer over their structured, partially structured and unstructured data (text documents, video, static imagery, social media) to determine context and deliver meaningful advice, alerting and taking action. Strong business rules operating on clean data are essential for determining context particularly in the alert and act phases.

Have good governance to ensure that as you pump new data into your AI engine or deploy new systems with different schemas, all data remains consistent and of high quality.

Generative AI can help to cleanse data at scale and speed. It can separate the so-called signal from the noise. It can also fix poorly labeled data. But make sure to have a human in the loop to double-check the changes. This saves time and effort in ETL (extract, transform and load), data integration and strong binding. You can't build systems that advise, alert and act without having clean data sets.

DATA VOLUME: COLLECT MORE DATA THAN YOU THINK YOU'LL NEED

Data storage costs are relatively inconsequential. New and more intuitive technologies will make it easier to collect and store.

An insurance tech client wanted to use location-specific hotel booking and cost data that it had collected in the last 20 years to understand historical norms on hotel rates. By doing so, it will be able to gauge additional living expenses and more quickly advise customers on affordable temporary places to live if their homes are damaged by disasters. The data is stored but has never been used. This advisory application has propelled its business case for AI.

SYSTEM DESIGN: DON'T BESIEGE USERS WITH ALERTS

The number and frequency of issues you decide to alert users about is a critical factor. Too few alerts and their decisions could go off the rails. Too many alerts and they could start ignoring them. (Think about your most annoying mobile app that over communicates!) This is where you must be spare with the business rules you use to design an AI-infused application. Not all alerts are meaningful. Some are generally ignored. Using generative AI, an alerting app could prompt the user by asking, "Did you get a good

response or a bad response?" The answer could help inform what alerts users find useful and direct future development plans.

SYSTEM DESIGN: FOLLOW HOW HUMANS INTERACT

Create interactions with users that feel intuitive to them. New large language models can be used to create more personal ways of interacting with users. They gain deep insights by asking the right questions (i.e., the user doesn't have to think about how to facilitate the interaction, but it just feels natural).

Take heavy equipment inspection. Rather than carrying around a clipboard or even a tablet computer, we see organizations designing intuitive thinking into AI-infused products and services. Rather than using green (good), yellow (beware) and red (bad), our best clients design equipment to generate error codes (through generative AI and natural language processing) that vocalize the state of a piece of equipment and how to fix it if it has a problem. As a result, the experience is more conversational.

Another example is in food monitoring to inform healthy eating habits. Some people track their food, for health reasons, others to count calories. What if you could take photographs of a meal and use AI to determine what ingredients are in the food? The app would determine the nutritional information (informing), then advise the user on their caloric and fat intake for the day. You could take that next step to alert – e.g., "Hey, this is something you should avoid," or "I understand that maybe you are allergic to a certain item on your plate."

SYSTEM DEVELOPMENT: USE AI ITSELF TO HELP BUILD YOUR AI SYSTEM

Say you're moving an application from "informing" to "advising" – i.e., by injecting AI into it. An AI system could understand what a developer is trying to do and suggest a way to finish the task. Think about codebase reviews. The system could provide alerts about security issues or potential bugs in an application under development. When embedding "take action" functionality into the system, developers could feed a user story into a coding assistant, along with a design mark. The assistant would then autonomously generate a section of code to accomplish that work. The human can review it while the agent takes them through bot-powered development process.

Limit system complexity where possible. The best systems are simple. As scale and scope increase, they get more complicated. Using AI, developers can rein in complexity and scaling problems from oversized workloads. They then don't need to think about the mundane but can focus on the business rules.

Model behavior so that a "digital twin" can work like a knowledge worker. Think in terms of a digital replica of a truck, package or envelope. If you are developing an AI-infused product or service to take control, your developers need to understand how often this system will misfire. It will be less risky (and expensive) to simulate that in the digital twin.

Keep an eye on cloud computing and infrastructure costs when moving from applications that inform to advise, alert and act. Technology costs for AI-infused products and services can get out of hand quickly. Organizations can save on development and the maintenance costs by using cloud-based services – but only if they are mindful of long-term total cost of ownership issues.

Remember, when using a large language model as a fee-based service, you pay per token (per prompt) when interacting with a cloud-based model through an application programming interface (API). Also consider the business value of altering vs. taking action on behalf of users given the compute resources required. The question to resolve: Is creating a more sophisticated AI-infused product or service worth the cost of ingesting additional data and consuming more cloud-server resources to deliver additional functionality?

Note: Many software developers may not know the answer until it is too late. They normally do not think in these terms.

Think about audit trails. For alerting and acting where more is at stake, you may well need a larger data set to substantiate acceptable use. Having an audit trail informed by a large data set can give you the ability to track and attribute cause and effect for regulatory compliance. AI agents collecting and analyzing this data, as well as humans who remain as both additional fact checkers and approvers, will need additional audit trail guardrails.

When released later this year, OpenAI's GPT-5 reportedly will have the ability to create a special agent that delivers consensus weighting on the validity of the responses provided by various fact checking agents.

USER ACCEPTANCE: LEARN FROM SYSTEMS PAST

Don't overlook conventional user acceptance best practices. Get users involved early in the design and development process. Once they are engaged in shaping the solution, they are much more likely to champion its use since it reflects their inputs and addresses their needs. And they then may be more likely to help identify future system requirements.

Be transparent where possible but focus communication on key systems advantages that propel personal productivity and professional advancement. Reinforce how the AI-infused product delivers a more fulfilling experience and has great impact on the business. Also, focus on how the new system will remove rote work and give them more creative and value-generating tasks. If you automate a part of an individual's job that they hate, they may more readily accept a new AI-infused product or service.

Calibrate what the system tells users based on personas (role, generation, activity, etc.) It's a sliding scale among the three categories – advise, alert and act. Taking the cockpit controls away from users could heighten their unease with change

and reinforce the belief that the new AI-infused product or service will eventually take their jobs. Moreover, when it comes to AI-infused products and services that alert, create notifications that will prompt awareness. These alerts must be a tightly aligned to a person's expertise, generation and stature within the company (a newbie vs. a long timer). As noted above, too many notifications, particularly if they are not very useful, can be more distracting than helpful.

Keep users in the loop and use AI to check AI. Who's watching the watchers? Bad actors will be using AI to game or work around the system and regulations that govern acceptable behavior. Therefore, to increase user acceptance, keep humans in the loop to override potentially injurious advice, alerts, or actions. This should enhance your AI-infused product or service's credibility among some cohorts, particular older users who tend not to trust machine intelligence as much as younger people do.

USER MASTERY: MEASURE IT WITH AI, AND USE IT TO PROMOTE

Take the call center. Say one out of every 15 calls is handled by AI that passes the Turing test and informs a human agent on the best response. The organization must continually measure the effectiveness of the bot's response over time and be proactive about revising the advice to help the call center person answer questions faster and better. If the agent is not using the bot's advice or meeting pre-set key performance indicators (KPIs), use AI to identify skill gaps. Then create customized AI-generated training scenarios to address the shortcomings. A secondary benefit: You can use the synthetic training data from these interactions to train your AI model.

Position AI system mastery as part of career advancement. Once users master the system, get them ready to move to a different domain or more advanced role. Give them a higher order of work fits their career aspirations. Provide rewards to those who do the right things. They will become important role models and mentors to others.

Be aware of the impact of loss of control. Some employees will react negatively when the system had to take over because they made an error or couldn't react fast enough. Explain it this way: The system takes action when it must because it can take the right action faster than any human can. However, also realize that some users will defer to the system because they think it is inherently smarter than they are. That raises risks if the system is prone to offering flawed advice and alerts, which could be detrimental if it takes inappropriate control.

SYSTEM EVOLUTION: USE A HYPOTHESIS TEST MODEL.

AI-infused products and services are high-stakes initiatives. Be bold but don't wander off a cliff. As your teams gain experience, see what percentage of scenarios the system advises. When does it alert or act? How successful were the outcomes? What can you improve? Where do the outcomes fall short? Try the classic A/B test case scenario to determine the appropriate time to advise, alert or interdict.

METHODOLOGY

In January and February of 2024, we conducted an online study of senior leaders from 310 companies in the U.S. in financial services, insurance, transportation (airlines, distribution and logistics and railroads), healthcare and life sciences.

We wanted to deeply understand their use of and plans for AI-infused products and services. (Figure 18 shows surveys by sector.)

A fifth of the companies had revenue of $20 billion and more. Some 22% were between $5 billion and $20 billion. About 60% were between $500 million and $5 billion. Average revenue was $12.3 billion, with a median of $3.7 billion. (See Figure 19.)

We surveyed business leaders with titles such as CEOs, CIOs, CTOs, chief product officers (especially software products) and heads of functions for which these software applications are being built (See figures 20 and 21).

To better understand our findings, we separated "Leaders" (40 companies that said the most successful AI-infused product or service delivered "extremely strong" impacts) from "Laggards" (84 companies that said their most successful AI-infused product or service delivered "no," "minor," or "moderate" impacts).

FIGURE 18

SURVEYS BY INDUSTRY

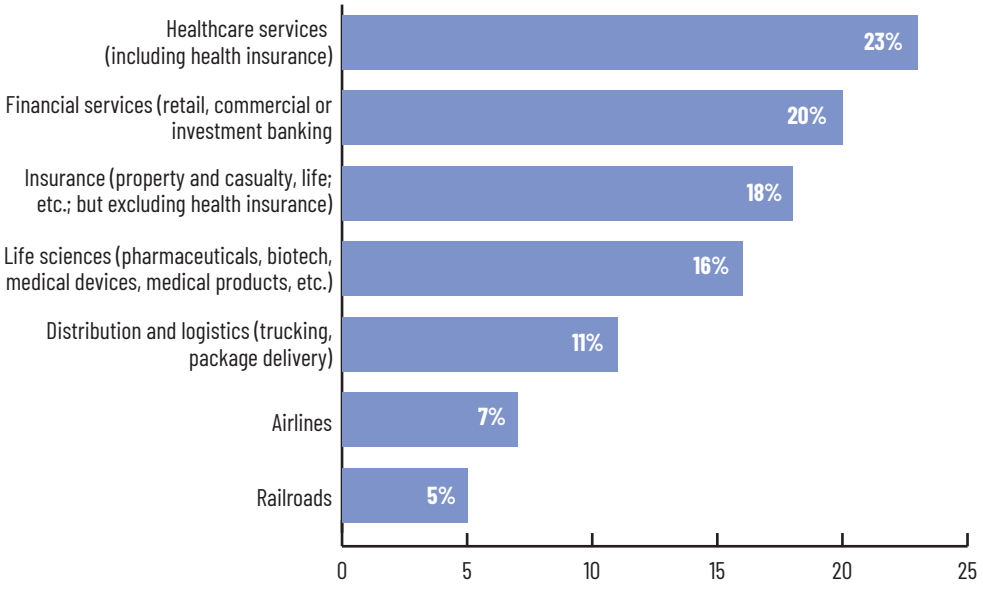
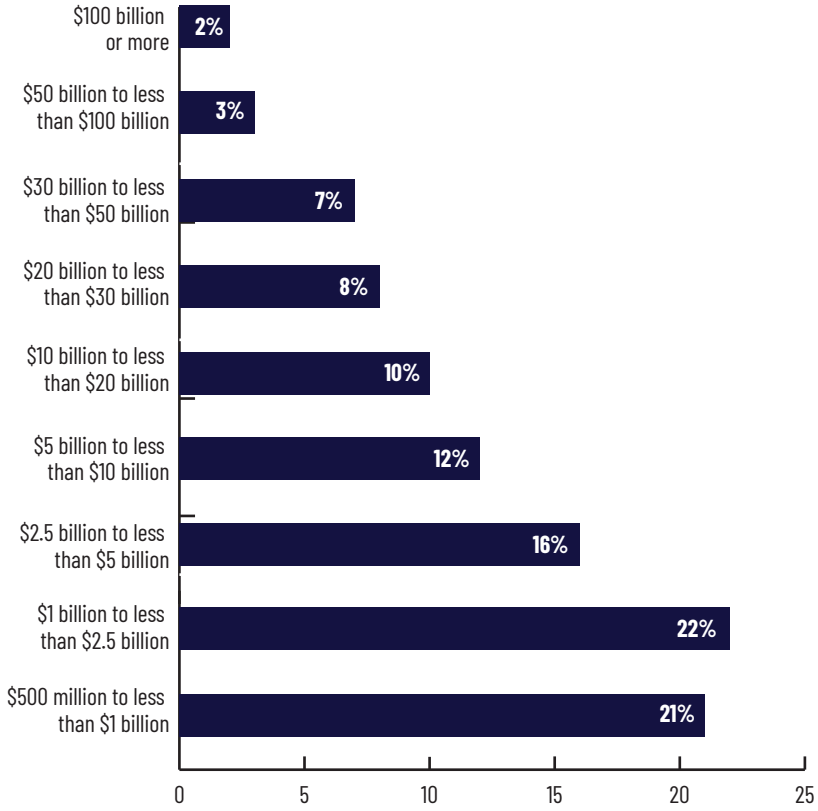


FIGURE 19

SURVEYS BY COMPANY REVENUE



Note: Percentage doesn't sum to 100% due to rounding.

FIGURE 20

RESPONDENTS BY ORGANIZATIONAL LEVEL

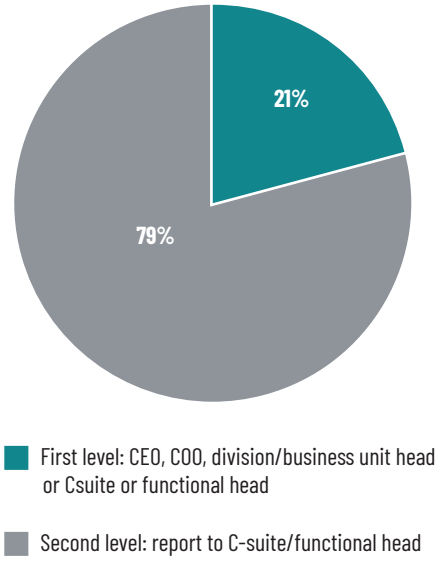
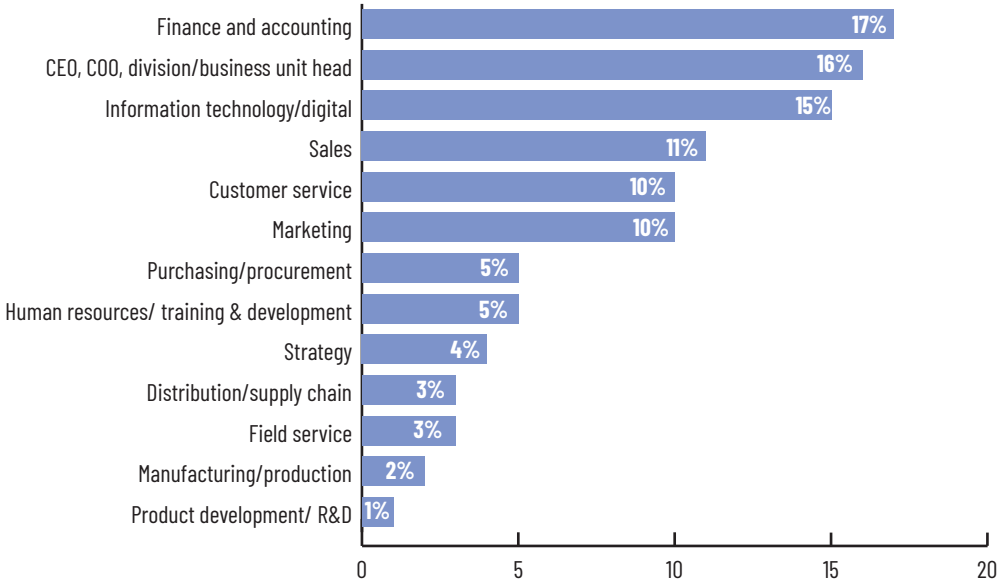


FIGURE 21

RESPONDENTS BY BUSINESS FUNCTION



Note: Percentage doesn't sum to 100% due to rounding.

ABOUT THE AUTHORS

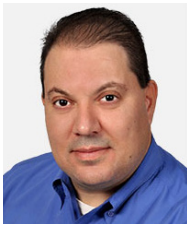
DEREK PERRY

Chief Technology Officer

In his role as Chief Technology Officer, Derek Perry oversees strategic service offering development and implementation for Sparq's clients.

Prior to his role with Sparq, Derek was the Director of the Quality Systems Business Solution and Manager at Clarkston Consulting. During his tenure at Clarkston Consulting, he was responsible for delivery consistency, methodology development, and service offering development.

Previously, Derek worked in the pharmaceutical, biotechnology, and consumer products industries. Within these verticals, he has deep knowledge of laboratory operations and automation, informatics, quality management and manufacturing operations. Derek is a graduate of Georgia Tech, where he earned a B.S. in Computer Science.



ZAIN NABOULSI

Senior AI Engineer

Zain is a Senior AI Engineer and SQL Developer, where he leads multidisciplinary AI-focused projects. With a talent for configuring and deploying generative AI models, Zain is an expert in advanced prompt engineering, a discipline critical to building high-performance generative AI systems.

Before joining Sparq, Zain was a Lead Systems Architect at Cheetah Transportation, Chief Technologist & Founder at Drone Labs LLC and Senior Developer Evangelist at Microsoft.

Zain has a B.S. degree in Psychology from Southwest Texas State University and holds a number of certifications including Azure Data Science Associate, Azure AI Engineer Associate, Azure Data Engineer Associate and AWS Machine Learning Specialty.

IAN FOX

Director of Digital Engineering

As Director of Digital Engineering, Ian Fox drives the company's software product engineering strategy. This includes expanding Sparq's service offerings and capabilities, based on tech trends, business needs and vertical alignment requirements. In this role, Ian is responsible for elevating the voice of engineering within delivery and account management, and providing a clear technical escalation path.

Previously, Ian was Vice President of Delivery at Centare, a digital business and technology consultancy, before its acquisition by Sparq. Ian has a passion for solving business problems through technology and has taken advisory roles on client engagements across industries to help teams and clients deliver world-class software products.

Ian has an Associate Degree in Applied Science, IT-Programmer/Analyst from Waukesha County Technical College.

INGRID CURTIS

President

As President, Ingrid is responsible for driving collaboration across Sparq to deliver industry-leading digital solutions and unique and valuable client and colleague experiences. In this role, she oversees the firm's consulting delivery team and drives services strategy through acquisitions and the development of new capabilities. Her leadership has been pivotal in cementing Sparq's reputation as a leader in digital engineering and product development, successfully blending technology with customer-centric solutions. Under her guidance, Sparq has consistently delivered transformative results to clients across industries via a strong team located throughout the U.S. and Latin America.

Ingrid's dedication to fostering a nurturing and inclusive workplace culture is evidenced by her role as the Executive Sponsor of Sparq's Equity, Inclusion & Diversity (EI&D) efforts. This underscores her commitment to creating an environment of belonging and respect, not just within Sparq but also in its interactions with clients and the broader community.

Prior to joining Sparq, Ingrid honed her technology transformation skills at Clarkston Consulting, specializing in the healthcare and life sciences sectors. There, she led global teams, demonstrating her expertise in managing complex, cross-border projects and an ability to drive change in fast-paced, high-stakes environments.

Ingrid is a proud alumna of Babson College, where she earned a Bachelor of Science in Business Management.

SCOTT MONNIG

Chief Client Officer

As Chief Client Officer, Scott is responsible for one of Spaq's core values, "Change the Experience." In this role, Scott works across the company's sales, sales engineering and delivery teams to ensure common practices and drive rigor that results in excellent client outcomes.

With 30-plus years of hands-on technology leadership experience, Scott has led high-performing teams, technology groups, and business divisions through dozens of enterprise systems development and digital innovation initiatives. He has also led organizational transformation engagements across industries that pivot around cloud computing, using the Agile and DevOps methodologies to address clients' rapidly growing digital demands.

Scott is a graduate of the University of Missouri, where he earned a B.S. in Computer Science.

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