

To benefit from advanced analytics, companies must address staffing, infrastructure, and data preparation.

AI-based data analytics enable business insight



Remember buying music on CDs? Or even vinyl? From the consumer perspective, the shift to streaming services provides a limitless selection of content that we can access on all of our devices. For the music industry, it creates tremendous opportunities to collect, analyze, and monetize data about our listening habits.

That was the directive SK Sharma was given in 2016, when he was hired as chief analytics and AI officer by Ingrooves Music Group, which provides global music distribution and marketing to indie artists. “The idea is,” he says, “in a very crowded music marketplace, how can we make certain kinds of content, particularly with respect to indie artists, stand out.” Making use of consumer data is “the crux of our business,” says Sharma, “and that’s what necessitates using predictive analytics and really being able to judiciously use the information that we have.”

For Sharma, that meant starting from scratch, assembling a team of data scientists and building an AI pipeline. Sharma and his team then created a “smart audience platform” that puts ads touting an artist’s latest release in front of listeners who are most likely to engage with that artist.

The music industry might not be the first business case that comes to mind for AI and data analytics. Yet AI-based data analytics can have a transformative impact in any industry and across a wide range of use cases.

Why companies need advanced data analytics

Most organizations today are drowning in data. They collect it for regulatory and compliance reasons, and they also archive additional data with the expectation that someday it will come in handy.

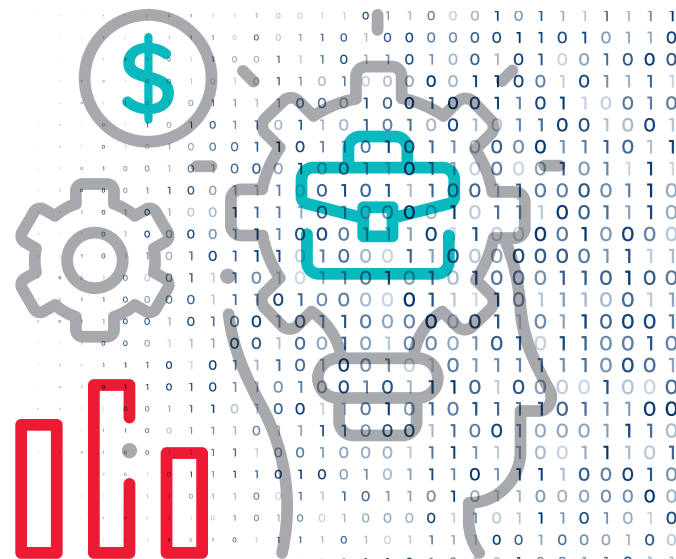
Companies are having an “aha moment” – realizing that AI-based data analytics can deliver real business value from their collected data that provides a competitive edge.

Key takeaways

- 1 The use of AI-based data analytics is becoming a competitive imperative for leading organizations. Unique business-specific use cases are helping organizations across industries derive value from their collected data.
- 2 Rather than attempt an “AI for everything” approach, organizations new to advanced analytics can begin by identifying a specific problem of fundamental business importance to address with data.
- 3 The process of incorporating AI into an organization will also address staffing, data preparation, data platform, and IT infrastructure. A key decision is whether to deploy analytics in the cloud or on premises.

That day has arrived. Or as Jason Hardy, global CTO at Hitachi Vantara, puts it, companies are having an “aha moment” – realizing that AI-based data analytics can deliver real business value from their collected data that provides a competitive edge.

He adds, “Traditionally, companies were saying, ‘Just archive it and we’ll figure out what to do with it later.’ That’s turned into a ‘No, this actually impacts us now; we need to be able to read that data in real time and process and infer against it.’”



This has become true across industries. In manufacturing, better analytics can improve yield, reduce waste, and increase efficiency. In consumer-focused businesses, AI can detect the emotional responses of customers to specific product placements or measure satisfaction with customer service. In industries that rely on a supply chain, AI can predict and mitigate faults in the supply chain before they occur.

Hardy adds, “We’re seeing customers who say, ‘I’ve got to jump on this AI bandwagon. I’ve got to figure this out. I need a platform to help me do that, whether it’s in the cloud or on-prem or a combination of both.’”

Unfortunately, most organizations don’t know where to start. Hardy says C-level executives tell him, “We want to use AI and machine learning. We want to use our data. We want to create value from it. We actually don’t know how. We don’t even know the question we’re trying to answer.”

Getting started with AI-based data analytics

Successful implementation of AI-based data analytics begins with a commitment from executive leadership and a thoughtful planning effort. Collaboration between data scientists, business leaders, IT infrastructure teams, data governance people, and data engineers is key.

It can’t be a skunkworks project. “Collaboration matters a ton,” says Mike Leone, senior analyst at Enterprise Strategy Group (ESG). “You need to have teams communicating on an ongoing basis. You want everybody in the room agreeing on things as early as possible and continuing that level of communication and collaboration throughout the AI initiative.”

For many organizations, the first step is hiring data scientists, which can be a difficult task. These professionals are in short supply and are also highly paid, so companies need to understand that building a team might take time. As well, launching a data initiative can expose skills gaps in other areas of the company, such as data engineering or IT. Plugging these gaps can sidetrack the project long before the data analytics can begin to yield results.

Then, before any analytic work can begin, the data needs to be ready. Leone says companies are finding that data quality is a huge issue: they must transform the data to the proper format, prepare the data, and integrate it into a



Industry-specific AI use cases

As AI-based data analytics moves from hypothetical to mainstream, important use cases are emerging in every industry.

Finance: AI is being used for fraud detection and fraud prevention.

Retail: AI can be used for personalization, for recommendation engines, to measure customer experience, to analyze product placement, and for chat bots on retail websites.

Insurance: AI-based systems can deliver data-driven features like real-time underwriting and credit approval.

E-commerce: AI-powered dynamic pricing enables companies to adjust pricing on the fly, based on factors like demand or inventory.

Manufacturing and industrial: AI-based systems can predict potential failures, identify inefficiencies, improve processes, boost quality, and automate operations.

Autonomous vehicles: Self-driving cars generate vast amounts of data for analytics, some of which needs to be acted on in real time and some of which needs to be archived for regulatory reasons.

Supply chain: AI-based systems can predict shortages before they occur, enabling companies to deploy backup plans.

data lake or some other type of centralized repository. And that's before the organization even gets to the nitty-gritty data science tasks of modeling, training, hyperparameter tuning, feature engineering, and the like.

Sharma describes the data preparation process at Ingrooves: "Early on in the journey it was about taking this treasure trove of data [from Spotify, Apple, and others], having a single source of truth, having a data dictionary, making sure it was properly labeled, and ensuring the integrity of that data, first and foremost, before we moved it downstream in any sort of predictive analytics workflow."

Next, organizations need to get their data platform and underlying infrastructure in order. To move from siloes of archived data to AI-based analytics, organizations need a data analytics and data management platform that can scale up quickly as the company's data analytics efforts become more widely adopted.

Another "gotcha" that companies might not anticipate is lack of maturity in their core IT infrastructure. Companies are finding that they need more compute power, more storage, and faster networking to process massive amounts of data. "Modernizing infrastructure to address the scale and performance demands is a big deal in AI," says Leone. "Frankly, a lot of the legacy infrastructure can't keep up. Organizations need to make new investments, whether it's in cloud infrastructure or it's in on-premises infrastructure."

Organizations also need to put the right workflows and tooling in place. Leone notes that one of the biggest hurdles facing data science teams is taking the leap from testing to deployment: once an AI model has been created,

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organizations often struggle to operationalize it and put it into production. He recommends that organizations make sure they have process in place for the entire AI lifecycle and check that everything is optimized and properly tuned.

Implementation decision points

Companies planning to deploy AI-based data analytics at scale need to make many decisions, but these two are key: Deploy in the cloud or on-premises? And rely on in-house expertise or seek third-party help?

If quickly getting models up and running is the top criterion, then a cloud-based AI analytics platform is the way to go, says Leone. The cloud providers are "working really hard to make it as easy as possible, to simplify the experience," he says. "They're offering managed services, they're offering pre-trained models, they're offering all these tools and technologies and consultative services to support organizations in the early stages."

But as companies scale up their advanced analytics, they reach a tipping point. Models become more complex. Those models start to incorporate more data. And moving that increasing volume of data back and forth from the cloud becomes too expensive.

When companies expand their AI-based activities, they also may begin to incorporate types of data that need to be processed on premises, such as IoT data, security



36%

of organizations are experiencing a problematic shortage of AI and machine learning skills

Source: 2022 Technology Spending Intentions Survey, ESG Research

camera footage, or any type of video-based analytics. Particularly in cases of time-sensitive insights, working on premises may be essential. “It doesn’t make a ton of sense to be collecting all that real-time data, throwing it up to the cloud, and inserting a level of latency, when you want to be able to have a real-time reaction to something that will really make a difference,” explains Leone.

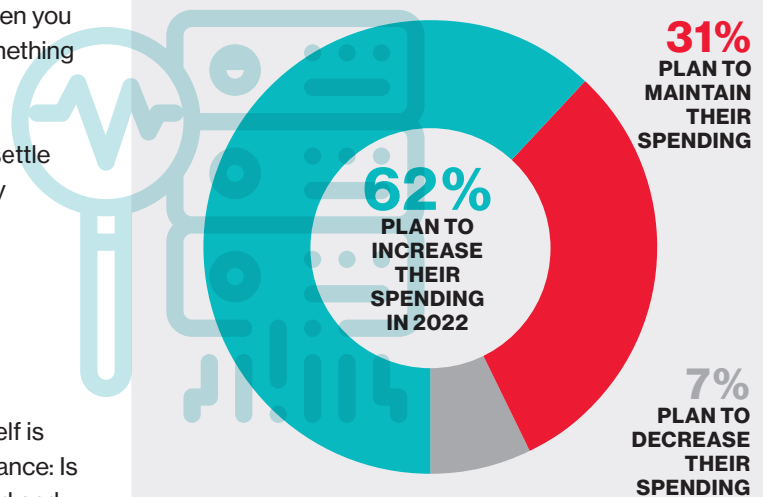
At a certain point, many companies may come to settle on a hybrid model: certain types of data are initially processed as close as possible to where they are generated, while less time-sensitive data can be processed in the cloud.

As companies gain a measure of experience and confidence in their ability to handle analytics, they may also realize that having control of the data itself is beneficial. Leone says, “Organizations have to balance: Is it more important to have the simplicity of the cloud and pay for it, or is it more important to have more control and a little more cost effectiveness by managing it ourselves, in our on-premises environment?”

The second key choice organizations must make is whether to build their AI-based data analytics program solely from in-house expertise or whether to also seek third-party help or solutions. Do-it-yourself approaches may appeal to organizations seeking to build out their own data science expertise for the long term, but finding the necessary talent is a challenge.

In an ESG survey of IT leaders, 36% of organizations reported experiencing a problematic shortage of AI and machine learning skills. “So in more than one in three organizations, IT is being pushed to leverage AI and provide infrastructure to data science teams and line of businesses to support AI initiatives, but they don’t have the skills on staff to support it,” says Leone. Technology partners who can supply guidance – or even pre-made

Organizational investment in AI and machine learning is booming



Source: 2022 Technology Spending Intentions Survey, ESG Research

solutions – alongside a platform or infrastructure can help fill the gap.

When organizations look to partner with these technology providers, they often can benefit from highly specialized solutions that focus on a single industry or use case. Leone describes “hundreds of industry-specific AI partners” that understand the unique challenges and requirements of a certain business, whether that’s retail or manufacturing or banking, that “absolutely can help organizations get started with confidence.”

Lessons learned for analytics

Ready to launch your own AI-based data analytics project? Veterans of similar initiatives have several key recommendations for how to proceed.

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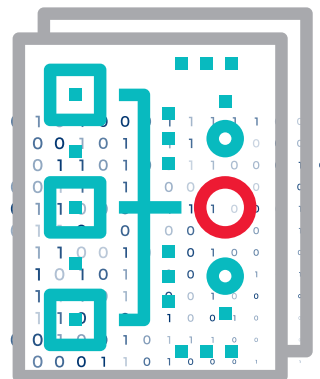
- **Focus on business outcomes.** Sharma says his approach was quite strategic: “We first said, ‘These are things that are of fundamental business importance. These are problems we can solve. Let’s find creative ways to solve these problems using analytics and AI.’ This is as opposed to ‘I want to use AI for everything under the sun.’”
- **Start small.** Pick a high-value project that has a good probability of succeeding and delivering a measurable benefit to the business. Hardy uses the term “minimum viable product” to describe an initial analytics effort designed to show quick results and act as a springboard for future initiatives. “It doesn’t have to show 100% value,” he explains. “It just has to show that we’re starting to get a better picture and then going from there.”
- **Fail fast.** Everyone wants their early projects to succeed, but failing fast on an AI project can be almost as valuable. “Companies need to learn from failures,” says Leone. “Maybe it was the wrong data set, maybe the infrastructure was unable to scale, maybe more business context was called for.” In those cases, changing direction quickly is important: the last thing you want to do is waste six months on a project that doesn’t deliver results.
- **Take it to the next level.** Once organizations get some wins under their belt, they can move from addressing a single, isolated business question to a more complex, sophisticated analytics process. Hardy says, “We’re now seeing different AI modeling methodologies being used simultaneously against the same data sets to infer a larger result, and then feeding that into different outcomes.” In addition, organizations are now combining data sets from different sources, such as IoT devices and video cameras, for advanced data analytics. “We’re seeing a lot of different approaches to solving bigger questions,” Hardy adds.

Critically, an organization’s use of AI-based data analytics should be rooted in a clear business problem. When this is true, introducing advanced analytics becomes a transformational endeavor that permeates every aspect of the business and requires support and collaboration from every level.

As Sharma puts it, “Instead of saying, ‘We have a data scientist,’ you should be able to say, ‘We have a set of unique business problems that don’t appear to be solvable with our current thinking. So, we need to think differently. We need to hire differently.’ That methodical, strategic approach to changing your data strategy, changing your analytics and AI strategy, is very important.”

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SK Sharma, chief analytics and AI officer, Ingrooves Music Group



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