



Digital Business

Through Thick and Thin: Making AI Work in the Real World

Organizations aren't just talking about artificial intelligence. They're using ethnographic tools to create human-centered algorithms – and the new context is making a difference.

Executive Summary

Algorithms have been essential to business since long before artificial intelligence (AI). In fact, algorithms are merely the digital representations of the competitive differentiators built into every business. A retailer's focus on low price is an algorithm. So is a manufacturer's practice of sourcing top-quality raw materials, or an insurer's ability to expedite policyholders' claims faster than its competitors.

AI algorithms are the digitized versions of those differentiators. They rely on complex uses of data and modeling, but at their core, they translate what already

makes a company tick. Their advantage is that they can identify strengths and opportunities that companies aren't even aware of. What's more, AI algorithms can deepen expertise that's already there, and generate new ways to take it further.

Yet for all their power, algorithms depend on human insight. Without it, AI is just technology.

In this white paper, we profile three companies that are putting human insight to work in AI algorithms designed to grow their businesses. By using ethnographic research – or what we call thick data – these companies are

blending human science and data science to make core business processes smarter and improve customers' lives:

- A financial services company is redefining how it engages with prospects to reinvigorate corporate credit card sales.
- A European energy company is changing the nature of its customer relationships and ramping up to expand its roster of services.

- A theme park is piloting new ways to interact with guests, with the intent of boosting ticket and merchandise sales.

In addition to highlighting their experiences, we also provide recommendations for how any organization can bring its own algorithms to life through technology, organizational, cultural and business processes.

Converting algorithms into customers

Perhaps nowhere are algorithms more important than when it comes to customers. The people who buy products and services are a fundamental part of a business's competitive differentiation.

The main avenue to understanding customers has traditionally been straightforward: Ask them what they want. But while this might seem like a logical step, it's flawed in several important ways. For one thing, it's expensive. U.S. companies spend \$46 billion annually asking people what they want, according to trade group ESOMAR.¹

For another, market research doesn't always reveal the information that companies are looking for. Survey respondents aren't necessarily willing or able to articulate their needs and motivations. After all, how much affection can a consumer really express for laundry detergent?² Perhaps even worse, market research often views data as isolated points, completely overlooking the causalities.

AI helps connect the dots. But while it's true that big data feeds the algorithms that shape customer

insight, data is only part of the equation. The first step is understanding the problem. Too often, organizations under-invest in the upfront problem statements and qualitative research that offers context.

Context is the job of ethnographic research. Rooted in observation rather than survey responses, ethnography bypasses the hurdles of traditional market research. By adding human insight to the data mix, ethnographic research produces what we call thick data.

Thick data brings the human touch to big data. It fills in the details and becomes a way to frame questions and theories. With human-centric research in hand, organizations can then use big data to scale their ability to address customer issues. That sequence of steps — thick data first, big data second — is crucial. (For more on engaging with customers, see *Sensemaking: The Power of the Humanities in the Age of the Algorithm*.³)

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How AI is making a difference

AI's commercial success depends on the ability of thick data to create intelligent, contextual and human-centric algorithms.

So far, creating these algorithms has been a challenge for organizations. This reality is reflected in our recent research study, which revealed a disconnect between executives' optimism about AI and actual AI implementations: While two-thirds of executives are aware of AI projects at their company, only 15% know of any fully implemented

AI initiatives. (For more details, read our research report "[Making AI Responsible and Effective](#)."⁴) Thick data can help close that implementation gap by ensuring algorithms are grounded and reflective of the real world.

Here are three examples of how companies are realizing success with AI by first identifying the business algorithms that make their organizations tick, and then developing the technology algorithms that support them.



#1 Getting to yes: finding a better way to target customers

After years of successfully marketing its credit cards to small and medium-sized companies, one of our financial services clients saw card offer acceptance begin to decline. Committed to reversing the drop-off and boosting conversion, the company partnered with us to learn more about the reasons for the decline. With new insight into what motivates prospects to sign on for a new card, the company is altering its sales algorithms to trigger next best actions in new ways.

Our team recommended learning more about the small-business owners who are prospective

customers. What are their buying needs? When are they most receptive to offers? We devised a field study in which we interviewed 20 representative clients in the New York City area in a variety of industries. Some were cardholders, and some weren't. Annual revenues ranged from \$50,000 to \$4 million, and none employed more than a dozen workers.

During our site visits, we found hardworking, hands-on small-business owners who delegate few decisions – including the selection of a company credit card. Most manage their own finances.

Instead of aggregating data about small businesses and taking its cues from details such as annual revenue and industry segment, the company is restructuring its unified view around the business owners. It's preparing to deploy technology algorithms informed by the nuances of the people who buy its products.

Perhaps most surprising, particularly in our tap-and-swipe era, was that because the business owners typically partner with local bankers for loans and lines of credit, the telephone is their preferred mode of communication for discussing financial services.

What's more, the owners revealed that telephone offers often play a role in their ultimate decision to sign up for credit cards, even if they don't immediately accept them. To the owners' way of thinking, phone calls are more productive than direct mail, and efficient conversations better than lengthy ones.

It's a counterintuitive finding in the digital age — and critical to our client's sales strategy. For this client, it's important to factor the telephone preference into its core algorithms, along with the discovery that the key decision makers for corporate credit cards are the business owners.

By carefully building hypotheses and then translating them into data proxies to improve the

existing targeting model, the company expects to sharpen its target list and the timing of its card offers.

The new engagement model will identify the interaction points likely to be most successful. What are the conditions under which they'll take an offer? All of that information will now be fed into its algorithms.

How AI is making a difference: The client's use of AI is enabling it to redefine how it engages with prospects. Social science uncovered the need to make more strategic use of its target market's preferred channel: the telephone. Now the client is revamping its customer 360 efforts — and putting people firmly at the center. Instead of aggregating data about small businesses and taking its cues from details such as annual revenue and industry segment, the company is restructuring its unified view around the business owners. It's preparing to deploy technology algorithms informed by the nuances of the people who buy its products.



By integrating multiple data sets – energy consumption, customer profile, contact center logs – our team created an AI algorithm that indexes customers based on details such as usage. Now, instead of engaging with customers around problems, the algorithm engages with them around goals such as reducing carbon footprint and lowering energy costs.



#2 Beyond billing: a power company sparks new connections with customers

Utility customer experiences are typically pragmatic: Customers pay a monthly bill and get a service – no upgrades, no loyalty programs, no perks. Now, however, a European energy company is using AI to upend that model. With an eye toward new services and channels, it's changing the nature of the way it connects with utility customers.

The company's initial reason for partnering with our team was more prosaic: Its call center was sagging under the weight of incoming customer calls, most of which were billing queries. Customer satisfaction was low. Net promoter scores were dismal. Given the rise of new options in the energy sector, the company sought a fresh, more positive way to engage with customers and grow its business.

Our team set out to learn more about the customers who dial into the company's call center. We reviewed field notes and spent hours shadowing call center staff, listening in on calls. We invited several call center customers to engage in extended interviews that were over two hours' long, and included wide-ranging questions about their lives and homes. We hosted a workshop with call center staff and conducted one-on-one interviews to further explore the customer experience.

From that research emerged a new way for the company to view its business: Rather than connecting with customers around billing issues, the energy company could shift its focus to their residences. In the new engagement model, the customer is the *home*.

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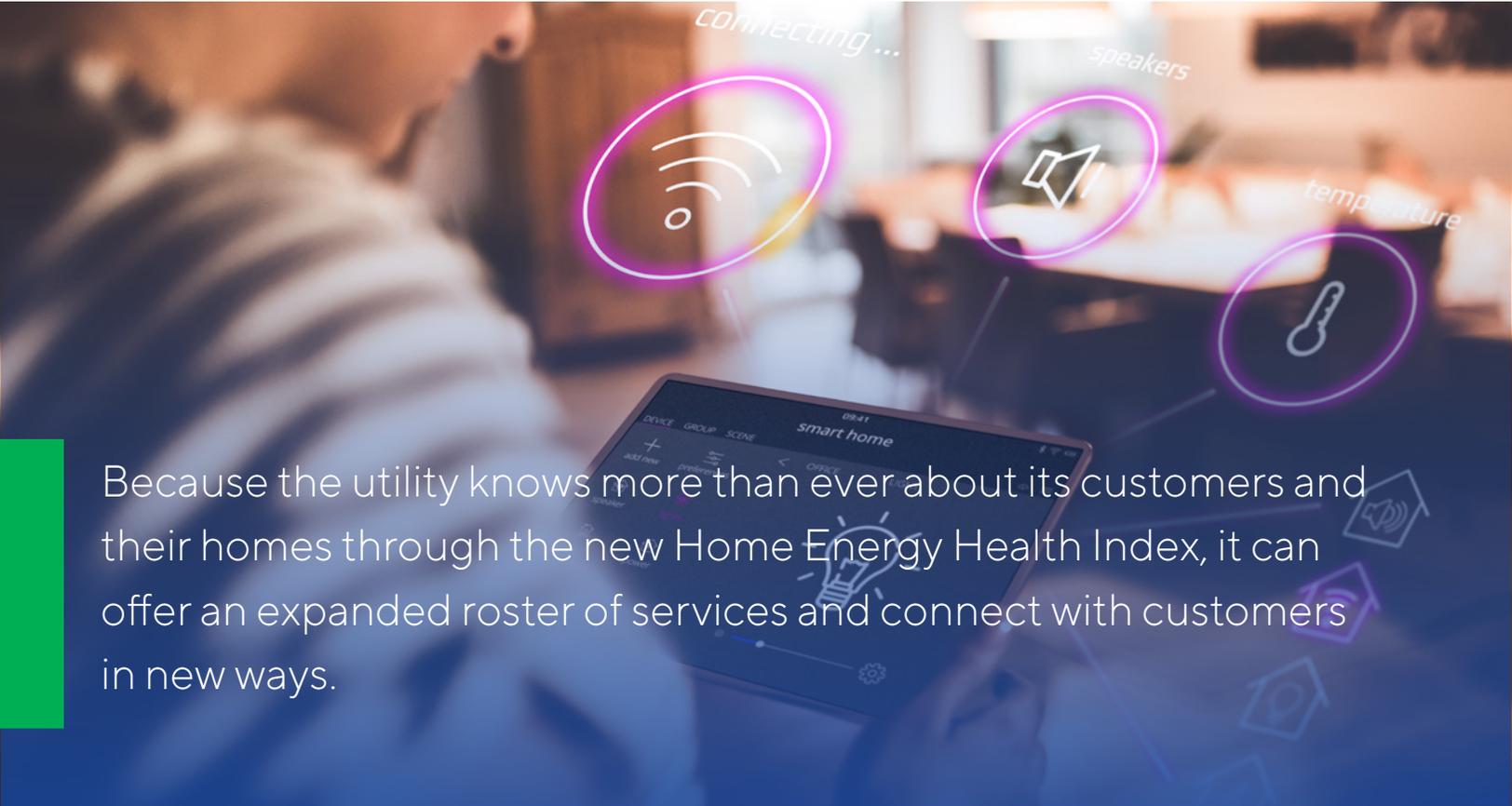
The new index, called the Home Energy Health Index, relies on algorithmic targeting and data from the company's smart meters, which monitor customers' energy usage. It positions the company for proactive connections with customers around energy. For example, one type of connection is customers' peace of mind from their utilities running problem-free in the background. Another might be serving as a source of expert advice for alternative energy options. The index offers the positive connection with customers the company is looking for.

Because most utilities are new to the idea of customer experience, there's plenty of room for customer goodwill. For example, like all energy companies, our client's services provide an entry point to home improvement and construction, and the index will enable the company to proactively target consumers who are remodeling or building new homes.

Among the internal issues the new algorithm raised was the company's lack of tools to effectively use the large data volumes now available. An internal audit of the company's existing CRM system led to improvements that will enable it to connect the customer experience across the enterprise and build an environment ready for model testing. To eliminate information silos, the business deployed a master single view of the customer.

As the company transitions to the new engagement model, it's navigating the operational and change management issues that accompany the shift. (For more on AI-related change management, see Quick Take, next page.) Instead of operating as a generic utility, it can now instigate an active partnership with customers.

How AI is making a difference: At first glance, the energy company's AI approach seems contrary to a human-centric strategy: It's targeting homes, not people, as customers. Yet that shift in the company's engagement model moves it closer to energy buyers. Because the utility knows more than ever about its customers and their homes through the new Home Energy Health Index, it can offer an expanded roster of services and connect with customers in new ways. Future applications for the algorithms it's developing include AI-based services and new communication channels such as chatbots.



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Quick Take

Believing in Algorithms

The transition from algorithm to action is AI's last-mile challenge. It's here that corporate culture and change management play central roles.

For many organizations, believing in AI algorithms doesn't come easily. When algorithms return unexpected results, they can run headlong into established assumptions and practices. For example, revealing an unanticipated customer demographic, or a pattern among approvals or denials for loans or bank accounts, can meet with a skeptical reception among employees. Algorithms sometimes run counter to gut instinct and skills that employees see as their greatest value to the organization.

In data-driven environments, employee skepticism can lead to AI adoption problems, especially among highly trained professionals. How do healthcare organizations get physicians to trust an algorithm over intuition and conventional thinking? It's not an easy problem to solve. How do you present information derived from algorithms so it's actionable and trustworthy? If an algorithm is 60% certain an individual won't follow the prescribed treatment, will raising the level of certainty to 90% boost adoption among clinicians? (For more on the role of transparency trust and personalization in AI, read our report "[AI: Ready for Business.](#)"⁵)

As organizations use AI to refine their algorithms and make significant shifts in their business models, planning for potential resistance is a key task for all leaders.





#3 Upping the ante for theme park fun

Excitement is built into the thrills, chills and bottom lines of any theme park. When a regional theme park adjacent to a luxury resort sought to boost ticket and merchandise sales, it needed to know more about what motivates park-goers to visit its site. How do they experience the visit? How do they take it with them when they leave?

Our team of social scientists spent a day at the park, meeting with several dozen guests who had arrived in various configurations: as families, couples and groups of friends. Some were first-time visitors, others were park veterans. Together, we went on rides, shopped and ate.

Our team filled 200 pages with field notes and snapped 2,000 photographs. To further document the experience and gain more insight into how memories are shared, we had secured permission in advance from our study group to monitor their post-park emails, social networking posts, tweets and pins.

After the site visit, our team combined the thick data we had gathered with other data sources. We drew on third-party demographic data as well as the park's transactional data, including previous purchases. In addition, we reviewed data collected through visitors' wristbands that tracked their journey through the site and its amenities.

Through the combination of big data and thick data, we gained a greater understanding of park-goers' behavior. Our teams identified three visitor needs the theme park could deliver on. For each need, we created an index, suggested pilots and developed a set of key performance indicators (KPIs):

1. **Get closer.** Along with having fun, the main reason people visit the park is to spend time with each other. Our algorithms led to development of the Bonding Index, which measures the park's ability to deliver on core group needs. That is, what opportunities do park-goers have to spend time with their group? Focus on the Bonding Index has sparked ideas for pilots that range from social competitions on simulators, to mapping out park routes for roller coaster rookies.
2. **Find greater balance.** While a day at the park is a high-energy experience, every park knows visitors need a space to rest and regroup. To help our client better tune into and serve visitors' energy swings during the day, we created the Mood Index, an algorithm that led to suggested pilots for optimizing queues and designing more attractive oases.

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3. **Get real.** What additional amenities and services will effectively capitalize on visitors' enthusiasm? The Depth Index offers a yardstick for deepening experiences with retail, activities, and food and beverage opportunities.

How AI is making a difference: The client's projected outcomes include a 100% targeted increase in footfall in four years. It plans to implement real-time monitoring of ticket sales, merchandise purchases and custom promotions. The park also created a customer intelligence platform to integrate the customer journey and deliver more contextual insights. It projects that the increased spending by repeat clients and expanded merchandise sales will deliver higher value per visit.



Looking ahead

What are the algorithms that make your business tick? How does applying human insight make a difference to these algorithms? Here's how your organization can begin to strike the right balance of big data and thick data to ensure the success of your AI initiatives.

1. **View all your company's challenges through a human-centric lens.** Every business function and challenge starts in some way with people. For some functions – customer experience and marketing – the human elements are obvious. But does the people angle matter for areas like back-office and operational capabilities? We hear this question a lot. The answer is that every corporate function can be viewed through a human-centric lens. For example, a supply chain is about employees who perform subprocesses such as demand management and fulfillment. What behaviors influence their reactions to demand problems? Knowing the answer can change the solutions that companies choose. AI, analytics and data are problem-solving standouts. But the first step to addressing corporate issues is always to apply ethnographic and behavioral science tools.
2. **Explore whether additional context will boost your organization's return on investment in big data.** Big data projects that fall short of delivering real change often share the same underlying flaw: The companies continue to mine data in the same ways they always have – just more of it. New insights demand new context. In analytics, the rule is this: the better the context, the sharper the analysis.
3. **Revisit the problems you're trying to solve.** Are you going after the right problems? Are there metrics that are essential to your business that you haven't yet discovered? The theme park's initial problem statement identified the need for additional marketing to promote merchandise sales and increase revenue per visitor. A closer look at the problem, however, revealed that the metrics impacting the park's growth weren't related to marketing. Your company can make similar course corrections in its AI algorithms by taking the time to examine whether the metric you want to improve is the right one.

Endnotes

- ¹ “Global Market Research Industry Worth \$76 Billion,” Research Live, Oct. 10, 2018, www.research-live.com/article/news/global-market-research-industry-worth-76bn/id/5044652.
- ² Ken Faro and Elie Ohana, “The Big Data Problem that Market Research Must Fix,” MIT Sloan Management Review, Oct. 4, 2018, <https://sloanreview.mit.edu/article/the-big-data-problem-that-market-research-must-fix/>.
- ³ Christian Madsbjerg, *Sensemaking: The Power of the Humanities in the Age of the Algorithm*, Hachette Books, 2017, www.amazon.com/Sensemaking-Power-Humanities-Age-Algorithm/dp/031639324X.
- ⁴ “Making AI Responsible – and Effective,” Cognizant, 2018, www.cognizant.com/whitepapers/making-ai-responsible-and-effective-codex3974.pdf.
- ⁵ “AI: Ready for Business,” Cognizant, July 2018, www.cognizant.com/whitepapers/ai-ready-for-business-codex3752.pdf.

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Badhrinath Krishnamoorthy (Badhri) is a Global Business Leader in Cognizant’s Artificial Intelligence & Analytics business unit. In this role, he drives strategic initiatives, business growth and key client and partner relationships. His focus areas include providing advice to business leaders in the transformation journey, creating innovative next-generation AI and analytics solutions that can deliver business value to clients, and building thought leadership in the AI & analytics domain.

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