Applying AI to Business: A Guide to Information Sources

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There is growing consensus, backed by recent surveys, that the biggest challenges in applying AI to business have little to do with the algorithmic technologies themselves. They have proven to be extremely powerful.

Rather, implementation challenges are far more likely related to data issues and an array of organizational considerations. These include:

- Data quality, missing data and difficulty integrating data housed across disparate systems.
- Project risks, including those related to cybersecurity (e.g., hacking, fooling face-recognition systems), data privacy and model bias (e.g., credit risk algorithms that unwittingly penalize certain groups).
- Difficulties recruiting data scientists and other technical experts, and questions about how to organize and manage them (e.g., in centers of excellence or within lines of business).
- How to get started: type and scope of pilot projects.
- How, when and where to involve line-of-business leaders and other domain experts in AI projects.
- Measuring results, including ROI (return on investment) and KPIs (key performance indicators).
- A host of change management issues, ranging from new job roles to reworked business processes.
- Operationalizing AI models—how they are deployed, maintained and fine-tuned over time.
- Communications around much of the above, including how to explain complicated AI models to gain stakeholder acceptance.

In short, as with other transformative technologies, companies are finding that people and process challenges can easily surpass the technical ones.

To help you navigate AI implementation, below is a compendium of articles, research reports and other resources focused on the application of AI to the business world.

(Note that the term AI is used here in its broadest sense. It refers to any computer technique—including if/then-type computer logic, machine learning algorithms (e.g., regression models and decision trees) and neural networks—that aims to mimic human intelligence.)

The information sources below are broken down first by key AI repositories, followed by a list of ad hoc articles and reports. The key repositories are a good starting point for gaining understanding of AI

adoption issues. You can stay abreast of new developments by subscribing to their updates or following them on Twitter.

McKinsey

Brings its extensive research and analysis under an Analytics Insights landing page on its website. Follow on Twitter @McKAnalytics.

Notes from the AI Frontier: Insights from Hundreds of Use Cases (April 2018) is a comprehensive report on 400 business use cases, covering 19 industries and nine business functions. It sizes the macro-level financial opportunity by function and industry. A related interactive tool lets you explore the use cases, showing the most likely AI techniques by business objective.

Crossing the Frontier: How to Apply AI for Impact is a collection of about a dozen articles, including:

- Ten Red Flags Signaling Your Analytics Program Will Fail (May 2018).
- What AI Can and Can't Do (Yet) for Your Business (January 2018).

Wall Street Journal

The *WSJ* brings together timely AI-related articles (often company- or industry-specific) under a dedicated portal. Follow on Twitter @WSJProAI.

Notable articles:

- Models will Run the World (August 19, 2018).
- On Hold for 45 Minutes? It Might Be Your Secret Customer Score (November 1, 2018).
- Chief Artificial Intelligence Officers Enter the C-Suite (February 5, 2019).

MIT (Massachusetts Institute of Technology)

Follow the *MIT Technology Review* online or on Twitter @techreview. AI and data science articles are also published in MIT's general management publication, *MIT Sloan Management Review*.

Notable content:

- This Is Why AI Has Yet to Reshape Most Businesses (February 13, 2019). Looks at organizational, people and data issues slowing down AI adoption, especially at companies not expressly built around data capture and usage. "If companies don't stop and build connections between[disparate] systems, then machine learning will work on just some of their data. That explains why the most common uses of AI so far have involved business processes that are siloed but nonetheless have abundant data, such as computer security or fraud detection at banks."
- Artificial Intelligence in Business Gets Real (Fall 2018). Report on survey of over 3,000 business leaders globally, along with 36 in-depth interviews.

Other

- State of AI in the Enterprise, 2nd Edition from Deloitte (2018). Survey of 1,100 companies covers popular AI business goals, ROI measurement, adoption rates of different "cognitive" technologies, data security, ethical risks (e.g., algorithmic bias) and other implementation/change management challenges.

- Big Data and AI Executive Survey 2019 by NewVantage Partners, a consulting firm, finds significant corporate enthusiasm for AI, but mixed results in implementing. "Respondents clearly say that technology isn't the problem—people and (to a lesser extent) processes are.… Yet we would guess with high confidence that the great majority of spending on big data and AI goes for technology and its development. We hear little about initiatives devoted to changing human attitudes and behaviors around data. " Among factors working against successful adoption are: lack of organizational alignment/agility (cited as top factor by 40%), cultural resistance (24%), understanding of data as an asset (14%) and executive leadership (7%). Only 5% cite technology as the top challenge.

- How to Choose Your First AI Project (February 6, 2019) from the *Harvard Business Review*, authored by Andrew Ng, former leader of Baidu and Google AI units and a pioneer in online AI learning. Follow Ng on Twitter @AndrewYNg.

- Let Curiosity Drive: Fostering Innovation in Data Science (January 18, 2019) from Chief Algorithms Officer at Stitch Fix, the online personalized fashion retailer. "The real value of data science lies not in making existing processes incrementally more efficient but rather in the creation of new algorithmic capabilities that enable step-function changes in value.…[T]wo things—low cost exploration and empirical evidence—set data science apart from other business functions."

- Podcasts sponsored by DataCamp, which offers online data science training, often cover company-, industry- and implementation-specific topics (in addition to technical ones). See this schema for different data science organizational models discussed on the Decision Intelligence and Data Science Podcast (October 22, 2018) with Google Cloud's chief decision scientist.