



I D C A N A L Y S T C O N N E C T I O N



Dave Schubmehl

Research Director, Cognitive Systems and Content Analytics



Greg Girard

Program Director, Omni-Channel Retail Analytics Strategies

Cognitive Commerce in B2B Marketing and Sales

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Advances in information technologies are thrusting all domains of human activity — commercial, industrial, agricultural, health, and education, to name a few — into an era of cognitive systems. Cognitive computing is distinguished by the ability to replicate three core characteristics of human thinking. These systems understand their environments (physical, economic, political, or commercial), reason from myriad causes through complex effects and implications to recommend actions, and in each cycle of understanding and reasoning improve performance by learning from their experience. IDC believes that within a decade a majority of commercial applications will be enhanced by cognitive capabilities.

On behalf of its line-of-business and IT executive customers, IBM addressed the following questions to Dave Schubmehl, IDC research director for Cognitive Systems and Content Analytics, and Greg Girard, IDC program director for Omni-Channel Retail Analytics.

Q. Let's start simply: What is cognitive computing? More specifically, what is cognitive commerce?

A. Cognitive computing is a broad term. It typically refers to how various advanced computing capabilities can be brought together to ingest high volumes of structured and unstructured data from a variety of internal and external sources, understand what the data means in the particular business context, and reason through the data to predict outcomes and prescribe actions. Cognitive software supports human decision making with more accuracy, confidence, speed, and agility based on broader and deeper bodies of evidence applied to a more comprehensive view of pertinent conditions without bias. Machine learning is central to cognitive computing. It simply means that the software adjusts its algorithms based on the outcomes of its recent efforts to successively improve its understanding, reasoning, predicting, and prescribing capabilities under more varied conditions. Learning enables

another distinguishing capability — the ability to perform a task the software has not been explicitly programmed to perform.

Traditional enterprise databases (e.g., sales, orders, and customers) and third-party databases (e.g., geolocation attributes of mobile phone calls and motor vehicles and atmospheric pressure and temperature) provide structured data. Unstructured data includes call center notes and recordings, customer emails, social media streams, published news, weather reports and forecasts, and videos of warehouse showrooms, as well as images, product descriptions, legal documents, performance reviews, and customer ratings and reviews.

The term "data lakes" is coming into vogue to describe the amassing volumes of unstructured data in the digital universe. IDC estimates that this universe is growing at 40% per year to reach 44ZB or 44 million gigabytes by 2020, a tenfold increase over 2013. These shocking, mind-numbing numbers replace the old metaphor of data firehoses with whitewater data rapids.

Cognitive solutions commonly consist of one or more advanced technologies, including natural language processing, machine learning, video analysis, image analysis, speech recognition, and natural language generation or expression. These capabilities can be expressed in services such as dialogue management, concept identification, and trade-off measurement. Decomposing unstructured data into attributes or components, discovering foundational concepts and relationships among them, and combining these elements are other key aspects of cognitive computing.

Cognitive commerce refers to any commerce business process that has been enabled by one or more of these characteristics and capabilities of cognitive computing. The application of cognitive capabilities in commerce can augment the performance of existing commerce technologies and systems or enable new technologies and systems to automate today's manual decisions, actions, and processes. Ingesting and understanding the implications of economic news and social media streams can reduce errors in demand and sales forecasting — an example of augmenting existing commerce applications. Evaluating how customers and prospects will react to advertising copy, scoring the tone of alternative copy, and composing personalized copy for an individual or customer segments are good examples of cognitive solutions automating and improving what are essentially manual tasks today.

Q. How would cognitive commerce improve a company's ecommerce performance — in what kinds of use cases exactly?

A. While it's still early days for cognitive commerce, we're seeing a number of use cases emerge in marketing, sales, and customer service. A few will illustrate the breadth and power of future cognitive commerce business processes.

Customer-facing expert advisors will support product, service, and vendor selection and configuration in fields as diverse as wealth management and insurance and complex industrial and process systems, all based on understanding the buyer's intent and considerations. Expert advisors will help in the design and development of multimedia field and customer marketing and educational content. Expert advice can reduce emotional and practical risk in one-off, infrequent, or high-cost/high-risk purchase decisions.

In sales, cognitive sales and account management advisors will coach account executives throughout complex sales cycles. These advisors will work from an encyclopedic understanding of the account's situation; discover the highly likely implications of social, economic, industry, technology, competitor, and corporate news on a prospect's evaluation criteria and purchase

intent; advise account teams accordingly; and support team-based account strategy wargaming that is deeply situation specific. These exercises could bring in the personality profiles of key decision makers and insight into the social dynamics and psychology of the buying team.

Advertising and marketing tactics and strategies could be tested through social insights about emerging trends and patterns brought together by the analysis of a range of internal and external unstructured data aligned to product hierarchy, geography, and business interests.

Improving demand forecast accuracy is an especially interesting use case in several regards: the financial and efficiency losses caused by persistent demand forecast errors, the range of verticals plagued by error-prone forecasting, and the mounting complexity in which sales and downstream workforce, supply chain, and marketing processes must be managed. Today's time series-based forecasts can only make the most minimal use of "causal factors." They can't ingest and integrate signals from available disparate explanatory sources such as local, national, and sector news or events, weather, competitors, customers, suppliers, economics, and regulations.

Q. Everyone talks about cognitive computing being transformational and revolutionary, but can cognitive commerce be adopted incrementally at the pace my company moves?

- A. Cognitive commerce involves a spectrum of technologies, ranging from speech recognition to recommendation systems based on machine learning. Organizations can begin to embrace these processes and technologies in sales and marketing to solve specific challenges on a one-by-one basis. "Know your customer" and customer service applications are excellent ways to get started with cognitive commerce. For example, a number of companies have replaced their traditional interactive voice response (IVR) systems with cognitively enabled applications that add in problem resolution capabilities to the traditional customer support system as well as automatically identify potential problems and offer solutions proactively to the customer. Another example would be a prescriptive and predictive model for sourcing and distributing inventory based on emerging trends discovered with social media sites. The use of cognitive systems for telemarketing and lead generation is becoming more common based on a wide variety of signals and data including social media, previous buying patterns, geolocation, and weather. Other examples include the use of predictive systems that help to better forecast demand based on third-party data from a variety of sources.

The bottom line is that companies need to start becoming familiar with cognitive technologies in 2016 so that they can gauge where the use of these technologies will yield the most benefit to the organization, in terms of productivity, innovation, increased revenue, or cost savings. Companies that wait to get experience with cognitive technologies will fall behind the most innovative organizations in their peer group.

Q. What are the key dependencies for successfully launching a cognitive commerce initiative — data, skills, processes, or technologies?

- A. The lessons learned from organizations interviewed and surveyed by IDC suggest the following key best practices:
- Create an organizational information access and analysis strategy to tie structured and unstructured data sources together virtually, as those are your key information assets for a cognitive commerce initiative.
 - Implement content aggregation strategies that can effectively access siloed and legacy data sources as they may be great sources of potentially high-quality data.

- Ensure that they have enough high-quality data, from both an internal and a third-party data perspective. Data is a key ingredient to cognitive applications for learning and reasoning processes.
- Be aware of opportunities for acquiring and using a wide variety of data sources to get the maximum amount of insight possible in their cognitive applications. This includes data about social media, events, customers, weather, and important trends, as well as many other important categories that can add predictive and prescriptive value to decision making.
- Develop and promote an organizational culture that understands and embraces the collection, use, sharing, dissemination, and collaboration of information as a key asset.
- Use cognitive systems technologies and processes such as text analytics, auto-categorization, machine learning, and content aggregation tools to identify, collect, extract, and utilize additional value from your information assets.
- Utilize both technology and services partners to most effectively prototype, design, and develop an approach that works for the organization and the type of problem being solved.
- Develop measures and methodologies for determining success. IDC research shows that organizations that explicitly measure their efforts are much more likely to gain significant benefits than those that don't.

What is important to note is that data, process, and cognitive systems are all closely related and have to be working in tandem to make cognitive-enabled applications successful. Since cognitive applications are algorithmically and statistically dependent on the proper content and data, it is important to have in place processes and strategies to acquire, curate, and validate the new sources and types of data that these systems work with. Cognitive commerce puts the burden on business domain experts, data scientists, and information technologists to collaboratively address these new data management challenges.

Q. Looking five years out, what impact will cognitive commerce have on ecommerce?

- A. Cognitive commerce will be pervasive within five years. The effects of cognitive commerce will be much more profound. Cognitive systems will work "under the covers" more often than not in B2B sales and marketing even as they support new services. IDC projects that at least 50% of developers will include some cognitive functionality into their apps by 2020. Customers' intelligent assistants will interact with sellers' recommendation and advisory systems throughout customers' buying cycles. At the same time, it's highly likely that cognitive apps will yield productivity improvements in excess of \$60 billion annually. Looking out to the early 2020s, it's highly likely that two-thirds of manufacturers will use cognitive systems to drive more effective anticipatory optimization to balance supply and demand, thus improving fulfillment performance by 2% and lowering costs by 5%. In the same time frame, two-thirds of transportation management agencies will employ cognitive solutions to manage vehicle loads versus capacities, reducing traffic congestion by 20%. Impacts in sales and marketing will be no less profound.

ABOUT THE ANALYSTS

Dave Schubmehl is research director for IDC's Content Analytics, Discovery and Cognitive Systems research. His research covers information access and artificial intelligence technologies including content analytics, search systems, unstructured information representation, cognitive computing, deep learning, machine learning, unified access to structured and unstructured information, Big Data, visualization, and rich media search in SaaS, cloud, and installed software environments.

As program director for Merchandise Strategies, Greg Girard is responsible for setting and delivering IDC Retail Insights' authoritative perspective on how retailers should use information technologies to achieve key operational, tactical, and strategic objectives in the sourcing, buying, planning, assortment, allocation, replenishment, and pricing of merchandise.

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Global Headquarters: 5 Speen Street Framingham, MA 01701 USA P.508.872.8200 F.508.935.4015 www.idc.com