

ALL THAT GLITTERS

There's gold hidden in the endless stream of digital information. Can Quandl help investors find it?

BY PETER SHAWN TAYLOR

PHOTOGRAPH BY DANIEL EHRENWORTH

Information has always been the world's most valuable currency. When Napoleon lost at Waterloo on June 18, 1815, it took British couriers three days to bring the news to London. But thanks to his firm's unique network of swift ships and relay riders, financier Nathan Rothschild knew the outcome of the battle two days before anyone else. He used that information to make a killing on British gilt bonds—which soared in value when Napoleon's defeat was announced—doubling his family's already prodigious fortune in the process.

Rothschild's 48-hour head start may be history's most famous example of what we now call "alternative data"—information that's relevant to financial markets but not readily available to all professional investors. These days, however, investors gain an edge through Big Data and computing power, not fast horses and leather pouches. That's why, if

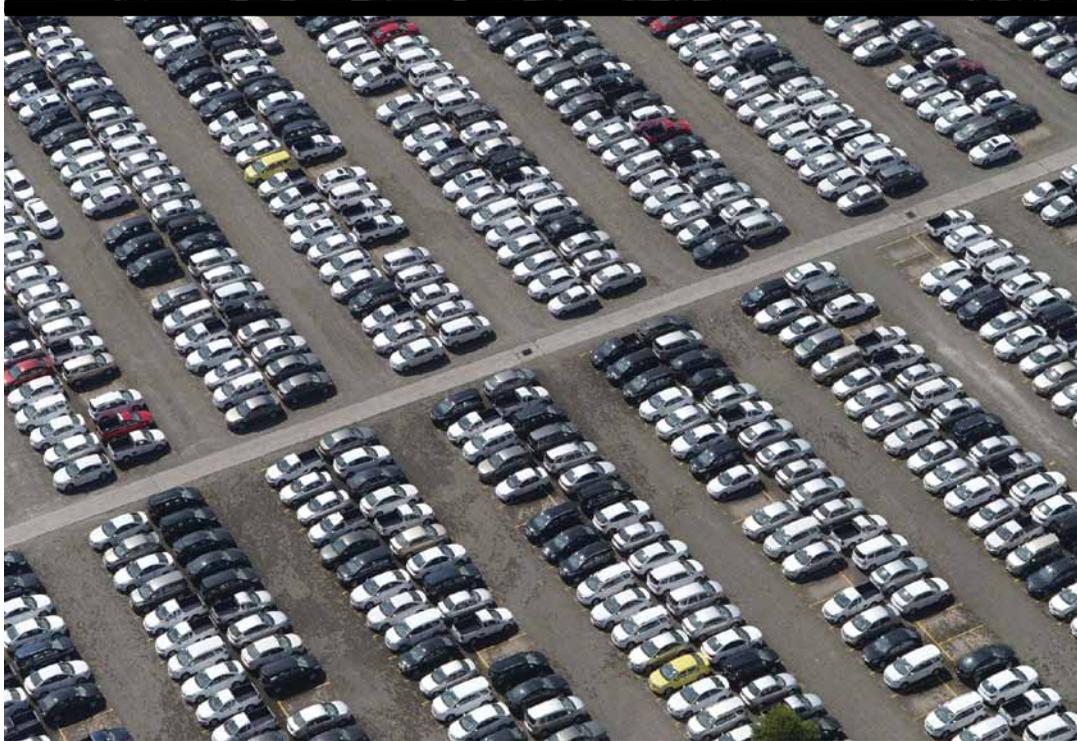
Rothschild were in the market for alternative data in 2020, he might turn to Tammer Kamel.

Kamel, 48, is the CEO of Quandl, a Toronto-based firm at the forefront of the alternative data boom. Since its founding in 2012, the 55-employee company has built a collection of 400 conventional and alternative data sets covering all manner of insight and ingenuity—including several accounting-themed sets that, for example, track audit-related issues such as restatements and late filings, or use number theory to search for anomalous entries to financial statements. "What's going on now is an explosion of data all over the world," says Kamel. "As more companies become data driven, they are measuring what is going on around them and that information, serendipitously, becomes useful to professional investors."

Alternative data offers those investors the chance to know things that others do not. That might mean analyzing millions of collated credit card bills for

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Quandl CEO
Tammer Kamel





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hints about changing buying habits, or tracking the movement of business jets and oil rigs to get a jump on corporate announcements. It can help investors predict who’s about to go bankrupt, determine whether the new iPhone is a hit and decide whether or not to trust China’s official growth numbers.

Ten years ago, these sorts of insights were the exclusive purview of sophisticated hedge funds. But recently, the broader investment community has begun to recognize the value in gaining this kind of informational advantage. After all, it’s almost impossible for professional investors to get a leg up on competitors by looking at publicly disseminated, strictly regulated information: quarterly earnings reports, stock prices and other fundamentals.

Alternative data may lack the rigorous oversight and confirmed veracity of audited financial statements, but that hasn’t quelled investor interest. “Alternative data is going mainstream,” says Richard Johnson, principal of market structure and technology at the Connecticut-based financial services consultancy Greenwich Associates. He adds that half of all the institutional investors that he’s surveyed plan to increase their use of alternative data in the coming year. Deloitte also reports that annual global spending on alternative data is growing rapidly, predicting it could hit US\$7 billion in 2020. As a result, Johnson says, “There are now more than 100 firms out there selling alternative data.”

Quandl stands at the head of that pack. In December 2018, Nasdaq acquired the firm, giving Quandl global reach and access to new data sources, while

Deloitte predicts annual global spending on alternative data could hit US\$7 billion in 2020

bolstering the stock exchange company’s market intelligence unit. (While details of the deal are private, Quandl had previously raised more than \$20 million in funding.) “When you are a small, unknown entity called Quandl, there is a perceived risk for a company to deal with you,” says Kamel. “But when Nasdaq comes knocking on your door, that’s different.”

Rather than indulge the hype surrounding alternative data, Kamel preaches a gospel of quality over quantity. He is skeptical, for instance, of using satellite imagery of store parking lots to determine retail foot traffic—a Bond-like method that’s popular with the press but, in his view, unproven as a source of useful info. “If the data set cannot say anything definitively through statistical analysis, if the data is too noisy or too small, we disqualify it,” he says. “Only one in a hundred data sets survive our tests.”

Those exacting standards seem to be paying off. Today, Quandl’s data sets—which cost between US\$35,000 and US\$250,000 per year—are used by nine of the world’s top 10 hedge funds, and eight of the 10 biggest investment banks. In a recent survey by Greenwich Associates, Quandl scored highest



By partnering with software firms that service e-retailers, Quandl can glean what online shoppers are buying in real time

in brand recognition in the alternative data sector. The timing couldn't be better. The world is only getting hungrier for alternative data, and Quandl is emerging as one of the best places to find it.

Kamel was born and raised in and around Toronto, but Quandl's roots trace back to Japan. After earning a computer engineering degree from the University of Waterloo, Kamel spent five years in Tokyo working as a quantitative analyst for the hedge fund Simplex Asset Management, where he met Abraham Thomas, a portfolio manager. By 2010, he and Thomas (now Quandl's chief data officer) had returned to Toronto and started thinking about creating a more user-friendly delivery system for conventional investment data. But going up against established industry data providers was daunting. "We realized we needed to offer something truly different from what Bloomberg had," says Kamel. "So we went out and found data that wasn't available anywhere else."

One of Quandl's first big hits came from a deep dive into a credit survey of small firms produced by the commercial data company Dun & Bradstreet. Kamel and Thomas realized that, by recalibrating the data, they could uncover which big companies were delaying or avoiding paying their bills to smaller entities, turning the information into an early warning signal for impending financial crises at major companies.

Over the next several years, Quandl added hundreds of new data sets to its stockpile. For example, they use shipping transponder data to estimate

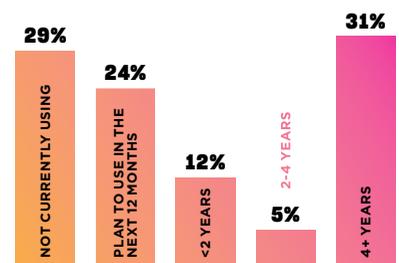
global iron ore and coal production rates, which hint at future price movements. And using web-scraped data obtained from a third party, they can reveal firms' changing hiring patterns.

One of Quandl's signature nuggets of revealed information—what Kamel calls his "canonical example"—is its ability to track car sales with real-time precision. "I can measure the sales of every car company in North America on a day-to-day basis," he says proudly. (Indeed, Quandl's website provides a running total of selected daily vehicle sales as a bragging point: "8,547 GMs were sold yesterday.") Quandl sources this information through partnerships with insurance companies, which track new car sales as part of their policy-writing business—and, in so doing, inadvertently capture data that can provide a detailed record of the performance of specific car manufacturers and the auto sector at large. These insurance companies,

Growth in investment firms' alternative data budgets



Length of time that investment managers have used alternative data



PHOTOGRAPH BY GETTY

Kamel says, “didn’t realize that they had their fingers on the pulse of a crucial part of the economy.”

Kamel calls this sort of evidence “exhaust”—a by-product of a third party’s business that offers great value to investors once it’s been compiled, verified and packaged. For many firms, selling exhaust is quickly becoming a significant source of recurring revenue—Quandl is regularly solicited by firms that hope their exhaust contains gold.

Another intriguing proprietary data offering is Quandl’s Corporate Aviation Intelligence platform. By knitting together publicly available aircraft registry and landing data, the firm can track 26,000 private aircraft and offer investors crucial hints to upcoming mergers and takeovers. In 2017, for example, the Johnson & Johnson jet was parked near Swiss pharmaceutical firm Actelion’s headquarters for a week prior to the announcement of its US\$30-billion share purchase. Investors who knew this could have been in line for their own Rothschild-style coup.

Quandl is also working on partnering with software companies that service e-retailers. As with car sales, exhaust from firms that offer logistics, display or ratings support to web-based retailers can allow Quandl to sneak a peek at what people are buying online in real time. This promises more timely and precise sales figures than the current practice of using credit card bill surveys to estimate sales. “We want to build rich intellectual property that will be difficult for our competitors to emulate,” says Kamel.

Not all exhaust yields valuable investment advice, though. “Ninety to 95 per cent of what we see is totally useless,” Kamel laments. “Finding data that actually has something to say is very difficult—it’s a needle-in-a-haystack problem.” Uncovering market-relevant insight from a vast mound of raw data requires massive applications of computing power and just the right amount of human inspiration. “The vast majority of the work we do is data science—pure hardcore quantitative statistics,” he says. “But it still requires experience and instinct to form a hypothesis about how the data might be useful.”

Quandl isn’t the only firm trying to win big by sieving the data stream. Many of its competitors focus on only a few data sets or specialize in boutique areas like weather prediction or satellite imagery, while others collect information from a diversity of sources. Those aggregators include Ireland’s Eagle Alpha—the industry’s volume leader, with 1,000 alternative data sets—and New York City-based Thinknum, which leans heavily on web-scraping and social media sentiment,

FIVE CPAs AT THE FOREFRONT OF THE DATA-DRIVEN ECONOMY



Naveen Kalia

Canadian partner in charge, audit innovation, KPMG Canada
Toronto

Kalia’s firm has partnered with IBM Watson and Microsoft to incorporate Big Data into KPMG Canada’s audits, many of which deploy algorithms to analyze 100 per cent of a company’s data. He is also working on using AI and machine learning to review that data for patterns, which, in combination with other tools, will allow KPMG to analyze a client’s controls and processes from A to Z, pinpoint inefficiencies and offer other business insights. “We’re moving into a world of real-time auditing,” says Kalia. “I see a future where our clients record most of their transactions on a blockchain and where we can get alerts from our AI auditor when a client enters an odd-looking interaction, in which case we’d audit it on the spot.”



Irene Wiecek

Director and founder of the BIGDataHUB at the University of Toronto Mississauga
Toronto

As director of U of T’s master of management and professional accounting program, Wiecek has incorporated data analytics, AI and coding into her curriculums. At the BIGDataHUB, which she founded in 2018, young and aspiring CPAs work alongside faculty, data scientists, engineers and ethicists in workshops, conferences and case study competitions using real data sets. “Once you open your eyes to Big Data, you can’t see anything the same way anymore,” says Wiecek. “CPAs have traditionally been the decision makers—we gather evidence, model and analyze it, and then make our decisions. The evidence of the future is Big Data. CPAs will still need to be skeptical as they look under the hood of systems that are increasingly driven by AI and fuelled by Big Data, and then we’ll provide the assurance and advisory services we always have.”



Carlos Leal

Senior manager, digital and emerging technologies, technology consulting, EY
Vancouver

Leal helps EY's clients understand the value of data in broader business strategies. Through proof-of-concept cases, he demonstrates how it can help address business problems or create new opportunities to generate value—for example, he showed an entertainment company how insights gleaned from consumer data could attract more customers and offer them a better experience. “In the past, we used financial statements as key indicators of where a business will be in the future,” says Leal. “But now, we’re able to aggregate data from internal and external sources like social media to add much more accuracy and speed to business performance predictions. There are also privacy and security concerns around this explosion of data, and that’s where accounting can play a prominent role in governance.”



Erin Kelly

Co-founder, president and CEO,
Advanced Symbolics Inc.
Ottawa

Kelly's firm uses an in-house AI tool named Polly, which performs text analytics on social media posts to predict human behaviour without asking questions or collecting names. Polly predicted both the Brexit “leave” vote and Trump's election, and has been tasked with exploring everything from suicide reduction to public transit habits. “People are worried that Big Data and AI are going to take their jobs, but I think they’ll enable us to do things we could never do before: better identify fraud, improve performance management,” says Kelly. “CPAs will need to get educated on the promise of Big Data and AI. This is a business function and should be done by business professionals like CPAs.” (Read more about Kelly in the November/December 2018 edition of *Pivot*.)



Pauline Brunet

Delivery manager, Element AI
Montreal

Brunet leads a team of developers, designers and applied research scientists that builds AI-powered software for Element's clients. By deploying tools like optical character recognition (converting images of words into machine-encoded text), Brunet's software frees clients from rote manual tasks and supplements their value-added, decision-based work. “The volume of Big Data that exists is already too much for CPAs to handle manually—they won't be able to digest it all and make decisions quickly enough,” says Brunet. “AI is the solution. This will lead to a departure from the traditional accounting role. Instead of recording transactions and booking entries, CPAs will need to become storytellers with the data.” —*Ali Amad*

tracking such things as menu prices at Chipotle Mexican Grill, or government contracts awarded to heavy equipment manufacturer Caterpillar. (According to research by Greenwich's Johnson, the top five sources of alternative insights across the entire industry are web-scraped data, crowd-sourced information such as surveys, credit card and point-of-sale details, social media sentiment, and collated web search trends.)

Manipulating and monetizing Big Data in this way inevitably raises privacy issues, something Kamel readily acknowledges. “We are absolutely zealous in our due diligence about data rights and privacy,” he stresses. “We don't touch any data unless it can be demonstrated that the sellers hold all the rights.” And any data used must be fully anonymized. Kamel claims a complete lack of interest in accessing anyone's personal details. “I don't give a damn what you bought yesterday. I only want to know how many iPhones were sold in total last month.”

Ann Cavoukian, executive director of the Global Privacy and Security by Design Centre in Toronto and Ontario's former privacy commissioner, declares herself “pleased with Quandl's commitment to using anonymized data.” She advises alternative data firms to pay attention to the risk of re-identification of personal information within their data sets, which can become a problem following a data breach. “You really need to demonstrate the strength of your anonymization,” she warns.

One of Cavoukian's biggest online privacy concerns is the proliferation of apps specifically designed to harvest consumer data. Free apps that track your packages or manage your finances are almost certainly collecting information about your buying habits and selling it to alternative data providers, often without the users realizing what's happening. “I'm always telling people to stay away from those apps,” she sighs. “But no one has the time to review all these apps' consent provisions and what they're doing with their information.”

Beyond privacy, Quandl has another pressing concern: winning Canadian customers. Despite the firm's homegrown success, its clientele consists almost entirely of large U.S. and European investors, save for a couple of well-known Canadian institutions. “We're better known in New York than Toronto,” Kamel admits. “Canada tends to be risk averse when it comes to financial markets, so we're not early adopters.” That could change, of course, as alternative data continues to gain mainstream acceptance. Until then, he's determined to resist the temptation to pack up for brighter lights, citing his hometown's ability to attract overseas talent as one reason to stay put. “We started as a small company in Toronto,” he says, “and that's why we're still here.” ♦

THE MISSING LINK

Data is key to Canada's economic future—and CPAs should be the ones to unlock its potential

BY MICHEL GIRARD

Over the past 18 months, Canadian CPAs have been deeply engaged in a rare exercise that aims not only to anticipate the future, but also to develop strategies that will help the profession adapt to the disruptive changes heading its way. This process, CPA Canada Foresight: Reimagining the Profession, has involved round tables, online discussions, scenario planning and a lot of hard thinking about the rapidly evolving relationship between accounting and technology. “The Way Forward,” a report released last year, lays out a road map for addressing two key questions that emerged out of the Foresight process: In what ways can professional accountants help unlock value for the organizations they serve? And how can the profession embrace change and react quickly and innovatively to new developments in the business community while continuing to support our members and act in the public interest?

There was broad consensus that a central part of the profession's future lies in mastering and reshaping a data-driven economy. A recent visioning exercise conducted by the federal government identified digitization in key sectors—health, bioscience, advanced manufacturing and agribusiness—as crucial to Canada's economic future and well-being. And with that digitization comes an explosion of digital information. Data has

become a kind of medium of exchange that flows through the veins of our economy. And as with any currency, data only has worth when society has established principles about how it is valued, measured and traded. That presents an opportunity for CPAs, who are well positioned to provide oversight and governance of “data value chains.”

If a data value chain seems like an obscure concept, consider the analogy of a more familiar value chain: oil and gas. The chain begins with exploration activity and test drilling, and then extends across multiple sub-sectors: refineries, pipelines, distribution and so on. Different sorts of professionals work at each stage: geologists, process engineers, high-skill pipe fitters and marketers, to name a few. The value chain also requires high-level oversight by professionals who can measure the value of the resource, integrate sub-systems and ensure regulatory compliance. Often, these professionals are CPAs.

The same structure should exist for data value chains. They depend on the flow of digital information rather than the flow of oil, but they share many of the characteristics of other value chains. Instead of process engineers and geologists, data value chains depend on experts like data brokers, software engineers, data analysts and programmers. And rather than drilling for oil, they collect data, exchange it, analyze it and provide solutions as to how to use it, such as feeding it into an artificial intelligence application. Big tech firms routinely glean valuable insights from the large data tranches they amass, and with the right standards, data value chains can serve other organizations of all scales—even those that are not currently in the business of managing pools of data.

Like oil and gas, data value chains will require the right professionals and standards to ensure good governance and value maximization. They'll need to operate within an overarching framework—not unlike the performance management systems or accounting and auditing standards used today—that allows companies to take advantage of this resource. That calls for a new set of professional skills focusing on enterprise-wide governance and using information as an asset. As trusted advisers, CPAs are well suited to step into that role.

Their duties will encompass working with a range of emerging disciplines and professions in the management of operations linked to the effective flow of information both inside and between organizations:

Data management. To leverage the value of the data pools they possess, companies will need to create records-management systems, deploy data-collecting devices and sensors, organize and grade the information gathered, and ensure the retention of metadata (data that describes other data).

Data segmentation. Operationally, data value chains must be properly segmented so that the right professionals manage the right components: cleaning up raw data, putting it in standardized formats, then aggregating, de-identifying, pooling and mining it for insights. Someone will need to determine what roles data engineers, data controllers, artificial intelligence experts and data scientists should play at different points on the value chain.

Data valuation. Increasingly, the share value of publicly traded companies is associated with data and intellectual property. Yet much of this value isn't reflected on balance sheets and financial statements. CPAs should take the lead in developing approaches for valuing that data so companies can figure out how to monetize it.

Data standards. Effective oversight and governance can only exist if there are open, shared standards that allow various players at different points in the value chain to share data. There needs to be a common set of rules about financial or operational tasks, ranging from valuation and benchmarking to technical interoperability. Critically, standards, guidance and data KPIs will be required to clarify the roles and responsibilities of participants in data value chains.

Data governance. As companies increasingly digitize, collect and share more data, and find new ways of monetizing it, there will be a growing role for professionals with the skills and experience to tackle important ethical and regulatory issues arising from privacy law compliance, cyber-security and appropriate data use.

The accounting profession is exceptionally well positioned to provide necessary oversight as the data value chain ecosystem develops and takes root

While we've singled out data value chains as a vital component of Canada's economic future, today's ground-level reality is that the vast majority of data analysis still occurs within single organizations. The risks and uncertainties associated with data sharing between organizations, even between divisions or branches in the same organization, are inhibiting the open flow of data. That poses a risk—and presents an opportunity—not just for the accounting profession, but the

economy at large. Just as we wouldn't be able to reap the benefits of oil and gas, agriculture and manufacturing without good governance and standards, we won't have the capacity to compete in the global data economy of the future without similar frameworks.

That's why we will need foundational standards to bring transparency to data value chains, establish common parameters, allow for interoperability and set verifiable data governance rules to establish and maintain trust between participants and with regulators. These standards are vitally important because they will ensure data is valid and trustworthy—precisely what is needed to help decision-makers make informed choices that drive success. Because the accounting profession is so versed in standards setting, assurance, valuation and governance, it is exceptionally well positioned to provide necessary oversight as the data value chain ecosystem develops and takes root. "CPAs have a lot of experience building frameworks that ensure financial information is consistent, comparable and reliable," says Tashia Batstone, CPA Canada's senior vice-president of external relations and business development. "Financial information is just one form of data. We have to take the skills we already have as they pertain to financial information, the most critical piece of data that businesses used in the past, and apply those skills to broader forms of data, which will become increasingly important for businesses in the future."

CPA Canada is represented on the steering committee of the Data Governance Standardization Collaborative, a multi-stakeholder initiative led by the Standards Council of Canada. The Collaborative will identify where the development of standards would help the country to capitalize on the benefits of data while managing security and privacy risks. In addition, CPA Canada has signed a memorandum of understanding with the Chief Information Officers Strategic Council to explore the development of guidance to help frame these issues.

To continue this process, the profession is building on the Foresight process and designing a consultation strategy so that CPAs can begin the granular work of supporting standards, gaining experience in an emergent discipline and establishing themselves as authorities. In a domain that will become vital to Canada's 21st-century economy, CPAs have a golden opportunity to take the lead and, in so doing, enable the evolution of the profession. ♦

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