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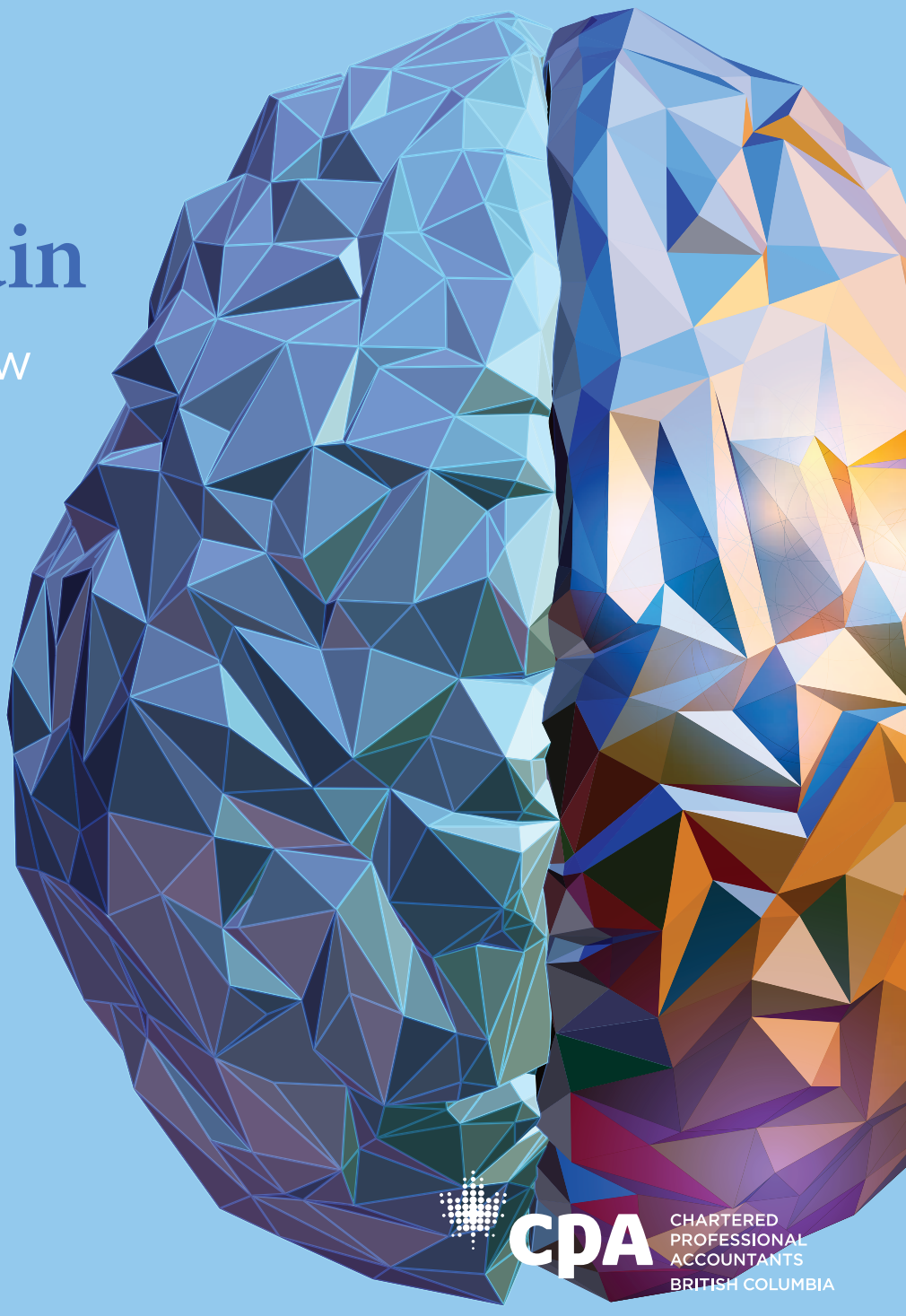
It's Not You, It's Blockchain

Why we need a new way to learn about disruptive tech



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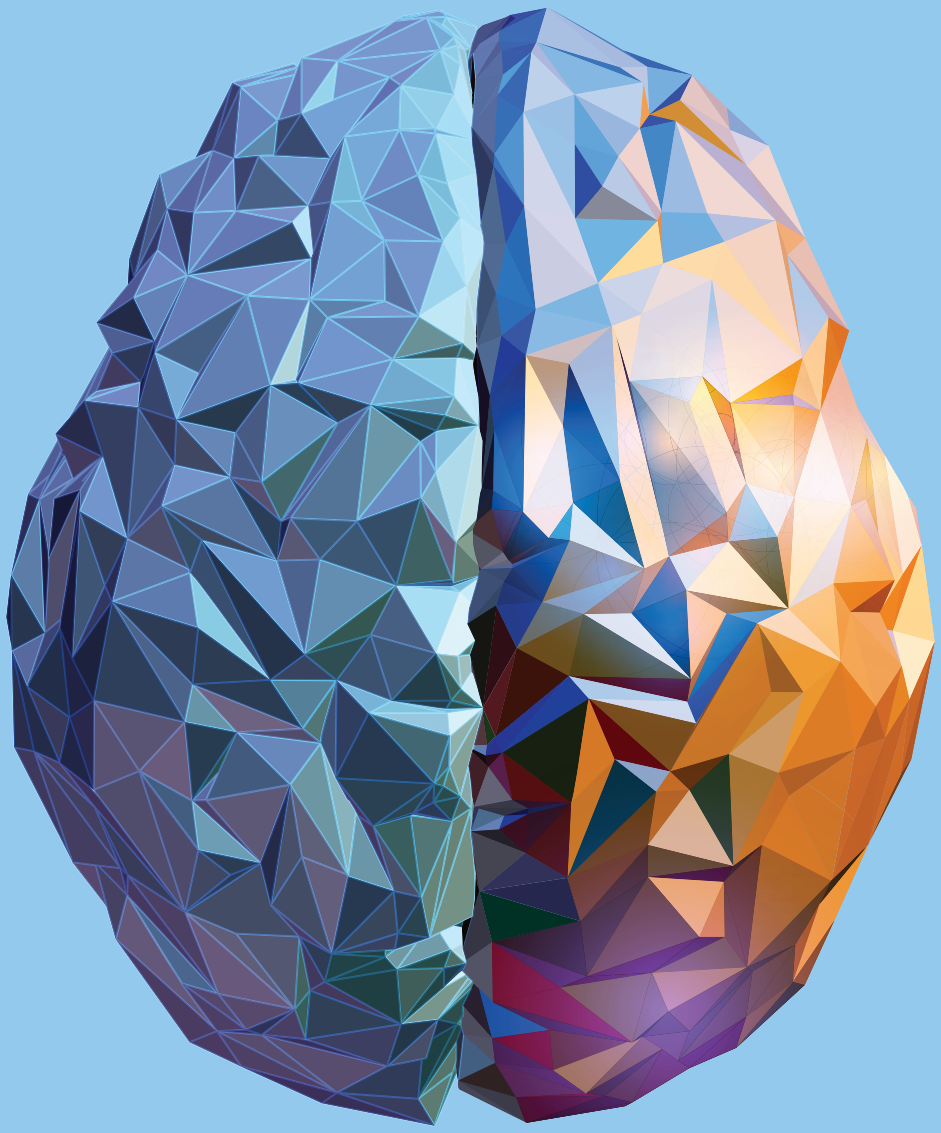

It's Not You, It's Blockchain

Disruptive technologies are inherently confusing, but there's hope for professionals who want to learn more

By Chris Rowell, DSc. (Tech), and Tejinder Basi, CCSP, CMC

ABOUT THIS ARTICLE: Like other professionals, CPAs are constantly being told that blockchain and other emerging technologies are going to radically change the way they do business. Yet many lack the time and/or resources to get up to speed—never mind getting ahead of the curve. Recognizing this, CPABC recently supported a study conducted by the University of British Columbia and Cyberium Consulting, a Vancouver-based technology and innovation firm specializing in cybersecurity and risk management, to determine the best ways to educate professionals about disruptive technologies. Using blockchain as an example of an emerging technology with significant disruptive potential, researchers conducted a survey, focus groups, and interviews with a diverse group of CPABC members, including some CPA blockchain experts, to understand their current perceptions of blockchain, their motivations (or lack thereof) for learning about it, what they most want to know, and the barriers they encounter when seeking information. In this article, lead researchers Chris Rowell and Tejinder Basi describe the current landscape, share highlights from the study,[1] and discuss efforts to break down learning barriers.

Blockchain came onto the world stage as the technology underlying the creation and peer-to-peer transfer of digital currencies such as Bitcoin. The core breakthrough was that blockchain—as a digital ledger that is distributed across a wide network and protected by cryptography—provided a way for people to instantly verify their ownership of an asset and transfer this ownership to others without relying on third-party intermediaries, such as banks and other financial institutions.

While Bitcoin provided an interesting initial use case, it gave only a very small glimpse of blockchain's true potential. In reality, blockchains can record anything of value—from property to commodities to health-care data—and it's because of this broad spectrum of potential applications that executives, increasingly, are identifying this technology as a critical strategic priority.[2]

Unfortunately, as blockchain continues to grow in prominence (see page 21), it also continues to confound. The sheer volume of information available about blockchain can make it hard to pinpoint what it is, exactly, that makes the technology special, how it actually works, when and where we're going to see its impact, and why (or indeed, whether) we should care. To further complicate matters, blockchain is emerging not in isolation but, rather, in parallel with other technologies like artificial intelligence (AI), and these technologies are being combined to create fundamentally new products, services, and business models.

While we are still in the early stages, it's expected that blockchain will eventually affect a wide range of businesses and industries. CPAs who understand its basic features will be well positioned to know if, when, and how they should engage more with this technology. The question, then, is how to develop this foundational understanding. That's what we endeavoured to find out through our study.

[1] Chris Rowell, DSc. (Tech) and Varshitha Narahari, B.Eng., *Educating Professionals about Disruptive Technologies*, October 2019.

[2] Chamber of Digital Commerce Canada, *Canadian Blockchain Census 2019*, (October 2019), **digitalchamber.org/canada-blockchain-census**.

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Why CPAs want to learn about blockchain

More than half (61.5%) of the CPAs who participated in our study said they'd actively sought out educational materials on blockchain in the past year. We found several common motivators for learning. Many survey respondents said they wanted to learn about blockchain because of its current (11%) or impending (50%) relevance to their professional roles. And in interviews and focus group discussions, several CPAs said they wanted to be able to provide informed answers to their clients when asked about blockchain. As one individual put it: "As a CPA, people expect me to know the answers to questions about new technology."

Personal curiosity was another driver. During focus group discussions, we found the following personal motivations were the most common:

- A general interest in new technologies;
- A particular interest in blockchain sparked by stories in the media and/or firsthand experience with blockchain-based applications like cryptocurrency; and
- A desire to expand professional knowledge and skills with regard to the various technologies that could potentially affect the CPA profession over the coming years.

What CPAs want to know, and what gets in the way

In our survey, we asked respondents to rank various disruptive technologies in order of relevance to their current work. Blockchain was ranked fourth overall behind cloud computing (#1), big data analytics (#2), and AI (#3). It fared even worse in interviews and focus groups, with some participants saying blockchain was not at all relevant to their current roles. CPAs in this latter group were far more inclined to adopt a "wait-and-see" approach with regard to learning more about blockchain. Some said they believed the technology hadn't been proven yet; others cited a lack of clear standards, guidance, and regulation; and others said they didn't believe blockchain would affect small- and medium-sized businesses for some time.

Relevance came up consistently when we asked CPAs what they would most like to see addressed in educational materials. At the same time, uncertainty about relevance was identified as one of the biggest barriers to learning. With good reason—gauging the relevance of any emerging technology is tricky. Blockchain has been described as a "foundational technology," meaning that it has the potential to fundamentally change our economic and social systems,[3] but what does that mean for the average CPA? Focus group participants told us it was often difficult to connect the examples of blockchain they'd seen in the media to their specific roles. They said they wanted to know how blockchain will affect their actual work—and how soon.

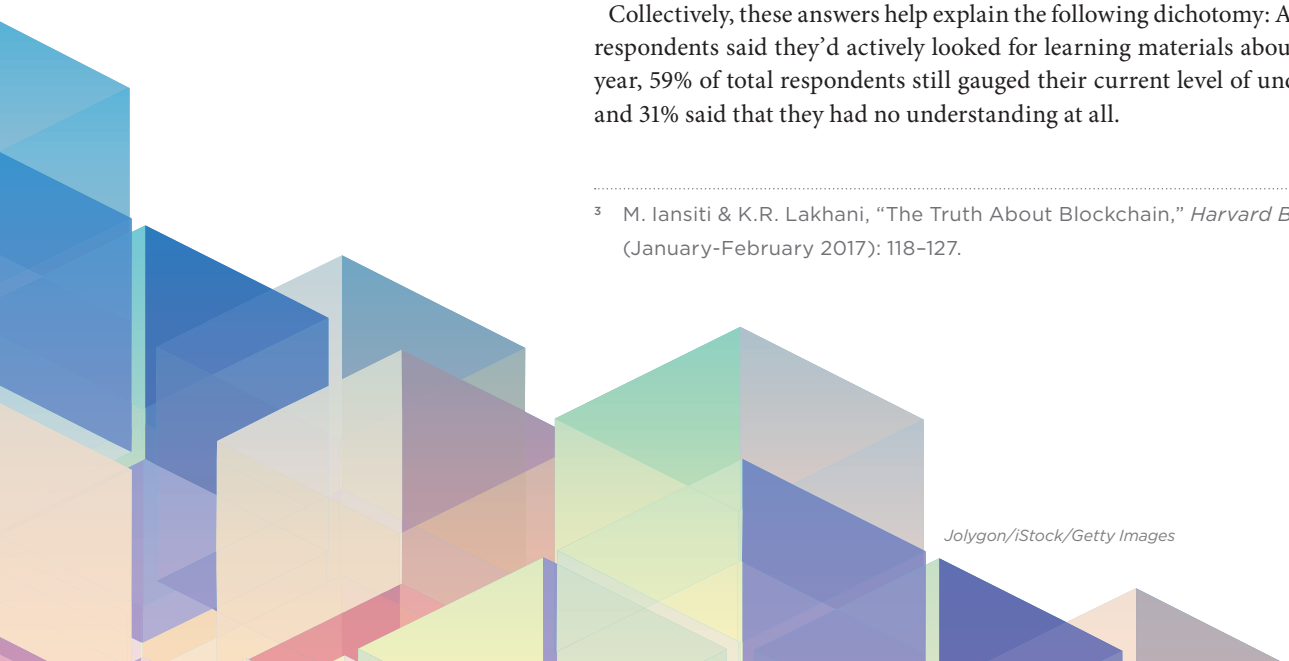
There are no easy answers. Blockchain will not affect all businesses (and, therefore, all CPAs) in the same way or at the same time. Currently, blockchains are being used by large enterprises for more incremental use cases, such as supply chain applications, since these address large pain points in a straightforward manner. More disruptive applications and blockchain integration by small and medium-sized enterprises could take longer to reach live production due to the upfront investment required, difficulties in building new networks and business models, and regulatory uncertainties.

Moreover, it takes time to build trust. Blockchain applications provide the most value when they allow businesses to securely access and share information with partners *beyond* their organizational boundaries, and this requires consensus building. Participants must come to understand the benefits of collaboration and reach an agreement on how the business network and the data on this network will be governed.

Focus group participants also cited blockchain's complexity as a major barrier to learning. This correlated to a desire for educational materials that would demystify blockchain's terminology and applications (see "Demystifying Blockchain" on pages 26-27). Several CPAs told us they felt inundated with information, including hype and negative media coverage, and reported that they'd encountered significant difficulties when trying to find useful and trustworthy information from legitimate sources. Similarly, two-thirds of our survey respondents said they did not know which resources to draw on to learn more about blockchain.

Collectively, these answers help explain the following dichotomy: Although 61.5% of survey respondents said they'd actively looked for learning materials about blockchain in the past year, 59% of total respondents still gauged their current level of understanding as "novice," and 31% said that they had no understanding at all.

[3] M. Iansiti & K.R. Lakhani, "The Truth About Blockchain," *Harvard Business Review* 95 (1) (January-February 2017): 118–127.



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Many participants in our focus group discussions said they wanted to understand blockchain's longer-term implications for the profession. Time will tell on this one, but we can hazard a guess based on past examples. Like other disruptive innovations in accounting, we expect blockchain to augment some functions to make them more economical, while at the same time making other functions more valuable. Consider, for example, the introduction of digital spreadsheets in 1979: This innovation dramatically reduced the cost of calculation while increasing the value of interpretation, judgment, and simulation.[4] Similarly, blockchain could significantly reduce the costs of recording, collecting, and verifying information, thereby freeing up time for CPAs to create value in other ways.

For many study participants, all of the aforementioned obstacles were exacerbated by time—specifically, the lack thereof. Participants in our focus groups and interviews routinely said their learning was hindered by the need to balance multiple, competing demands, and 36% of our survey respondents cited time constraints as a significant barrier to learning.

Overall, we found that CPAs are experiencing a range of drivers for and barriers to learning about blockchain. However, despite the many barriers identified, most expect blockchain to become relevant for them in future and, therefore, want to learn more about the technology. When asked what level of understanding they'd like to gain if all barriers to learning were removed, 30% of survey respondents said they wanted a general overview and 36% said they wanted a deep-level of understanding that would enable them to integrate blockchain into their work wherever appropriate.

How then, can we remove these barriers to learning? To answer this question, we first need to recognize that these barriers don't stem from CPAs' individual learning abilities or motivations—rather, they stem from the features of blockchain that are inherent in most disruptive technologies.

[4] Greg Ip, "We Survived Spreadsheets, and We'll Survive AI," *The Wall Street Journal*, updated August 2, 2017.

What makes disruptive technology so challenging—from the automobile to blockchain

Generally speaking, before they gain mass acceptance, disruptive technologies share three potentially problematic characteristics:

1. They're highly diverse, which can generate confusion;
2. They perform poorly along certain dimensions; and
3. They attract a wide range of viewpoints and criticisms.

Let's look at each of these characteristics in turn by retracing the early days of the automobile and connecting its emergence to that of blockchain.

1. Variations galore

The huge variation in disruptive technology during its early stages can create confusion. When the automobile industry began to emerge towards the end of the 1800s, there was significant diversity in the range of cars produced and in their component technologies.[5] During the first two decades of the automobile industry, inventors were split on a wide range of design decisions, such as where to position the engine, how to steer, and how to stop. In addition, multiple competing means of propulsion were debated, with the only point of agreement being that the automobile could not be powered by animals.[6] Manufacturers couldn't even reach a consensus on what to call this new invention—among the early contenders were "autocycle," "motor wagon," and "horseless carriage."[7] The considerable variation across labels, technologies, and designs created significant confusion for innovators, investors, and consumers alike.[8]

[5] G.R. Carroll, L.S. Bigelow, M.L. Seidel, & L.B. Tsai. "The Fates of De Novo and De Alio Producers in the American Automobile Industry 1885-1981." *Strategic Management Journal* 17 (Summer Special Issue, 1996): 117–137.

[6] H. Rao, "The Social Constuction of Reputation: Certification Contests, Legitimation, and the Survival of Organizations in the American Automobile Industry: 1895-1912," *Strategic Management Journal* 15 (Winter 1994): 29–44.

[7] D.L. Cohn, *Combustion on Wheels: An Informal History of the Automobile Age,* (Boston: Houghton Mifflin Company 1944), 29.

[8] H. Rao, "Institutional Activism in the Early American Automobile Industry," *Journal of Business Venturing* 19 (2004): 359–384.

Blockchain investment trends that show it's not a passing fad

- According to its latest Worldwide Semiannual Blockchain Spending Guide, the International Data Corporation (IDC) expects worldwide spending on blockchain solutions to reach US$15.9 billion in 2023, at a five-year compound annual growth rate (CAGR) of 60.2% between 2018 and 2023. Canada is set to have the highest CAGR (73.3%).[1]
- Citing an earlier IDC report, the Chamber of Digital Commerce Canada (CDCC) noted that Canada's spending on blockchain is projected to increase from US$72 million in 2019 to US$644 million by 2023.[2]
- The CDCC also noted that venture capital and private investments in blockchain topped US$10 billion over the past five years.[3]
- In 2019, 53% of large organizations said blockchain was a critical priority, according to Accenture Research.[4]
- Citing a January 2019 report by the Bank for International Settlements, the World Economic Forum noted: "… at least 40 central banks around the world are currently, or soon will be, researching and experimenting with central bank digital currency, a commonly proposed distributed ledger technology, for a variety of use cases."[5]
- There were more than 200 blockchain-related initiatives in the public sector, spanning 45 countries, in 2018.[6]
- The total market capitalization of cryptocurrency platforms was ~US$197 billion as of December 6, 2019.[7]
- According to a 2019 study by the Cambridge Centre for Alternative Finance, one in five enterprise blockchain use cases in live production are supply chain applications.[8]

[1] Marie Huillet, "Blockchain Solution Spending to Hit $16 Billion by 2023: IDC Report," August 9, 2019, **cointelegraph.com**.

[2] Chamber of Digital Commerce Canada, *Canadian Blockchain Census 2019* (October 2019): 5.

[3] Ibid, 5.

[4] Ibid, 22.

[5] World Economic Forum, *Central Banks and Distributed Ledger Technology: How Are Central Banks Exploring Blockchain Today?* (white paper) (March 2019): 4.

[6] J. Berryhill, T. Bourgery, and A. Hanson, *Blockchains Unchained: Blockchain Technology and Its Use in the Public Sector*, OECD Working Papers on Public Governance No. 28 (Paris: OECD Publishing June 2018): 20. (**https://doi.org/10.1787/3c32c429-en**)

[7] **https://cryptolization.com**

[8] Michel Rauchs, Apolline Blandin, Keith Bear, Stephen McKeon, *2nd Global Enterprise Blockchain Benchmarking Study* (Cambridge Centre for Alternative Finance, 2019): 34.

This confusion is exacerbated by the strategic use of jargon by entrepreneurs who add labels like "blockchain," "token," and "crypto" to the names of their ventures and products in the hopes of attracting interest and investment. In December 2017, for example, a company called Long Island Iced Tea Corp. changed its name to "Long Blockchain Corp." and almost instantly saw an increase of more than 250% in its stock price.[9] If you're wondering what an iced tea producer has to do with blockchain, you're not alone.

2. Growing pains

Early applications of disruptive technology are often inferior along certain dimensions that customers value highly.[10] Early automobiles, for example, were often far slower and less reliable than alternate modes of transport already familiar to consumers. The story of the first-ever speeding ticket issued to a motorist makes this painfully clear: In 1896, a driver was seen "hurtling through the streets of Paddock Wood, Kent" at the breakneck speed of eight miles per hour—four times the legal speed limit at the time.[11] Given that this motorist was caught by a constable on a bicycle, it's easy to see why consumers questioned the value of automobile technology in its early days.

Similarly, even the most prolific applications of blockchain have attracted scorn for their woeful performance along several dimensions that we deem important, including ease of use, throughput and scalability, and energy efficiency. For example, despite the hype around Bitcoin as a digital currency, the Bitcoin blockchain can currently process only seven transactions per second.[12] Compare this with Visa, which averages around 1,700 transactions per second and claims to be able to handle over 24,000 per second.[13] At the same time, Bitcoin requires a huge level of data redundancy and substantial amounts of energy to function. Because we are prone to evaluate novel applications based on established criteria, we tend to focus on their drawbacks and disregard them accordingly.

[9] S. Buhr, "Long Island Iced Tea Shares Went Gangbusters after Changing Its Name to Long Blockchain," 2017. Retrieved August 14, 2019, **techcrunch.com**.

[10] J.L. Bower & C.M. Christensen, "Disruptive Technologies: Catching the Wave," *Harvard Business Review* (February 1995): 43–54.

[11] Ben Judge, "28 January 1896: The World's First Speeding Ticket," *MoneyWeek*, January 28, 2015.

[12] K. Croman et al., "On Scaling Decentralized Blockchains," *Financial Cryptography and Data Security. FC 2016. Lecture Notes in Computer Science, vol 9604*. eds. J. Clark et al., (Berlin: Springer): 2016

[13] Visa, "Visa Acceptance for Retailers." Retrieved November 17, 2019, from **https://usa.visa.com/run-your-business/small-business-tools/retail.html.**

3. Everyone's a critic

Given its ambiguous features and poor performance in certain areas, disruptive technology often attracts a wide range of viewpoints. Cars were so unreliable during the early years of the automobile industry that they became a source of derision. "All it needs is a horse" was a common barb,[14] and this wasn't idle criticism—early car models were often equipped with hitches for horses or mules, should they fail to run.[15] The shortcomings of automobiles compared to horse-drawn carriages were heightened by the absence of the social, legal, and physical infrastructures we now take for granted. For example, many roads were so underdeveloped and muddy that cars couldn't navigate them.[16]

Blockchain, too, has attracted an array of opinions and criticisms, mainly centering around cryptocurrency applications, which—as noted by the CPAs who participated in our study—can make it difficult for people to find credible and trustworthy information from unbiased sources. In short, just as the differing viewpoints about the merits of the automobile made it challenging for consumers to get a clear picture of its emergence back in the late 19th and early 20th centuries,[17] differing viewpoints are making it hard for professionals with limited experience in blockchain to gauge its merits today.

[14] Cohn, 30.

[15] J.J. Flink, *The Automobile Age* (Cambridge, MA: MIT Press, 1988).

[16] Cohn, 1944

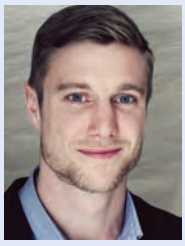
[17] Rao, 1994; Rao 2004.

In summary, many of the most pressing impediments to learning about blockchain are not down to the individual, but rather stem from the very nature of disruptive technology itself. While it may be disheartening to hear that all disruptive technologies are inherently confusing, this is actually good news. It means that if we can create an effective educational strategy for blockchain, we may be able to adapt this same strategy to *any* disruptive technology.

Building a solid foundation

To help CPAs overcome the various learning challenges identified in this study, we collaborated with CPABC to create two professional development courses on blockchain basics for the fall 2019 PD program: "Blockchain Essentials for CPAs" and "Foundations of Blockchain." These courses examined how blockchain is being used today, how it might be applied in the future, and what this means for the profession. Plans are in the works to offer the courses again in 2020, as the desire for clarity hasn't waned.

Ultimately, amid all the uncertainty with regard to the exact impact of blockchain across different areas, what *is* certain is that CPAs who equip themselves with a foundational understanding of blockchain technology will be better able to cut through the hype; evaluate blockchain applications with greater clarity; determine if, how, and when it could become relevant for their business; and decide for themselves whether, when, and how they will learn more. ■



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Tejinder Basi is the founder and CEO of Cyberium Consulting and an adjunct professor at the UBC Sauder School of Business. He advises public- and private-sector organizations on the effective and secure use of leading technology, and regularly speaks on these topics. Tejinder has over 30 years of experience in business leadership, IT consulting, audit, and cybersecurity across Europe and North America, and was formerly a partner with Deloitte in BC, leading the firm's cybersecurity, risk management, and data analytics services.