

# Blockchain for Financial Leaders: Opportunity vs. Reality

FINTECH



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## INTRODUCTION:

### DISRUPTION IS IN THE DETAILS

Risk averse, skeptical, and focused on the bottom-line, financial executives should be allowed to display some incredulity regarding the current cryptocurrency craze. They have seen their fair share of market bubbles as well as “disruptive” technologies that required significant resources and offered little payoff.

However, the technology underpinning a possible Bitcoin and crypto bubble is already changing the dialogue surrounding financial reporting and accounting: blockchain.

Blockchain rethinks the approach to several fundamental processes and technologies at the core of the financial suite, including ledgers, spreadsheets, and contracts. Not since the launch of Visual Basic, a precursor to now-ubiquitous Excel software, has a technology garnered this amount of attention. And while it has already made significant inroads in the payments space and therefore into finance, many see several additional future applications for blockchain in the financial world.

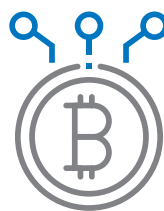
In this report, the Financial Executive Research Foundation (FERF) speaks with key industry stakeholders in the current push to incorporate blockchain technology into various financial applications in order to understand its practical implications for core financial reporting functions and its knock-on effects on both auditing and accounting practices.

Taken in conjunction with the survey associated with this report, these are the key takeaways for senior-level financial executives to consider when approaching blockchain:

1. It's the early days: How and when blockchain is adopted into the everyday functions of the financial suite will not be known for five to ten years.
2. Big questions remain: Fundamental precepts of accounting and auditing will need to be adapted or completely rethought to incorporate distributed ledger technology.
3. Bitcoin is not blockchain: Whether cryptocurrencies double in value or collapse to zero, blockchain will need to be addressed by senior-level financial executives.

## BACKGROUND

With only 10 years of history since blockchains were first proposed, there are some critical terms that FEI members need to understand before wading into the technology.



### BLOCKCHAIN

A “distributed ledger” technology, meaning that all transactions recorded within a particular database are shared, synchronized, and approved across a network and verified by consensus using cryptographic algorithms. This is quite different from traditional financial ledger recording methods where transactions are recorded but are verified by a trusted third party.



### BITCOIN AND CRYPTOCURRENCIES:

Cryptocurrencies are “tokens” that are traded using blockchain technology that were envisioned to replace traditional state-sponsored fiat currencies. The first cryptocurrency — Bitcoin — was created as a method of proving the viability of the concept of blockchain.



### INITIAL COIN OFFERING (ICO):

ICOs are the cryptocurrency world's version of an IPO, allowing “alternative” coins to be purchased and traded over an individual blockchain. Tokens created by ICOs are distinct from those cryptocurrencies “mined” using powerful computing rigs that solve cryptographic problems.



### SMART CONTRACTS:

Code using the blockchain that allows parties to create a self-executing contract.

## I. PAYMENTS ARE JUST THE BEGINNING

Blockchain was born out of the payments industry and in many ways that is where it remains, as technologists, start-ups, and engineers iterate on the original concept.

It was first proposed as part of a 2008 white paper titled "Bitcoin: A Peer-to-Peer Electronic Cash System" authored by an anonymous author (or anonymous group) who went by the nom de plume "Satoshi Nakamoto." The paper suggested a "purely peer-to-peer version of electronic cash that would allow online payments to be sent directly from one party to another without going through a financial institution."

However, for people to send and receive payments, there would need to be a substitute for the "trusted third party" role of a bank.

The solution to the third-party problem, according to Satoshi, was a security and recordkeeping program that creates computer-generated "blocks" tied together in cryptographically enhanced "chains." When connected, these "blockchains" would create an online ledger of transactions that is, theoretically, both distributed (peer-to-peer) and immutable (cannot be modified).

In theory, these ledgers of blockchains could obviate the need for a bank to confirm transactions, since the algorithm would only transact using the consensus of the distributed network.

Since the Satoshi paper was published a decade ago, most of the focus on the use of blockchain has been on its functioning as a consensus-driven ledger with respect to all types of payments, mostly in cryptocurrencies.

"Today blockchain is a proven technology, but it's not a technology that has already established a defined ecosystem of players. Everybody's now making progress and trying to work with others on the first scenarios," says Martin Naraschewski, Vice President of Finance Solutions, SAP SE. "There are a number of proofs of concept, like for domestic and international payment transactions. We are more in a proof of concept stage, just trying to find the right use cases. Clearly from the history of Bitcoin and international cross-border payments, these payments are the most natural candidates and the furthest ahead."

However, financial executives expect that blockchain will rapidly be adopted for use in other scenarios involving payments, like capital markets and contracts.

"Capital markets today involve very complex processes. You have many intermediaries at the time you buy a stock and you never have the stock in your possession. These transactions are always managed and hosted by someone else because we had to invent trusted parties to support those services," says Eric Piscini, principal for Banking and Technology at Deloitte Consulting

LLP. "Today, those services and payers don't have a function in the blockchain world. Blockchain completely changed the way we think about trading, the way we think about security lending. We will get better, faster, cheaper service."

"What's interesting about this one is you're going to have major disruption in the core business of some of the financial services payers," Piscini adds. "The function of those payers in financial markets and financial services will either be removed or completely reinvented."

"Beyond payments, the use of blockchain within so-called 'smart contracts' is a mechanism that senior-level financial executives may see sooner rather than later," says Campbell Pryde, the President and CEO of XBRL U.S. and a member of the board of the Data Coalition. Pryde argues that blockchain-based smart contracts will allow companies to pull data from their financial statements in order to fulfill their contractual obligations. This concept is already being tested in the insurance and reinsurance industries.

"With a smart contract, any transaction is publicly available and can be seen," Pryde says. "Also, with smart contracts you can take actions based on underlying information that's coming from financial statements. So for example, if there's a loan covenant or something similar, a smart contract takes certain actions if a default clause is triggered or a rate is adjusted. What we'd be interested in is how do we standardize this information so smart contracts can talk to each other and can initiate transactions based on underlying information coming from companies."

Given that blockchains are already interacting with financial statements by enforcing payments and pulling data associated with smart contracts, industry professionals are beginning to ask whether the technology could take the next logical step of moving all financial reporting into the distributed ledger world of blockchain.

## II. CAN BITCOIN QUESTIONS LEAD TO BLOCKCHAIN FINANCIAL REPORTING ANSWERS?

Recent statements have thrown into question Bitcoin trading and ecosystems, but despite the negative press, accounting and financial reporting professionals are pressing ahead with exploring the incorporation of its underlying blockchain technology into financial statements.

"Bitcoin could disappear tomorrow and it would not affect the future of blockchain technology," says Campbell Harvey, Professor of Finance at Duke University's Fuqua School of Business. "One theoretical application of blockchain is to financial reporting and

this is exactly the point in time to discuss the advantages and disadvantages.”

The past several months have brought powerful criticisms of Bitcoin.

Last year JPMorgan CEO Jamie Dimon called bitcoin a “fraud” and compared the rise of the digital currency to the “Tulip Mania” of 17th-century Holland, considered to be one of the first speculative investment bubbles.

“It won’t end well. Someone is going to get killed,” Dimon is reported having told the audience.

Separately, and more relevant to financial preparers, U.S. Securities and Exchange Commission Chief Accountant Wesley Bricker told an audience at an accounting industry conference that the regulator is reviewing the way ICO firms are reporting (or not reporting) their activity within financial statements.

“The SEC’s registration requirements, including for securities offerings, include various requirements for the filing of audited financial statements,” Bricker said. “An organization should consider applicable accounting and reporting guidance, for example in the U.S. GAAP, when preparing financial statements.”

Harvey argues that despite the recent criticisms of Bitcoin, financial executives should not overlook the underlying benefits of the technology that allowed for the digital currency’s rise to prominence.

“Blockchain is a very general technology and it affects many different things. Many of FEI’s member firms will be impacted in one way or another, and one particular way will be in financial reporting,” Harvey says. “The main mistake people make is that when they start talking about blockchain they morph the discussion into one about Bitcoin.”

At its core, blockchain technology allows for the creation of a distributed ledger that records transactions between parties with transparency using a secure system that immediately and permanently verifies data. While Bitcoin is the most prominent product currently employing blockchain, the technology is agnostic with respect to the nature of the data that can be recorded. That means everything from customer orders to fleet costs can be incorporated into a financial system using distributed ledger technology.

The primary benefit of blockchain for financial statements can, according to Harvey, be summed up by a single term: real time.

“We currently use this model that relies on reporting numbers from the past within annual, semiannual, and quarterly reporting,” Harvey explains. “What blockchain allows you to do is create a ledger maintained by the internal audit team that receives immediate and secure data from the business lines, which can then be potentially validated by external auditors in real time.”

In addition, companies would employ a “private distributed ledger” (as opposed to Bitcoin’s public ledger) that would allow external parties to see only what is in the typical financial report, but also allow financial executives and leadership to view information in much more detail.

“Creating a private, real-time ledger would also, theoretically, remove the risk of earnings management from financial reporting, since all transactions are validated and recorded as they happen,” Harvey adds.

“When you go to real time you actually eliminate all the negative incentives that exist at the end of the quarter to make the numbers look good... because there is no end of quarter,” Harvey says, adding that a recent survey by Duke revealed that 78 percent of CFOs admit to “destroying” value within their own firms in order to manage investor expectations at quarter end.

“Many companies don’t hire, don’t advertise, and delay valuable projects around the end of the quarter since these things could impact investor sentiment, even though they might be correct business decisions,” Harvey says. “With real time reporting, those incentives disappear. Firms will focus less on managing their earnings and more on managing their expertise to grow value.”

Several questions remain to be answered regarding blockchain and financial reporting, not least of which is its impact on accounting policy and regulation.

“Disruption of existing systems is already taking place where traditional ledgers and recording methods have been used,” says David L. Yermack, Chairman of the New York University’s Stern School of Business. “You’re seeing things happening already in supply chain management, and you can look at some of the platforms being built by Microsoft and IBM for companies like Maersk, where they’re introducing a shared ledger.” Yermack explains that reducing their supply chain management reporting operations allows companies to reduce their need to audit “30 different companies who have kept 30 different ledgers.”

“It’s not just that you’re introducing the concept of a shared ledger that will greatly reduce the need for financial recordkeeping, just the sheer volume of it, but the transactions themselves are put into this blockchain format, which I would call a self-auditing technology,” Yermack says. “If anybody goes back and changes any of the data, the change is apparent immediately to all users, so you don’t need an audit looking for stuff by trial and error.”

“There are certainly accounting items that are not cash flow based that can come in lumps, and decisions need to be made based on that,” adds Harvey. “But when you have a system that is completely transparent, the value of it should be explored.”

**“When you go to real time you actually eliminate all the negative incentives that exist at the end of the quarter to make the numbers look good...”**



### III. BLOCKCHAIN AND THE TRANSFORMATION OF FINANCE

*Financial Executives Research Foundation (FERF) spoke with Jon Raphael, audit chief innovation officer at Deloitte & Touche LLP, about blockchain, the future of financial reporting, and a realistic pathway to disruption.*



**JON RAPHAEL**

*Audit Chief Innovation Officer  
Deloitte & Touche LLP*

**FERF:** Jon, how would you rank blockchain and distributed ledger technology in terms of their potential influence on accounting and financial reporting, especially when compared to other things like artificial intelligence and regulation?

**Jon Raphael:** Blockchain has the potential to be very transformative. By itself blockchain will likely change how records are maintained and how value is transferred between counterparties. Blockchain's impact is often compared to the impact the internet has had on information. Today, the internet is an integral part of the fabric of our lives – for example, most research is conducted online. Blockchain, when it reaches scale, could produce the same type of impact in terms of how transactions are recorded, and on the transfer and evidence of value. I'm confident we will witness this as we start to see scaling of blockchain applications over the next couple of years.

Most compelling, however, is blockchain's potential for transformative analytic capabilities. One of the beneficial outcomes of blockchain is easy access to structured data which can then be used to generate advanced analytics and accelerate machine learning. This will enable tools to get smarter and drive us further and faster toward more continuous auditing and assurance.

**FERF:** When people talk about blockchain, it's often associated with products like Bitcoin or other cryptocurrencies. The value of those has run up significantly over the past couple of months. Do you think that's having a negative effect on the adoption of blockchain, or are people becoming more adept at understanding the difference between cryptocurrencies and blockchain?

**Raphael:** Cryptocurrencies such as Bitcoin are making people who are really interested in blockchain more aware because once they start to dig in and understand cryptocurrencies, they realize they are just one use case for blockchain. Another key factor influencing and driving interest are the ICOs in which people are raising money for future benefits provided by blockchain. In fact, one of the ways you can fund an ICO investment is with Bitcoin. But when you think about the potential to impact accounting books and records, it's really all about the underlying blockchain technology itself. The marketplace is continuing to increase its understanding of blockchain technology and its impact, but there is a long way to go.

**FERF:** Sometimes for a market or an industry to stand up and take notice of something, it needs somebody big to say, "Yes, we see the potential in this, and we're going use this." How would you characterize interest in the Fortune 500, financial staff and CFOs, when it comes to blockchain, in particular with regard to financial reporting? Is it on their radar right now?

**Raphael:** Absolutely. Many companies I speak with have created blockchain labs or experiments, or they're working within a consortium to understand or to scale potential use cases for a particular transaction type. However, we're not hearing many companies commit to putting all their books and records on blockchain in the coming months, and for good reason. That's because the key to effective blockchain deployment is intelligent choice of the use case. We'll see some of these things start to scale over the next year or so.

**FERF:** It's interesting you talk about it being early days, and it certainly is from what we're hearing from other people. Are preparers, as I say, prepared for that sort of change, or do they see that same sort of potential?

**Raphael:** Companies are contemplating this very issue. As blockchain develops more use cases, it'll change more processes, work flows, controls, and transactions – but also raise new risks such as security and access controls. It is important to understand that a lot of what is occurring in the marketplace today are specific use cases about certain transaction types. For example, companies might say, "We want to do a derivative transaction in the blockchain," or "We want to be able to represent and exchange some physical documents," e.g., a title or a deed, which currently exists today as some sort of a contract or legal document. However, at least in the near term I don't see a company completely transforming all of their processes with blockchain.

Case in point: management estimates, which are integral to financial reporting. Companies book legal accruals when there are probable losses that are reasonably estimable. Obviously no two companies are going to agree on a legal settlement before they actually settle a case, but accounting rules requires an estimate to be made. The notion of having that estimate recorded on the blockchain certainly doesn't seem to be a great use case. Moreover, there are many similar judgments that occur throughout the financial reporting process, such as valuation of complex financial instruments, revenue recognition, or goodwill impairments.

So will use cases change how information is prepared and used in financial reporting, provided to auditors, and so on? Of course. And, will it be structured, and is there potential then to access that information with advanced tools that drive efficiency and effectiveness? Absolutely. You still have to compile and create financial statements and disclosures. I don't see that entire process, end-to-end, changing drastically in the short- to medium-term. Long-term remains an open question. Many things are occurring at an amazing speed. We'll see where it all goes.

**FERF:** Realistically, where do you see blockchain adoption within financial reporting in the next 10 years, not just theoretically?

**Raphael:** Ten years is a really long time to project what will happen. Many of the use cases over the next few years will be transaction-oriented or will digitize and record ownership, such as a blockchain derivative transaction that references an interest rate going up or down. The ability for the blockchain to leverage smart contracts to be able to reference a data source to see whether interest rates moved up or down, and then automatically facilitate the settlement and recording of transactions is one use case. Also, things like deeds, titles, even ownership of music or other digital assets, having them exchanged via blockchain, thereby also facilitating the appropriate collection of royalties also has great potential.

Again, think back to how the internet evolved. It existed for a very long time before it was adopted by the masses. Initial use cases were generally intra-entity or within a closed loop of entities, which is very similar to what's happening with blockchain today. Over time, it achieved more scale, became more pervasive, and then simply integrated into the fabric of how we function.

One of the strengths of blockchain, of course, is that participants can see the information. How much information everybody is comfortable sharing – and that information could provide a strategic advantage – still needs to be resolved. The desire to make that information available for other parties to see is something companies will need to think through for each use case. This is one of the challenges that lies ahead for massive scaling of blockchain.

## BLOCKCHAIN TECHNOLOGY IS CLOSE, THE TALENT IS NOT

Eventually moving financial statements into distributed ledgers means incurring a "switching cost," albeit not strictly from purchasing new IT systems. Switching costs can be defined, broadly, as the time, money, and effort requires to start using a new technology.

"What you're likely to see is that people will stick with their old systems as long as possible, but end up getting leapfrogged by people who force them into changing on a schedule not

under their control," says NYU's Yermack. "I think organizational inertia, and the lack of budgets for hardware and software, are probably the biggest impediments. I think there's going to be a certain need to hire IT people and I understand that there's a real shortage of people in the industry right now, but universities are pretty actively trying to remedy this. Maybe there's a shortage of human capital, but I think the transition is going to happen well within the space of a generation."

"The size of the blockchain talent pool is one of the biggest factors that will be important to scale its adoption," says

Darshini Dalal, U.S. Blockchain Lab Leader at Deloitte Consulting. "A second is going to be the standardization of both platforms as well as the technology in the best manner. Within these platforms there should be a standardized protocol. I think that that jumble of awareness as well as standardization of what we mean by things, and getting people to become knowledgeable about them, is going to be the biggest element of surprise for blockchain's adoption to be, I would say, memorialized."

Getting users comfortable with not only paying to upgrade their systems, but also hiring the talent needed to run them, is a particular challenge in proving the ROI of blockchain.

Dalal continues: "The key challenge we are seeing is the same challenge that all of the business network approaches are facing -- what's the value-add to go to the network if there are no parties around. This is the challenge that blockchain will face naturally as a business network technology."

## IV. THIRD PARTY VS CONSENSUS

The fervor around Bitcoin, cryptocurrencies, and their underlying blockchain technology is hitting new highs and lows. Bitcoin's value soared in 2017 from \$1,000 to just under \$20,000 before dropping down to around \$13,000 at the end of the year. Seeing opportunity, companies are changing their entire business plans -- such as Long Island Iced Tea Corp. morphing into Long Blockchain Corp. -- in order to ride the valuation wave.

But despite the fervor of blockchain enthusiasts seeking to apply the technology to financial reporting and for completely disrupting corporate disclosures, there are significant hurdles that sit at the core of modern accounting practice and audit methodology, says Joshua Coyne, assistant professor at the University of Memphis School of Accounting.

"The issue with blockchain is that people think, 'It has the word ledger, ledgers are used in accounting, therefore blockchain plus ledger equals good accounting,'" Coyne says. "But that's hype. When it comes to the blockchain, even though it's a novel technology I don't believe it's a novel technology for financial reporting."

Accounting standard setters have the cryptocurrencies on their radar, if not the accounting implications of blockchain in particular. This past summer the Financial Accounting Standards Board (FASB) received a request from The Chamber of Digital Commerce to add a project around accounting for digital currencies to its Emerging Issues Task Force agenda.

"There is currently no authoritative literature on accounting principles generally accepted in the United States (U.S. GAAP), which specifically addresses the accounting for digital assets,

including digital currencies," the organization said in its agenda request to FASB, adding that the growing market requires "accounting guidance addressing the recognition, measurement, presentation, and disclosure of digital currencies and related transactions."

A FASB spokesman said that the staff is currently performing research on accounting for cryptocurrencies and will discuss the research with the Board at a future public board meeting.

While adopting a distributed ledger technology into modern financial reporting may seem like the next logical step, senior-level financial executives should realize that the structure of auditing and accounting under U.S. GAAP presents several issues.

First and foremost, according to Coyne, the distributed ledger system technology only recognizes a transaction if it's accepted by all parties on the blockchain and recorded. Put simply, if a transaction is recorded in the ledger it exists, and if it's not recorded in the ledger it does not exist. However, in modern accounting and financial reporting, transactions can live outside the ledger and still have an economic impact on an organization.

"Accounting is fundamentally different from blockchain because the idea is to capture real world events that live outside of the ledger," Coyne says. "In blockchain everything exists inside the ledger and there are no real world events that live outside of that ledger."

Coyne also argues that employing a distributed ledger in financial reporting assumes that all users have agreed to accounting treatments upfront, something that is unlikely given the constantly changing nature of finance.

"In financial reporting it's not just did this transaction occur, it's did this transaction occur and does the reporting of it satisfy GAAP or IFRS," he says. "We have to be in a situation where all of the members of the network know enough accounting to be able to create consensus about that. We can't have average retail investors participating in this network because they would throw up their hands and say, 'Well, I don't know accounting standards. I can't tell you whether this was correct.'"

For Coyne, and other financial reporting blockchain skeptics, it remains to be seen if it makes sense for financial leaders, standard setters, and regulators to put more resources into exploring the technology.

"I am always trying to push accounting more into IT and not less because I think that's extremely important for accounting students who are coming out and who need to change the profession," he says. "I really struggle with it when it comes to blockchain."

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