ExpertInsights@IBV

Blockchain...really?

Or blockchain...really!

IBM Institute for Business Value

What's in a name?

In December 2017, an unprofitable beverage company's stock surged 289 percent when it rebranded itself with the word "blockchain."[1] A few weeks later, Kodak's stock rose significantly after announcing it would venture into blockchain and cryptocurrency.[2] Do these events signal that blockchain is riding a wave of inflated and unsupportable expectations? Although blockchain has captured the imagination of many people, they disagree about what blockchain actually is.

A transformational technology

The confusion around blockchain is compounded by marketing terminology that is designed to make blockchain concepts broadly accessible. But these terms break down upon analysis. A "smart contract" is a concept that holds promise and interest. Yet enthusiasm dissipates rapidly when it's revealed that a smart contract is a codified "if/then" statement. This concept is not "smart" or an enforceable contract.

Lack of clarity fuels questions about whether practical uses for blockchain technology truly exist. The challenge is generally framed as a question of why you need to use blockchain instead of the proven capabilities of centralized databases. Given the current maturity of blockchain, this question isn't an empty one. Blockchain is generating continuous debate among technologists, which distracts from broader issues of how blockchain is poised to transform and disrupt the marketplace.

Even the Chancellor of the Bank of England, an outspoken critic of Bitcoin, a successful blockchain application, recognizes that blockchain mirrors a fundamental shift in society's preference for decentralized peer-to-peer interactions.[3] If this shift were realized in banking with the introduction of a central bank-issued digital fiat currency, the result could be an outflow of customer funds from deposit accounts. The loss of these funds would fundamentally challenge the way banks serve and lend to their customers.

Déjà vu all over again?

Although a range of challenges remain to be resolved, markets are ascribing enormous value to the utility of blockchain and decentralization. In December 2017, the total market capitalization for cryptocurrency briefly exceeded 370 billon USD, surpassing the market capitalization of the largest US bank.[4]

We've seen this movie before. When Netscape was only a 16-month old company with no profits, it heralded the first wave of the Internet with a successful IPO that valued it at 2 billion USD. The public correctly pre-judged and assigned significant value to the transformational power the Internet represented.

The blockchain transformation at hand includes a future where everyone can share in the transfer of value, powered by transparency and trust. From financial services to social networks, business models based on centralized processes are ripe targets for competition. These businesses have the potential to leapfrog the existing infrastructure and reinvent commerce. But first, they need evidence that blockchain applications hold a meaningful commercial advantage over centralized database technology.

Fact or fiction

"We're not saying that tomorrow you can flip the switch and a blockchain is going to solve these problems. What's important is how it opens the door to a new way of thinking about the problems we face."[5]

Michael Casey, a co-author of
The Truth Machine

Many blockchain features aren't hype. At the same time, some features commonly associated with blockchain have questionable accuracy.

Blockchain is immutable

Events have shown that blockchain history can be changed. In a well-publicized example, new rules were established for a public blockchain that invalidated previously valid blocks so that transactions could be cancelled and the blockchain rolled back to a previous state.[6] This action was taken transparently and for a good reason: to prevent the loss of 40 million USD. It has led to a healthy debate about the role of immutability and whether errors and malicious actions should be left uncorrected. This issue of how immutability squares with regulatory rules requiring the easy deletion of consumer data is another area of interest.[7] For example, in Europe, the General Data Protection Regulation (GDPR) gives consumers the right to have their data deleted.[8] Development of viable responses to these challenges are underway, including not placing highly sensitive data, such as medical records, directly on the blockchain. Instead, the information is saved in a database and only stored as a hash on the blockchain.

Blockchain is anonymous

Ledgers share information across a network of participants. Even if parties are identified only by random numeric addresses, they are not truly anonymous. Transaction detail may be used to reattribute their identities, which may affect a party's advantage in a transaction and violate consumer protection laws. Private ledgers, however, can maintain confidentiality and privacy between trusted parties.

Blockchain is unhackable

Blockchain security requires the same strong practices and policies as other digital processes. In situations with insufficient or ignored security features, malicious exploits have resulted in the theft, misuse and destruction of assets. One study of a million smart contracts identified about 34,000 as susceptible to malicious hacking.[9]

Creating an Internet of Value

Some blockchain solutions aren't ready for large-scale transactions. For example, major public blockchains only run 10-15 transactions per second because of self-imposed limits that promote decentralization. On the other hand, private blockchains, such as the Open Source Foundation's Hyperledger Fabric, can achieve millisecond performance. Lab tests show that, in the future, commercial blockchains will exceed the performance of Alibaba, which processed 325,000 orders per second at its peak during Singles Day 2017.[10]

Twenty years from now, Bitcoin may be best known for marking the beginning of a journey to the internet of value: "a secure, direct way of exchanging money, intellectual property and other rights and assets without the involvement of traditional intermediaries."[11] Bitcoin has demonstrated that value, as tied to blockchain, can be stored and transmitted.

Blockchain's ability to transfer value and tackle financial inclusion is recognized and promoted by the United Nations and central banks. A number of these banks are actively considering the launch of digital fiat currency. Sweden is facing a cashless future and is actively investigating the potential of e-Krona to protect its society from concentrating the payments business with a few, select private companies.[12]

Worldwide commerce is being rearchitected, and leading global companies have used blockchain to empower faster, more efficient and secure global trade. They are using it to unite manufacturers, shipping lines, freight forwarders, port and terminal operators, shippers and customs authorities. An entire blockchain driven food ecosystem that links growers, manufacturers, retailers, regulators and others is in production. Its goal is to protect food safety while eliminating systemic inefficiencies and food waste. What remains to be seen is how fast these initiatives are adopted and who the winners will be.

An unfolding story

Only the first chapter or two has been written in the biography of blockchain. Decentralization is a potential threat to large companies because it lowers the barriers to entry and offers opportunities for new entrants to attack centralized companies that have been the hub of commerce.

Production blockchains with real clients and real use cases have arrived. But how will large companies choose to compete? Will they try to hold their ground, defending legacy environments while smaller, nimbler competitors try to disrupt them? Or will they double down on blockchain and use their scale and scope to beat the upstarts at their own game?

Getting blockchain off the starting blocks

Blockchain isn't the answer for everything. For example, replicating extensive enterprise data that is adequately stored and shared elsewhere isn't necessary. However, major companies are shifting from proofs-of-concepts into production, particularly with cross-domain and ecosystem opportunities. Blockchain is being used where trust, transparency and data synchronization are needed for parties to work together. Although the scope of these early efforts may be limited, the use cases aren't.

As you decide where you might use blockchain, here are a few steps to help make a blockchain project successful.

1. *Secure senior executive support*. Blockchain should be backed by the business, not just the innovation organization. Buy-in founded on a practical business case is a critical success factor.
2. *Gain expertise.* Outside experts can help educate and accelerate the path to production, but the transformational opportunity needs to be understood in terms of the future of a business and its customers. What new doors can be opened? Developing knowledge paves the way for change.
3. *Start slow, grow fast.* Most enterprises are ready to move beyond simple proofs of concept. Production might begin with a project that is well-contained and from which your organization can learn. Build on success by increasing deployment scope and breadth.
4. *Remember that language matters: Avoid buzzwords.* Blockchain jargon that is meant to simplify concepts can misinform and sow confusion.

Notes and sources

1 Shapira, Arie, Kailey Leinz. "Long Island Iced Tea Soars After Changing Its Name to Long Blockchain." Bloomberg. December 21, 2017 https://www.bloomberg.com/news/articles/2017-12-21/crypto-craze-sees-long-island-iced-tea-rename-as-long-blockchain

2 Herron, Jeremy. "Kodak Surges After Announcing Plans to Launch Cryptocurrency Called 'Kodakcoin.'" Bloomberg. January 9, 2018. https://www.bloomberg.com/news/articles/2018-01-09/kodak-stock-surges-after-announcing-coin-to-join-crypto-craze

3 Carney, Mark. "The Future of Money – a speech by Mark Carney." Bank of England. March 2, 2018. https://www.bankofengland.co.uk/speech/2018/mark-carney-speech-to-the-inaugural-scottish-economics-conference

4 Francis, Jeff. "Cryptocurrency Market Cap Now Higher than JPMorgan Chase." Bitcoinist. December 6, 2017. http://bitcoinist.com/cryptocurrency-market-cap-now-higher-jpmorgan-chase/

5 Popper, Nathaniel. "Tech Thinks It Has a Fix for the Problems It Created: Blockchain." New York Times. April 1, 2018. https://www.nytimes.com/2018/04/01/technology/blockchain-uses.html

6 Del Castillo, Michael. "Ethereum Executes Blockchain Hard Fork to Return DAO Funds." Coindesk. July 21, 2016. https://www.coindesk.com/ethereum-executes-blockchain-hard-fork-return-dao-investor-funds/

7 RMA Journal Hardening Chains

8 Vollmer, Nicolas. "EU GDPR "Right to erasure ('right to be forgotten')."" Secure Data Service. December 16, 2017. http://www.privacy-regulation.eu/en/17.htm

9 Orcutt, Mike. "Ethereum's smart contracts are full of holes." MIT Technology Review. March 1, 2018. https://www.technologyreview.com/s/610392/ethereums-smart-contracts-re-full-of-holes/

10 McLean, Asha. "University of Sydney touts Red Belly Blockchain as outperforming Visa." ZDNet. October 25, 2017. https://www.zdnet.com/article/university-of-sydney-touts-red-belly-blockchain-as-outperforming-visa/; Routh, Adam. "Alibaba Records $25.3 Billion in Singles Day Sales." Barron's. November 12, 2017. https://www.nasdaq.com/article/alibaba-records-253-billion-in-singles-day-sales-cm876020

11 MacIver, Kenny. "From the internet of information to the internet of value." Global Intelligence for the CIO. July 2016. https://www.i-cio.com/big-thinkers/don-tapscott/item/from-the-internet-of-information-to-the-internet-of-value

12 Aitken, Roger. "Cashless Society: Is This What An 'E-krona' In Sweden Could Look Like?" Forbes. September 26, 2017. https://www.forbes.com/sites/rogeraitken/2017/09/26/cashless-society-is-this-what-an-e-krona-in-sweden-could-look-like/#1b576150165e

About ExpertInsights@IBV reports

ExpertInsights@IBV represents the opinions of thought leaders on newsworthy business and related technology topics. They are based upon conversations with leading subject matter experts from around the globe. For more information, contact the IBM Institute for Business Value at iibv@us.ibm.com.

Experts on this topic

Jason Kelley

General Manager, Blockchain Services
IBM
https://www.linkedin.com/in/jason-kelley-599330/
jekelley@us.ibm.com

Jonathan Rosenoer

Global Governance and Compliance Leader
Master Inventor
IBM Blockchain and Digital Currency
https://www.linkedin.com/in/jonathan-rosenoer-87811/
jrosenoer@us.ibm.com

Jesse Lund

Vice President, Global Blockchain Market Development
IBM Financial Services Sector
https://www.linkedin.com/in/jesselund/
Jesse.Lund@ibm.com

New Orchard Road
Armonk, NY 10504
Produced in the United States of America
June 2018

55017255USEN-00