Supply Chain Cryptocurrency: Building Supply Chain Transparency With Blockchain

Since Bitcoin's founding in 2009, cryptocurrency has been making erratic but persistent inroads into the economic and commercial lives of businesses and individuals around the world. Cryptocurrency has created billionaires, and the technology it's built upon—the blockchain—has shown powerful potential that goes far beyond its usual applications in the financial services field.

Major corporations—including heavy hitters such as IBM, Microsoft, and Samsung—have already begun to tap this potential by incorporating both cryptocurrency and the blockchain into their business activities. One area of particular importance is the supply chain, where cryptocurrency and the blockchain can both be leveraged by savvy users to secure savings and value

while also improving transparency and security.

Supply Chain Cryptocurrency and the Blockchain

Every year, global supply chains grow longer and more complex. Potential disruptions in global trade, from pandemics to political upheaval to natural disasters, grow more severe.

To operate their businesses, manufacture goods, and deliver their products to customers around the world, companies rely on an intricate web of suppliers, shipping and logistics organizations, and retailers, all collaborating and communicating well enough to get the job done.

This complexity requires advanced and proactive supply chain management technologies. And for maximum efficiency, profitability, and value, it absolutely requires end-to-end supply chain visibility. Full visibility into not just the details of spend, but business-critical concepts like sustainability, authenticity, and ethical procurement helps companies reduce risk, build value, and secure the trust and custom of their target markets.

Bitcoin and other digital currencies like it—including Ethereum, Dogecoin, etc.—provide transaction-level transparency and authenticity through the blockchain platform. And some organizations are, in fact, taking the Bitcoin concept and applying it to proprietary cryptocurrencies.

However, for organizations looking to optimize supply chain efficiency and resilience, it’s the blockchain that holds the true value, since it allows for the use of both digital currency and advanced digital technologies in optimizing asset management, logistics, and strategic sourcing.

> *The same technology that rocketed Bitcoin to the top of the cryptocurrency*

heap can help you achieve total visibility into, and full control over, your supply chain.

Some companies, such as Coca-Cola, are tapping into cryptocurrency networks to take advantage of the token system. Using the Ethereum network, Coca-Cola is experimenting with decentralized finance (DeFi) to allow its suppliers to communicate and trade using the Ethereum digital currency *and* "tokenize" physical assets by assigning unique identifiers to them, allowing for better tracking, quality control, and inventory management. In addition to eliminating the need for third-party financial institutions such as banks, the platform also supports the use of smart contracts to fully automate terms and conditions between parties.

The overall goal is to remove as many obstacles to efficient, cost-effective commerce as possible while ensuring total transparency, authenticity, and the safe, effective integration of other digital technologies such as The Internet of Things (IoT).

Elsewhere, software titan Microsoft has partnered with an Ethereum venture studio called ConsenSys and professional services firm Ernst & Young (along with a variety of other organizations, including Duke University and processor company AMD) to develop the Baseline Protocol.

This open-source platform is designed to remove data silos and improve collaboration and communication by standardizing data exchange through the blockchain. Over time, companies sharing information on the platform will reduce their operational expenses and build value through more effective process automation, increased data security and transparency, and reduced overhead.

WalMart Canada is already leveraging blockchain technology to manage their logistics data. By partnering with DT Labs, the company created a new payment processing and invoice payment system built on the blockchain. By streamlining

processes and incorporating a seemingly infinite number of datapoints into a managed data ecosystem, the company created a “single source of truth” that allowed for automatic payments based on tracked events and much improved discrepancy management. In fact, after implementing the system, WalMart reduced carrier invoice disputes by 97%.

Other projects leveraging the blockchain to improve supply chain management include:

- **VeChain (VET)**, a public blockchain designed from the beginning with supply chain optimization and security in mind. This platform uses radio frequency identification (RFID) sensors embedded within products or packaging to track them in real time through every stage of the supply chain. Used by major companies such as Walmart China and BMW, VeChain also supports two digital currencies: VET, which is used for economic trade, and VTHO, which is used to manage smart contracts.
- **IOTA (MIOTA),** a distributed ledger platform powered by a proprietary infrastructure called Tangle. With IOTA, companies can access all points of their global supply chain in real time, secure proprietary information (including intellectual property, trade secrets, etc.) from access by third parties, and provide a richer data set for companies to analyze in order to drive process optimization, improve supplier compliance, or develop and source new products.
- **Ambrosus (AMB)**, which began on the Ethereum network but has since moved to its own blockchain-based platform, is focused on product tracking and verification. It uses Amber tokens (AMB) to help the food and pharmaceutical industries, along with a growing list of other markets, monitor goods through the Internet of Things to track freshness, quality, location, and more.

Initiatives like these are just the beginning. Blockchain is already being used in more than fifty industries, with current and future products on the table designed

to help organizations and government bodies manage not just supply chains, but other complex infrastructures such as vote tracking, law enforcement, healthcare, and waste management.

Beyond Bitcoin: Benefits of the Blockchain

From digital startups to well-established brick-and-mortar companies, businesses of all sizes and types are tapping into the power of the bitcoin platform to strengthen their competitive footing, eliminate waste and lower costs, and help center procurement as the core of strategic value and innovation for their organizations.

Blockchain-powered tools provide a wide range of benefits, including:

- **Better payment processing.** Smart contracts—which require certain indelible conditions to be met before payment can be issued—ensure both parties hold up their end of any given deal. But they also allow for payments to be handled and issued (or received!) in a timely fashion.
  Automatic tracking of key events using both software and physical sensors in the IoT (e.g., successful delivery of an order, on time and with the specified quantities and quality) allows teams to "set it and forget it," issuing payment once the system confirms all conditions are met. This also allows accounts payable teams to automatically capture incentives and early payment discounts that may be coded into the contract, without having to hover over every purchase.
  Conversely, vendors who haven't met the terms of the contract will find themselves motivated to make swift corrections to receive their money.
- **Environmental impact and sustainability.** The blockchain provides significant value and savings in multiple ways related to a company's environmental footprint and its sustainability practices. As concern over

climate change continues to grow, sustainably sourced, environmentally friendly products with a clear sourcing trail will prove more and more attractive to consumers.

Monitoring suppliers for compliance with environmental and sustainable practices will also help companies save money by trimming waste, encourage reuse and recycling where applicable, and further refine their processes to lower costs *and* environmental impact over time.

- **Authenticity and consumer trust.** For luxury name brands, providing genuine goods to customers paying top dollar is essential, and tracking goods and materials throughout the supply chain can help guard against counterfeiting and fraud. Companies also need reliable ways to ensure the authenticity of digital assets such as movies, eBooks, music files, etc., both to minimize risk of piracy and ensure consumers are getting what they paid for.

  But it's not just luxury brands or media distributors that benefit from, or worry about, authenticity. Companies in the food, pharmaceutical, and manufacturing industries all need reliable tools for ensuring their goods are of the quality and materials necessary to ensure safe use or consumption.

  In addition, having full transparency and authenticity for goods in the digital supply chain strengthens consumer trust and reduces risk of costly legal action, boycotts, etc.
- **Lower costs across the procure-to-pay lifecycle.** Advanced automation, secure data management, and elimination of paper-based workflows reduce costs at every stage of the procure-to-pay process. Total visibility into spend data, with real-time monitoring of goods and materials, provides more useful insights, in a more timely fashion, so decision-makers can take advantage of opportunities or move to protect business continuity more quickly. Over time, iterative continuous improvement creates a ripple effect, generating greater value and reducing costs even further.

Tips for Implementing Blockchain Solutions Effectively

- As with all major initiatives, begin with a needs assessment.
- Carefully examine and consider use cases and case studies relevant to your industry, vertical, and scaling capabilities.
- Consider the difference between executing a strategy for cryptocurrency and supply chain transparency. The former relies on decentralization and prioritizes anonymous, autonomous currency exchange; the latter involves known parties with shared goals, a need for clear and complete data that can be accessed and analyzed as needed, and a robust software and data management ecosystem that allows for real-time tracking at whatever level of granularity is required to meet organizational goals.
  In addition, blockchain in the supply chain requires additional consideration of data security, as all participants can access data once granted permission.
- Determine:
    - The partners you will work with in building a secure, transparent supply chain.
    - The controls and protocols necessary to ensure data security as well as shared access.
    - Mechanisms that set the boundaries for the platform, including:
        - Selection, review, and confirmation criteria for joining the network.
        - The scope and scale of data to be recorded and shared.
            - For example, companies might use the blockchain system to track items and materials only, or distribute only approved information collected and analyzed from other applications, thus providing an extra layer of security as compared to simply

throwing the doors open, so to speak.
        - Blockchain networks require peer-to-peer review, and so may not be suited for direct oversight and management of high-volume transactions, but rather shared access to approved transaction data already processed in other applications.
    - The encryption methodologies used.
    - Scope of smart contracts.
    - Methods for ensuring blockchain data aligns with physical reality, including:
        - Physical audits, both manual and using IoT technologies such as RFID sensors, QR codes, and scanners to improve accuracy.
        - Tokenization to ensure all items moving through the supply chain are constantly monitored in real time and to provide a reliable measure of traceability and a clear point of investigation should errors, fraud, or other problems occur.
    - Research and demo the various cryptocurrency and blockchain platforms available to determine which one will best suit your needs and the needs of your partners in managing supply chain data.
    - Prioritize a collaborative approach and open communication with your trusted partners in building and deploying your chosen blockchain solution.

Optimize Your Supply Chain for

Transparency and Value with Blockchain

The same technology that rocketed Bitcoin to the top of the cryptocurrency heap can help you achieve total visibility into, and full control over, your supply chain. If you're considering implementing blockchain technologies and cryptocurrency into your supply chain, take the time to research your best options, develop and implement new protocols built on blockchain's capabilities, and reach out to build a reliable blockchain ecosystem with suppliers. With time, effort, and a shared commitment, you'll be able to craft a blockchain solution that meets your needs and provides the supply chain transparency, reliability, and accuracy you need to meet your company's goals.

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