Blockchain and fashion: Implications for supply chain management, ethical sourcing and anti-counterfeiting

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Blockchain is one of the most hyped technologies of 2018, with much of the attention driven by virtual currencies like bitcoin. However, the virtual currency hype has obscured blockchain technology's many broader applications. In the fashion industry, for example, blockchain technology has the potential to revolutionize supply chain management (including ethical sourcing) and anti-counterfeiting initiatives.

Background

A blockchain, in general terms, is a digital, distributed ledger technology on which transactions are anonymously recorded. The transaction ledger is maintained simultaneously across a network of unrelated computers or servers called nodes. The ledger contains a continuous and complete record (the chain) of all transactions performed, which are grouped into blocks. A block is only added to the ledger chain if all of the nodes in the network reach consensus on the next valid block to be added to the chain. When a new block is added to the chain, it is time-stamped, and the transaction is irrevocable and irreversible.

With a distributed ledger, there is no single point of failure, and the chain is updated in real time as a transaction is approved. Because blockchains use encryption and it is nearly impossible to alter their existing data illicitly, the ledger creates a trusted, immutable record, without the need for a central intermediary. Thus, a blockchain is really a shared digital ledger technology that allows participants to securely transact directly, with accountability and a high resistance to malicious tampering.

A blockchain may be public and open (permissionless) like the internet, or may be structured within a private group like an intranet (permissioned). The blockchain functionality that has captured the attention of commercial actors, including fashion retailers, are permissioned blockchains, because only preapproved participants may join them. The entities creating the permissioned blockchain agree on rules governing how entries are recorded and under what circumstances they can be modified. Only authorized participants are given access and are known within the network.

Blockchain’s application to the fashion industry

One of blockchain technology’s most promising applications is to supply chain and inventory management. Outside of the fashion world, blockchains are already being implemented in food supply chains. Currently, it is difficult to trace contaminated food products back to the original source of contamination, leading to mass recalls and lengthy delays in resolving disease outbreaks caused by food contamination. But with a blockchain, each step in the
supply chain can be transparently and securely logged, enabling near instant traceability of each bag of lettuce or package of hamburgers to its original source. In the near future, determining the source of an outbreak arising from a tainted food will take less time, and recalls will be limited only to affected products, saving lives and money.

Blockchains are also being deployed in the diamond industry to trace each gem back to its source, with the potential to eliminate diversion of conflict minerals into supply chains touted as ethical and to provide consumer assurance.

Fashion supply chains are similarly opaque, involving sourcing of raw fibers and materials from farmers, fabrics and leathers from textile mills and tanneries, and garments from cut-and-sew and finishing factories. Distribution networks are vast and complex. Consumers lack visibility into how garments are produced and transported into local shops or vast e-commerce markets. Often, brands themselves do not have full visibility into their own supply chains.

Blockchain technology, paired with radio frequency technologies or other tracking technologies, could enable the transparent tracking of a garment’s production from raw source materials to point-of-purchase. Proof of concept of a blockchain’s efficacy in supply chain management was demonstrated last year at the Copenhagen fashion summit, where consumers could scan a code on the tags of garments presented by London-based designer Martine Jarlgaard, and view a full history of the supply chain behind each garment, including the specific alpacas whose coats were used to produce every sweater in the line. While this degree of visibility may appear to be an extreme example of local, sustainable and ethical production and consumption trends, it is nonetheless reasonable to assume brands will meet consumers’ increasing calls for ethical and sustainable fashion. Blockchain can help them do so faster and more cheaply.

The supply chain transparency enabled by blockchain technology also has enormous potential to facilitate brand owners’ efforts to combat counterfeit and diverted graymarket goods. When a physical-digital link is created between an authentic product and a blockchain ledger, the provenance and chain of custody of that product is instantly traceable. Counterfeit goods, in contrast, lack such a physical-digital link and will be easy to detect.

Similarly, the transparency and immutability of transactions recorded on a blockchain could show the exact point of diversion of authentic product from an authorized distribution network. This degree of visibility stands to provide brand owners with enormous advantages in combating counterfeit and gray market goods, including evidentiary advantages as it is conceivable that blockchain ledgers could serve as compelling evidence in civil and criminal court proceedings.

Blockchain technology is nascent, and the questions of whether and how it will be successfully scaled and deployed in the fashion industry will be determined in the future. However, the future is coming quickly, and industry participants should be prepared.

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