

to the authorized users. Due to its high security, the data quality is higher in a blockchain environment and transactions are processed faster at a lower cost. An uncertain regulatory environment and lack of widespread adoption of the technology are among its disadvantages. In addition to cryptocurrency applications, which are discussed later in this section, there are numerous current and future applications of blockchain technology. Nine such applications are:⁴¹

- **Tracking food and other goods**—Blockchain technology can securely track the entire supply chain of ingredients from the point where they were harvested to the final purchase by consumers. It can even record the price that was paid to the farmers and indicate the fairness of the price.
- **Secure software development**—A blockchain-based tracking system ensures the security of the code, tracks every step of the development process, and speeds up the process of finding any problems in the code.
- **Digital content management**—Blockchain-based tools help manage copyrights and other intellectual properties by proving authorship of content and tracking who has accessed the content, therefore reducing piracy.
- **Improving healthcare records integrity**—Blockchain technology provides tools in order to store complete medical records of patients and make them available securely to authorized users such as doctors and other medical personnel.
- **Mortgage approval process**—Blockchain-based tools could give borrowers the option of storing their financial information in a secure blockchain network and then share it with potential lenders, which can significantly speed up the mortgage approval process.
- **Improving and speeding up insurance claims processing**—Blockchain-based tools could help cut down on fraudulent payments and double payments for the same claim and can streamline the process when multiple firms are involved in an incident.
- **Audit trail**—A blockchain database could provide unaltered data in various forms to companies such as law firms or accounting firms in order to audit a particular case all in one place.
- **Electronic voting**—A blockchain network could guarantee the authenticity and reliability of the

Blockchain Technology in Action: Walmart and Alibaba

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Many companies such as Walmart, Alibaba, and American Express are using distributed ledger technologies in blockchain in order to run their businesses more efficiently and improve customer trust and safety. Managing the supply chain in a multinational company such as Walmart could be a complex task and traceability of products from factory, farm, or supplier to the customer can become challenging. In these situations, supply chain transparency becomes very important, especially if something goes wrong, for example, when food items are contaminated. In such a case, the company must have accurate, real-time information in order to notify customers and pull contaminated items off shelves. This is where blockchain can play a major role. IBM is working with Walmart, Kroger, and Nestlé to allow participants in the supply chain network to share information. If all goes according to plan, the benefits will be increased safety, faster crisis management, and improved customer trust.

Alibaba is using blockchain for fighting food fraud, as tracing back defective and contaminated products is not the only problem. *Food fraud* is substitution or misrepresentation of food for economic gain. This is what happened in the Tesco horsemeat scandal, where some packaged beef meals were found to contain up to 60% horsemeat. Alibaba in collaboration with four other companies from New Zealand and Australia are combining a blockchain ledger with QR-coded product tags. Any movement of each product will be recorded on an open ledger. Every concerned person will have access to the ledger and will know exactly what the product is, its origin, and its destination. This will significantly improve food safety and should boost consumer confidence.⁴²

Questions and Discussions

1. Why did Walmart deploy blockchain technology? Discuss.
2. What are two applications of blockchain technology at Alibaba?