

## BLOCKCHAIN: A FOUNDATIONAL CHANGE IN FINANCIAL RECORDS

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### Abstract

*Blockchain is a foundational change in how financial records are created, kept, and updated. Rather than having one single owner, blockchain records are distributed among all their users. The genius of the blockchain approach is in using a complex system of consensus and verification to ensure that, even with no central owner and with time lags between all the users, nevertheless a single, agreed-upon version of the truth propagates to all users as part of a permanent record. This creates a kind of 'universal entry bookkeeping', where a single entry is shared identically and permanently with every participant. This paper describes the technology and its likely impact on business, and in particular on the accounting profession.*

**Keywords:** blockchain, finance, accounting, book keeping

Blockchain has the potential to increase the efficiency of the process of accounting for transactions and assets, operating as a system of universal entry bookkeeping. This would create certainty over rights and obligations and provenance, which in turn would empower the accountancy profession to expand its scope to record more types of activity than before, and to drill down closer to the economic reality underpinning the transactions recorded.

The Accounting Perspective: The Potential of Blockchain: Blockchain is an accounting technology. It is concerned with the transfer of ownership of assets, and maintaining a ledger of accurate financial information. The accounting profession is broadly concerned with the measurement and communication of financial information, and the analysis of said information. Much of the profession is concerned with ascertaining or measuring rights and obligations over property, or planning how to best allocate financial resources. For accountants, using blockchain provides clarity over ownership of assets and existence of obligations, and could dramatically improve efficiency. Blockchain has the potential to enhance the accounting profession by reducing the costs of maintaining and reconciling ledgers, and providing absolute certainty over the ownership and history of assets. Blockchain could help accountants gain clarity over the available resources and obligations of their organisations, and also free up resources to concentrate on planning and valuation, rather than recordkeeping. Alongside other automation trends such as machine learning, blockchain will lead to more and more transactional-level accounting being done – but not by accountants. Instead, successful accountants will be those that work on assessing the real economic interpretation of blockchain records, marrying the record to economic reality and valuation. For example, blockchain might make the existence of a debtor certain, but its recoverable value and economic worth are still debateable. And an asset's ownership might be verifiable by blockchain records, but its condition, location and true worth will still need to be assured. By eliminating reconciliations and providing certainty over transaction history, blockchain could also allow for increases in the scope of accounting, bringing more areas into consideration that are presently deemed too difficult or unreliable to measure, such as the value of

the data that a company holds. Blockchain is a replacement for bookkeeping and reconciliation work. This could threaten the work of accountants in those areas, while adding strength to those focused on providing value elsewhere. For example, in due diligence in mergers and acquisitions, distributed consensus over key figures allows more time to be spent on judgemental areas and advice, and an overall faster process.

The Accounting Perspective: Implications for Auditors- Blockchain has applications in external audit. Performing confirmations of a company's financial status would be less necessary if some or all of the transactions that underlie that status are visible on blockchains. This proposal would mean a profound change in the way that audits work. A blockchain solution, when combined with appropriate data analytics, could help with the transactional level assertions involved in an audit, and the auditor's skills would be better spent considering higher-level questions. For example, auditing is not just checking the detail of whom a transaction was between and the monetary amount, but also how it is recorded and classified. If a transaction credits cash, is this outflow due to cost of sales or expenses, or is it paying a creditor, or creating an asset? These judgemental elements often require context that is not available to the general public, but instead require knowledge of the business, and with blockchain in place, the auditor will have more time to focus on these questions. The Accounting Perspective: How the Profession can Lead- The move to a financial system with a significant blockchain element offers many opportunities for the accountancy profession. Accountants are seen as experts in record keeping, application of complex rules, business logic and standards setting. They have the opportunity to guide and influence how blockchain is embedded and used in the future, and to develop blockchain-led solutions and services. To become truly an integral part of the financial system, blockchain must be developed, standardised and optimised. This process is likely to take many years – it has already been nine years since bitcoin began operating and there is much work still to be done. There are many blockchain applications and start-ups in this field, but there are very few that are beyond the proof of concept or pilot study stage. Accountants are already

participating in the research, but there is more for the profession to do. Crafting regulation and standards to cover blockchain will be no small challenge, and leading accountancy firms and bodies can bring their expertise to that work. Accountants can also work as advisers to companies considering joining blockchains themselves, providing advice on weighing the costs and advantages of the new system. Accountants' mix of business and financial nous will position them as key advisers to companies approaching these new technologies looking for opportunity.

The Accounting Perspective: Skills for the Future-The parts of accounting concerned with transactional assurance and carrying out transfer of property rights will be transformed by blockchain and smart contract approaches. The reduction in the need for reconciliation and dispute management, combined with the increased certainty around rights and obligations, will allow greater focus on how to account for and consider the transactions, and enable an expansion in what areas can be accounted for. Many current-day accounting department processes can be optimised through blockchain and other modern technologies, such as data analytics or machine learning; this will increase the efficiency and value of the accounting function. As a result of the above, the spectrum of skills represented in accounting will change. Some work such as reconciliations and provenance assurance will be reduced or eliminated, while other areas such as technology, advisory, and other value-adding activities will expand. To properly audit a company with significant blockchain-based transactions, the focus of the auditor will shift. There is little need to confirm the accuracy or existence of blockchain transactions with external sources, but there is still plenty of attention to pay to how those transactions are recorded and recognised in the financial statements, and how judgemental elements such as valuations are decided. In the long term, more and more records could move onto blockchains, and auditors and regulators with access would be able to check transactions in real time and with certainty over the provenance of those transactions. Accountants will not need to be engineers with detailed knowledge of how blockchain works. But they will need to know how to advise on blockchain adoption and consider the impact of blockchain on their businesses and clients. They also need to be able to act as the bridge, having informed conversations with both technologists and business stakeholders. Accountants' skills will need to expand to include an understanding of the principle

features and functions of blockchain – for example, blockchain already appears on the syllabus for ICAEW's ACA qualification.

### Conclusion

Ultimately, blockchain is likely to be a foundational technology. It will take years – perhaps even decades – for it to be fully developed, standardised and embedded in the architecture of the internet and the financial system. It will also need to work quicker, more efficiently and have lower operating costs. But the rewards are trustworthy records and reduced reconciliations. So we can expect that if not blockchain, then some implementation of distributed ledger systems will emerge as a key business technology.

Accounting will be more efficient due to the increased trust in the information available and the reduced time spent in reconciling and disputing records with other parties. This will lead to greater focus on the ultimate aims of accountancy – interpreting the economic meaning of transactions, and providing information to support better decisions.

### Glossary

The name blockchain is inherently descriptive of how the technology works – new transactions are gathered together into a block and added to a chain of all previous transactions, by a cryptographic process that is complex to perform, but which makes it easy to confirm that the history of all transactions is genuine. A hash is a sort of digital signature or summary of a block that is used to authenticate it and its place in the chain. Blockchain works through a process of consensus– all nodes will be able to identify the longest and most up-to-date ledger and agree on what it is.

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