



Powering the Future of Finance Through Blockchain

Blockchain in Finance & Accounting (F&A)

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Introduction

The rise of digital technologies is fundamentally altering the nature of business operations, from disrupting organizations' business models to transforming the underlying competitive landscape. Business leaders navigating this dynamic environment expect real time, data-driven decision support from their Finance & Accounting (F&A) functions to make effective strategic decisions – simply focusing on traditional accounting is no longer enough.

Some proactive organizations are already leveraging discrete digital technologies, such as automation for real-time data, analytics to derive insights, and advanced visualization to communicate these insights effectively. These technologies, when leveraged in an orchestrated manner, can significantly amplify value. However, achieving effective orchestration is difficult for a variety of reasons, such as data security, data consistency, data validity, process inefficiency, and cybersecurity.

Significant opportunity exists for a solution that can enable orchestration while addressing these underlying issues. Blockchain is one potential solution that is creating a lot of buzz. Blockchain, a digital distributed ledger with cryptographic security, can act as a platform to share and validate data across different technology tools while enhancing process automation and network security. As a breakthrough technology, it promises to dramatically shift the way we define, track, share, own, and manage transactions.

Blockchain has potential to fundamentally transform the F&A function given evolving expectations from traditional accounting to create strategic impact. While blockchain's great potential is widely accepted, the ways in which it can deliver on its promise is still not clearly understood.

In this paper, Everest Group demystifies blockchain, examines different ways in which F&A processes can be reimagined due to this new technology, considers current challenges, and suggests future direction and implications for blockchain-driven F&A transformation.

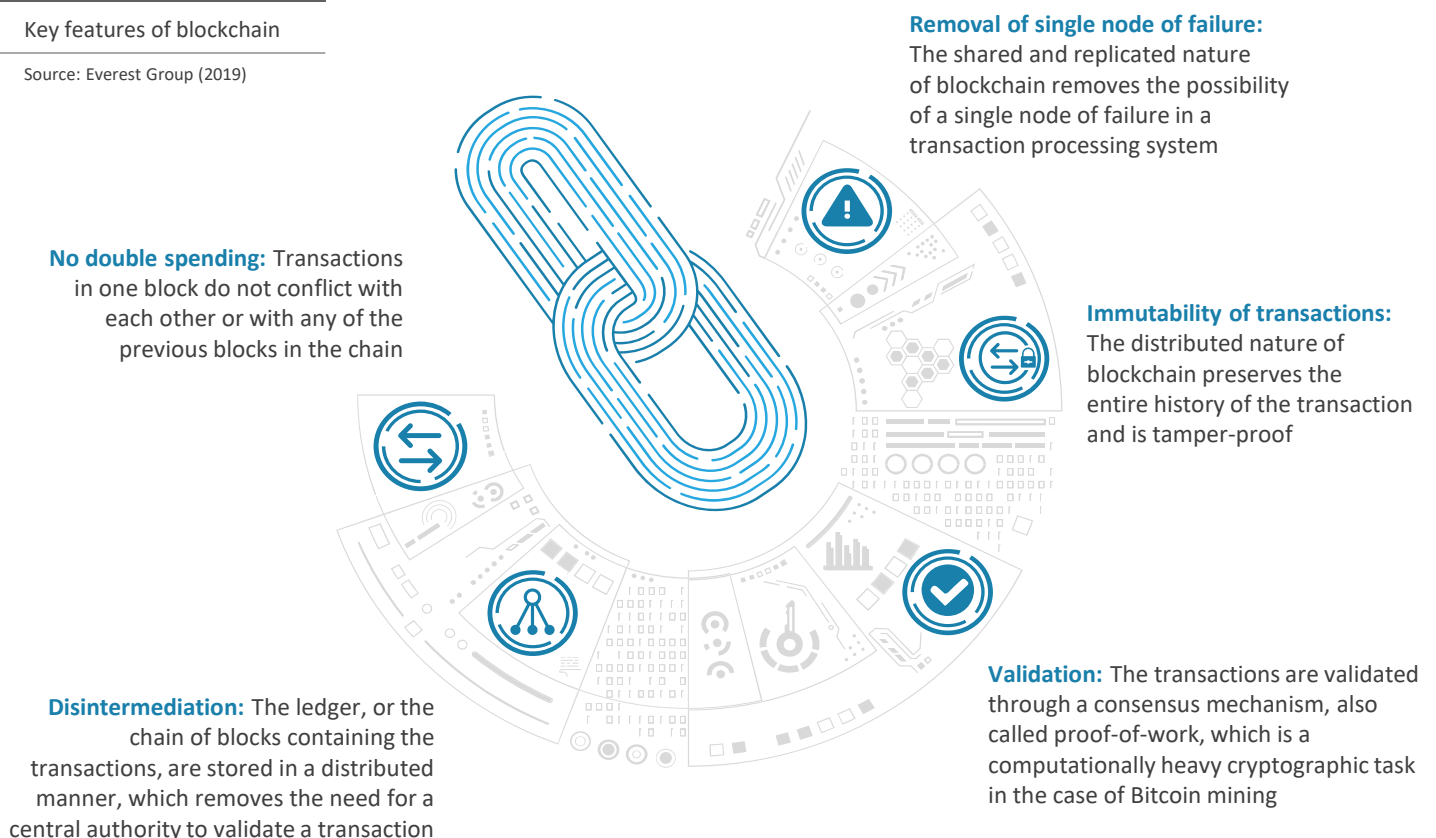
Overview of blockchain and its use in enterprises

At its simplest, blockchain is an encoded digital ledger or a database of transactions in the form of blocks arranged in a chain. These blocks are validated by multiple users through consensus mechanisms shared across a public or private network. Blockchain's power to transform and dramatically shift the way we handle transactions lies in its ability to create trust among people who would otherwise have no reason to trust each other. Exhibit 1 describes blockchain's key features.

EXHIBIT 1

Key features of blockchain

Source: Everest Group (2019)



The initial use cases of blockchain were bitcoin and other cryptocurrencies for peer-to-peer payments. As the excitement around cryptocurrencies subsided, enterprises – especially financial services firms – started to explore other uses for blockchain. Soon, there was an explosion of use cases within financial services, and blockchain experienced tremendous interest from investment firms and venture capital firms.

Blockchain use case in the trade finance process

The trade finance process

The process of trade finance involves importers and exporters mitigating trade risk through the use of reliable intermediaries –financial institutions that serve to provide assurance to sellers (in the event that the buyer does not pay) and contract certainty to buyers (in the event that goods are not delivered).

Current state of the process and challenges

The process involves a large number of entities and, the interactions among them are one-to-one, which – in turn – means that a number of documents are generated at each stage. As this process uses multiple paper-based contracts that need to be reconciled with each other, settlement typically takes weeks. Moreover, because each party across countries operates on multiple platforms in silos, miscommunication is common and the propensity for fraud is high. In effect, the process can lead to multiple versions of the “truth,” which might not comply with one another.

How blockchain can transform trade finance process

Using smart contracts, blockchain can help to address trade finance process challenges. This approach essentially involves the autonomous execution of a code-based contract stored on a distributed ledger instead of tediously reconciling multiple paper-based contracts across various entities. Blockchain enables a “single version of the truth,” which different parties can access. Moreover, because each participant on the network can securely amend that ledger without the need for a central authority, the extra layer of correspondent financial institutions is no longer necessary.

Although enterprises saw promise in blockchain, they encountered challenges as they experimented with it. For example, some were uncomfortable sharing internal data on public networks, and others realized that blockchain’s cryptographic consensus mechanism uses a lot of computing power, limiting the frequency of transactions and making blockchain unsuitable for scalable operations. The advent of the private blockchain, with its more tightly controlled permission mechanism that maintains the decentralization principle of classic blockchains, resolved these issues.

While private blockchains resolved some issues and accelerated enterprise blockchain adoption, another challenge arose: A fully private blockchain can only be used within an organization. The formation of consortium blockchains, in which multiple stakeholders can interact on the blockchain as the permission to add blocks is distributed to a pre-selected set of participants, resolved this latest challenge. Through consortium blockchains, enterprises can interact with a wider set of market participants including banks, vendors, technology firms, and others.

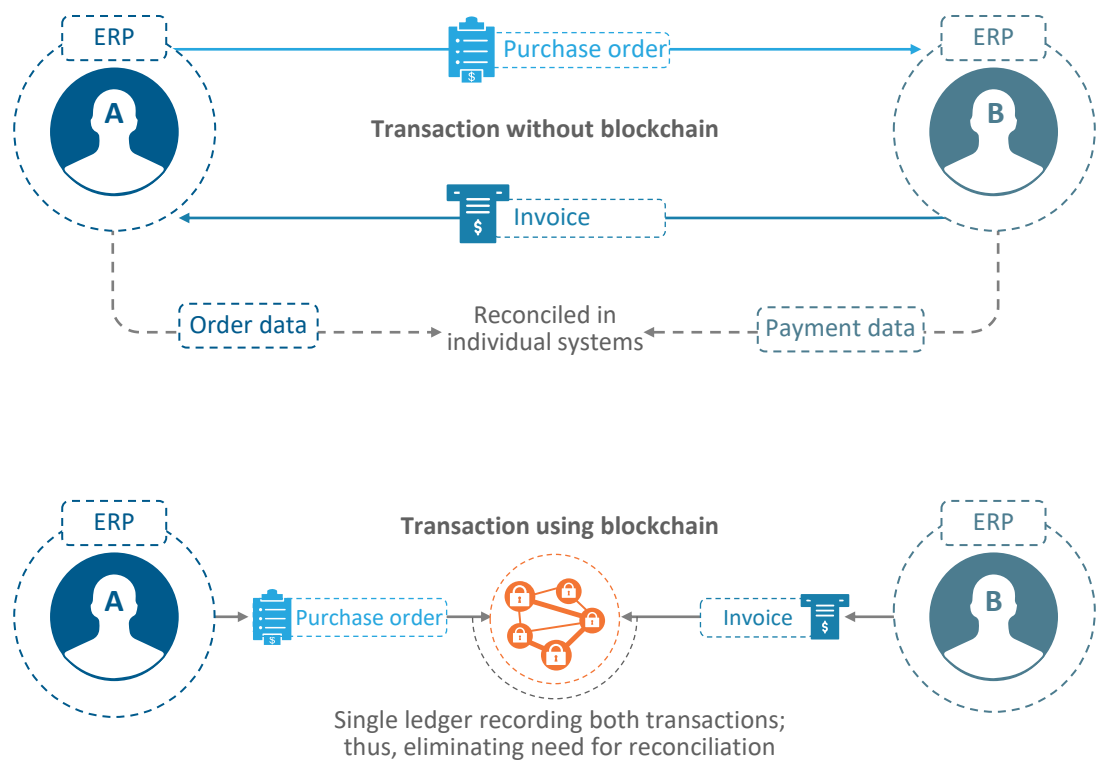
Overview and advantages of blockchain in F&A

Business transactions are the building blocks for all F&A activities. Thus, for the F&A function to create meaningful business outcomes while maintaining smooth operations, timely and accurate transaction recording and reporting is essential. Delays and inaccuracies impede decision-making and can result in broader negative impact on business. The inherent characteristics of blockchain as a database of linked transactions, secured cryptographically, makes it highly relevant as a platform for conducting tamper-proof F&A transactions. This immutable feature of blockchain can be leveraged across the ecosystem to drive out significant inefficiency and duplication of effort without the fear of delays and inaccuracies. Exhibit 2 illustrates a basic use of blockchain in F&A.

EXHIBIT 2

Example of blockchain enabled transaction between two companies A and B

Source: Everest Group (2019)



Advantages of blockchain in F&A

While the example presented above is quite basic, blockchain can offer significant benefits across the entire F&A value chain. Examples include:

- **Cost reduction:** Blockchain reduces operational cost by eliminating duplicate efforts in maintaining different accounting books and further reduces effort spent on data validation and coordination. Blockchain also removes resource costs spent in dispute management and query handling as it provides greater transparency
- **Cycle time reduction:** F&A transactions recorded on blockchain are digital, and each participant has access to the same information related to a particular transaction. This mutual access to information eliminates the need for data extraction from multiple sources and data reconciliation, significantly reducing period-end closing to near real-time
- **Automated audit:** F&A transactions recorded on the blockchain can be traced back to their origin as every block of data is linked to the previous block and the previous block also contains the address of the next block. This feature of blockchain automates the capture of an audit trail for all transactions, essentially automating the audit process
- **Greater transparency:** The distributed nature of blockchain results in increased transparency in F&A transactions, as all related participants on the network have real-time access to the same transactions. This access also results in faster dispute management
- **Increased security:** F&A transactions recorded on blockchain are comparatively more secure, as each transaction is cryptographically sealed and linked to the previous transaction. For added security, blockchain is stored on different nodes across the network, making it nearly impossible to tamper with the data
- **Better reporting and insights:** Blockchain enables real-time reporting and helps in more robust decision-making, as it solves the key issues around data security and availability of sanitized data in real-time

Blockchain adoptability in F&A

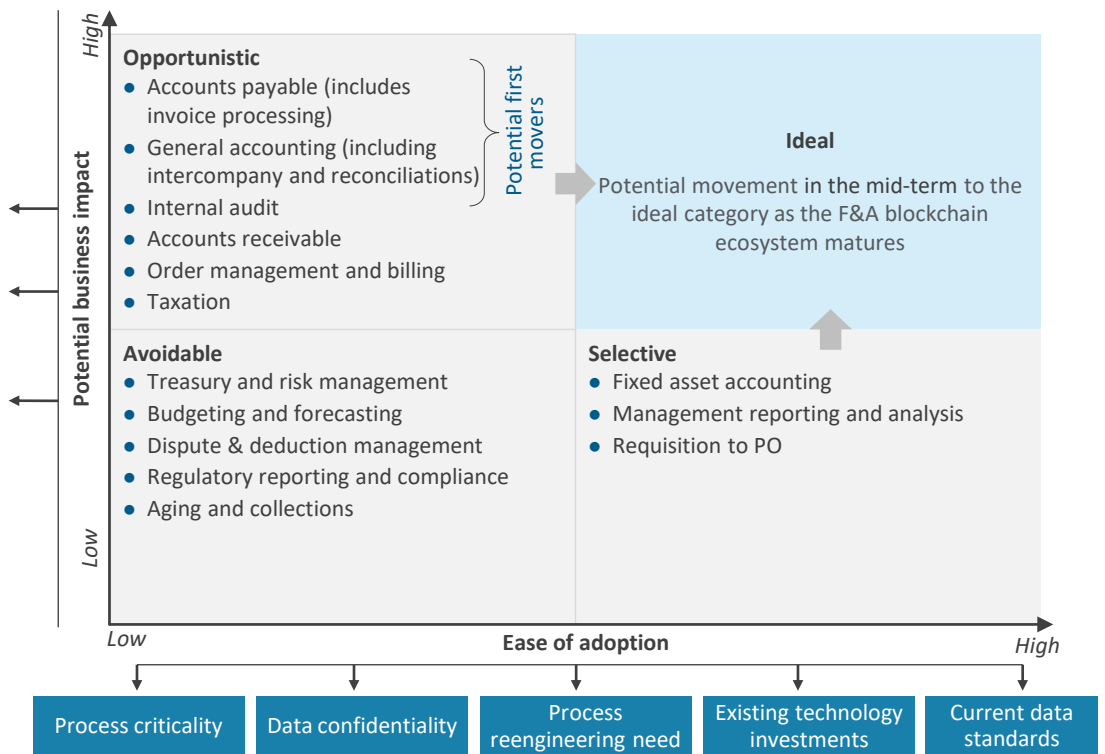
While blockchain promises great advantages, enterprises should understand its realistic potential and the ideal opportunities for blockchain implementation in F&A. They should experiment with blockchain implementation based on informed decisions about its impact and adoptability. Everest Group's blockchain prioritization framework (refer to Exhibit 3 on next page) can assist enterprises in assessing business processes for blockchain adoption along two key dimensions: potential impact and ease of adoption. (For more information on our framework, please refer to our report, [Unblocking Blockchain Adoption – A Prioritization Framework for Business Processes](#))

EXHIBIT 3

F&A processes categorized using Everest Group’s prioritization framework

Source: Everest Group (2019)

- Cycle time reduction potential
- Cost and effort elimination potential
- Additional benefits (includes increased transparency and security)



High-volume processes such as accounts payable, accounts receivable, order management and billing, intercompany reconciliations, and general accounting, have high-friction process flows (invoice matching, dispute management, etc.) and multiple intermediaries (vendors, internal enterprise departments, and banks). Such factors make these processes great candidates for blockchain adoption from a business impact standpoint. However, due to multiple barriers to adoption – including data standardization issues (distinct data formats due to different ERPs, billing systems, etc.) and potential disintermediation – there may be a lack of willingness to fully exploit blockchain’s potential in these processes.

Other processes such as taxation and internal audit can be automated using blockchain but are prone to data confidentiality concerns and require considerable process reengineering. So, while these areas may have high potential for blockchain adoption, enterprises should evaluate opportunistically by continuously monitoring the external ecosystem.

Some processes such as requisition-to-PO, fixed asset accounting, and management planning and analysis do not gain significantly from blockchain implementation at this point. However, as the technology matures and potentially offers better return on investment, these processes could be considered for blockchain implementation.

Aging and collections, regulatory reporting and compliance, and dispute management are some processes that either include significant manual intervention or have drastically different underlying guiding principles; as a result, digitalization is limited, and blockchain adaptability potential is low.

Note: Processes within each quadrant are listed in no particular order

While we have discussed the adoptability of blockchain across F&A processes, successful implementation requires coordination and collaboration with a wide variety of process participants. This orchestration is most effectively handled by an entity that has disproportionate advantage over other partners to drive blockchain adoption. In the case of F&A, an enterprise adopting blockchain would want both its vendors and customers on the blockchain to reap intended benefits. Relative to its customers, the enterprise has more control over its vendors, and can influence them to adopt blockchain. As a result, accounts payable is the prime candidate for blockchain adoption. The viability of this argument is strengthened by real examples of large enterprises, including one of the largest Consumer Packaged Goods (CPG) companies and a commercial bank, having already transformed their accounts payable through blockchain. For internal-only adoption, processes such as reconciliation and internal audit – which do not require external collaboration – are other suitable candidates for blockchain adoption.

Value amplification with other digital levers

Disruption of accounts payable through blockchain is inevitable

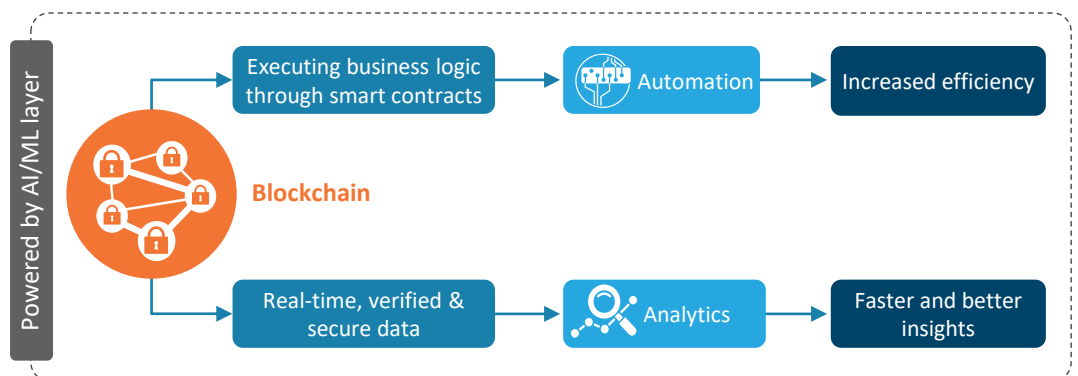
While blockchain offers significant benefits, its value can be amplified further by combining it with other digital levers that the F&A function is currently using (see Exhibit 4). An example of a digital lever that greatly enhances blockchain’s value is smart contracts, which are self-executing contracts with business logic written directly into lines of code. In F&A, the entire process under accounts payable and accounts receivable can be automated using smart contracts. For example, when an enterprise submits a purchase order to the vendor, a smart contract containing the terms of the purchase agreement is generated on the blockchain. If the vendor rejects the order, the smart contract will be destroyed automatically, and the record will be voided. If the vendor accepts the order, the smart contract will update the record for both parties, creating an audit trail. Thus, a smart contract increases efficiency by automating the logic behind different transactions.

Smart contracts have found use in a variety of situations; however, they are prone to error when the underlying code and business logic are developed by humans. However, leveraging Artificial Intelligence (AI) and Machine Learning (ML) can make the logic as well as the code behind smart contracts more robust.

EXHIBIT 4

Interplay of different digital technologies with blockchain

Source: Everest Group (2019)



While these digital levers can amplify the value of blockchain significantly, blockchain can also enable better leverage of some of these digital levers. One such lever is analytics. Analytics is being leveraged extensively by organizations looking to improve their F&A processes as well outcomes. Collections, where analytics is highly leveraged, provides a good example. An analytics solution can analyze customers' payment patterns and external information to provide insights when devising collection strategies.

While the use of analytics offers immense benefits, its effective use is being hampered by concerns around data security, quality, and availability. Blockchain alleviates data security concerns, given its tamper-proof and distributed ledger. In addition, blockchain is expected to enhance data availability through increased secured data sharing among market constituents. Broader access to data through the blockchain ecosystem, when combined with advances in smart contracts, will empower analytics tools to work through different business ecosystems and deliver better insights.

Challenges to blockchain adoption in F&A

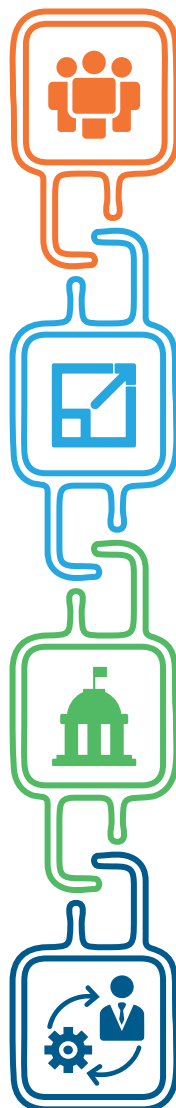
Before any new technology can gain mass adoption, it must go through multiple adoption stages and prove its benefits relative to the effort and investment required to implement it. Blockchain faces an even steeper climb given that its immediate investment is quite large, and its benefits are gradual and long term.

In addition to the cost/benefit aspect, there are multiple other challenges that need to be addressed to move blockchain from nascence to mass adoption, as described in Exhibit 5.

EXHIBIT 5

Challenges to blockchain adoption

Source: Everest Group (2019)



Talent shortage

- There is a significant talent demand/supply gap given limited availability of talent with expertise in niche areas such as cryptography and distributed systems
- The gap is even greater in F&A due to lack of blockchain talent with finance expertise

Scalability concerns

- Achieving scalability in blockchain involves increasing throughput and reducing cost per transaction, which is difficult to achieve given its decentralized nature and consensus-based mechanism
- As the organization scales, the stakeholder ecosystem evolves and blockchain must support multiple systems to onboard more stakeholders
- Moreover, different parties follow different reporting and compliance standards, a challenge that grows as multiple stakeholders that follow different mechanisms onboard blockchain

Regulatory issues

- New concepts such as smart contracts, cryptographic signatures, and individuals as data owners are not covered under existing regulations; thus, existing regulations hinder blockchain's growth, instead of support it
- Currently, blockchain is not nimble enough to adapt to constantly changing regulatory and tax systems that vary by geography

Governance and change management

- As the number of participants on blockchain increases and interact with other blockchains, governance challenges rise
- Blockchain adoption results in significant process and technology related changes and also significant disintermediation such as elimination of efforts in data consolidation and reconciliation of transactions. Pushback is expected from employees, some of which have strong influence on decision makers
- Financial data is highly confidential. While blockchain introduces transparency, it must also address and comply with data policies and governance

Talent shortage and change management issues are likely to be resolved gradually as blockchain becomes mainstream. Many federal governments are already working to develop regulations and standards relating to blockchain. Scalability and security are technical concerns related to the core architecture of existing blockchains, which might be resolved as new alternatives to existing blockchains emerge offering similar benefits without these concerns.

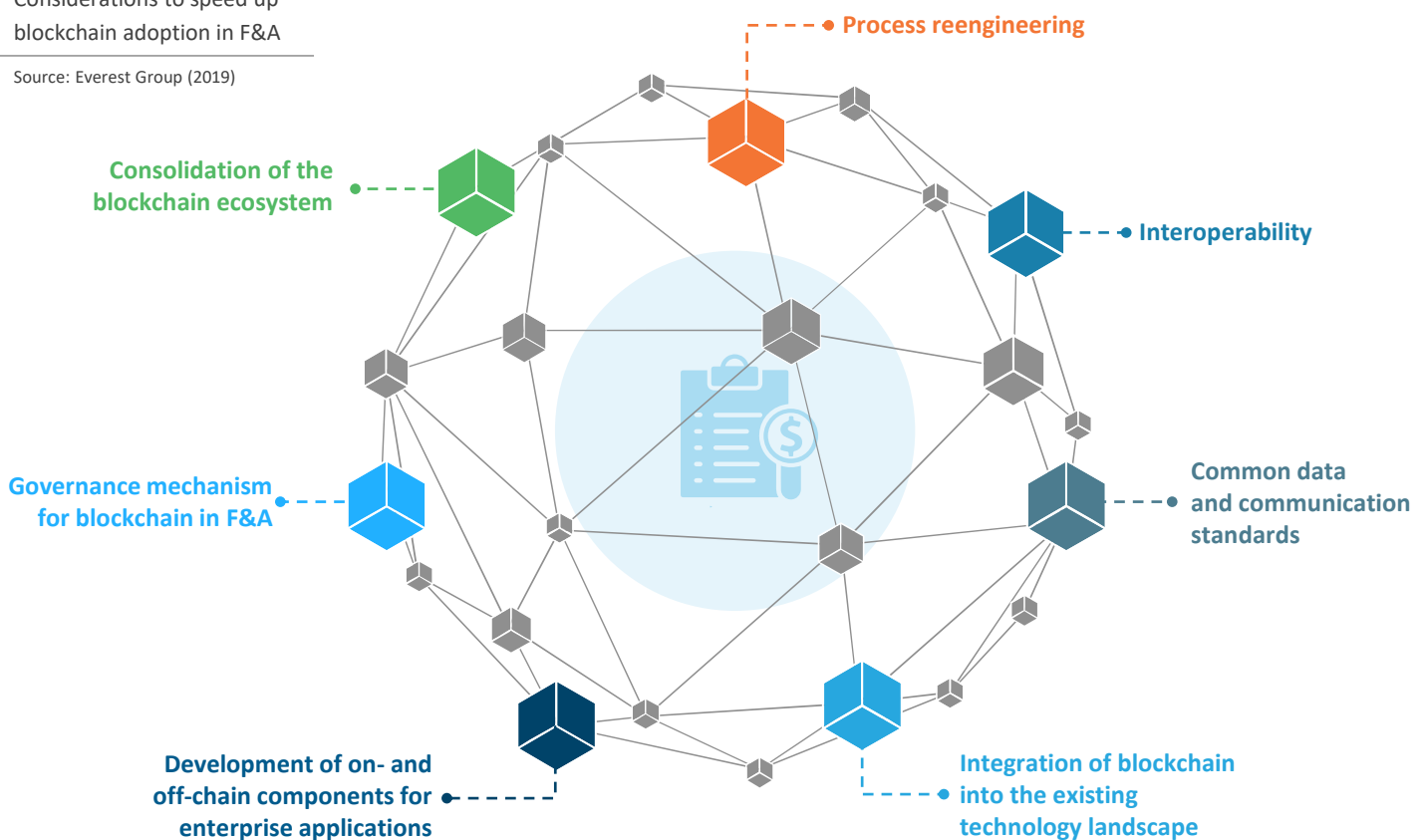
Considerations to speed blockchain adoption in the F&A industry

The past twelve to eighteen months have seen blockchain engagements move from use cases or POC stages to final deployment in many organizations. However, we are still far from large-scale deployments of blockchain encompassing multiple organizations and leveraging the benefits of network effects enabled by orchestration of blockchain with other digital technologies. F&A is still in its infancy from a blockchain perspective.

EXHIBIT 6

Considerations to speed up blockchain adoption in F&A

Source: Everest Group (2019)



Below, we outline some considerations (see Exhibit 6) which will be key to moving F&A processes from opportunistic and selective categories to the ideal category and will require different stakeholders in the F&A blockchain ecosystem to work together.

- **Integration of blockchain into the existing technology landscape:** Blockchain is meant to complement the existing technology landscape by eliminating the need for certain processes and associated tools. To fully realize the value of blockchain, existing ERP systems and other augmentation technologies need to be integrated with blockchain. Service providers and technology vendors have started to create APIs and connectors to enable seamless integration of blockchain with the existing technology ecosystem. However, it is imperative for enterprises to be able and willing to leverage these tools and to integrate blockchain to their digital ecosystem
- **Process reengineering:** Inclusion of blockchain eliminates certain processes and removes duplicate effort. For example, a single shared ledger between two parties enables real-time approval and eliminates the need for data extraction and reconciliation at a later stage. Thus, enterprises should consider the expected future-state of processes following blockchain implementation and reengineer them to utilize blockchain to its fullest potential
- **Common data and communication standards:** Another key consideration for faster adoption of blockchain in F&A is the creation of common data and communication standards. There are different ERPs and billing and payments systems in the market that produce data in diverse formats and communicate through different communication protocols that need to be standardized for blockchain to work effectively
- **Interoperability:** The majority of currently deployed blockchains are private permissioned blockchains that enterprises leverage internally. These blockchain implementations are essentially similar to the initial stages of internet adoption: thousands of disparate, siloed intranet networks from various organizations. These networks were able to transfer information and messages/emails within their own intranet network but could not connect to anything outside of the organization. As with the internet, the true benefits of decentralized blockchain technology come from enabling these siloed blockchains to interact with each other – blockchain interoperability. However, the problem with interoperability is that different blockchains speak different languages. Overcoming this problem requires technology that facilitates universal communication among blockchains. There are many solutions being developed to enhance interoperability, but most are still in the initial stages of development
- **Consolidation of the blockchain ecosystem:** The current blockchain technology ecosystem consists of a wide variety of service providers, technology providers, platform providers, and other constituents. On top of that, there are numerous startups working in specific niches to leverage blockchain technology. While all these entities are essential to the rapid evolution of blockchain technology, their fragmented nature makes it difficult for enterprises to leverage them effectively

- Development of on- and off-chain components for enterprise applications:** Continuous development of on-chain components, such as smart contracts-based applications including Dapps (Distributed Applications) and smart legal contracts, will be key to enhancing blockchain usability for enterprises. In addition to these on-chain components, development of off-chain components for user management, workflows, systems integration, etc. are necessary to make blockchain truly usable for enterprise applications beyond the prevalent use cases
- Governance mechanism for blockchain in F&A:** Another aspect of blockchain implementation that enterprises need to consider is the use of public or private blockchains. In F&A, initially, a fully private blockchain can be considered for intercompany accounting and reconciliation. However, given that F&A operations are not limited to intercompany transactions, the blockchain needs to be expanded to enable a broader set of market constituents to participate. Inclusion of an extended set of participations requires rules of engagement around process and data ownership, an incentive structure, and a suitable governance mechanism

Stakeholders in the blockchain ecosystem are cognizant of these considerations and are working together to expedite the development of solutions. It is important to work on all these elements simultaneously as their collective impact is needed to fully address the challenges.

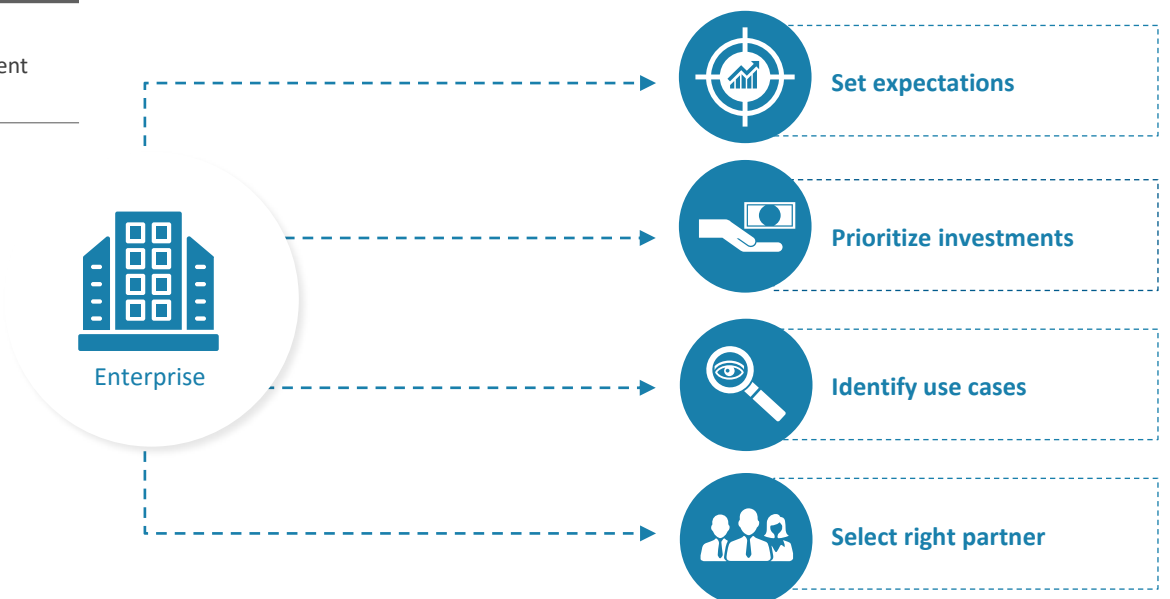
Implications for entities involved in blockchain development in F&A

Successful implementation of blockchain in F&A is contingent on collaboration among market constituents. A few specific constituents will need to take the lead in organizing and driving this collaboration effort, as described in Exhibits 7 and 8.

EXHIBIT 7

Role of enterprise in blockchain enablement in F&A

Source: Everest Group (2019)

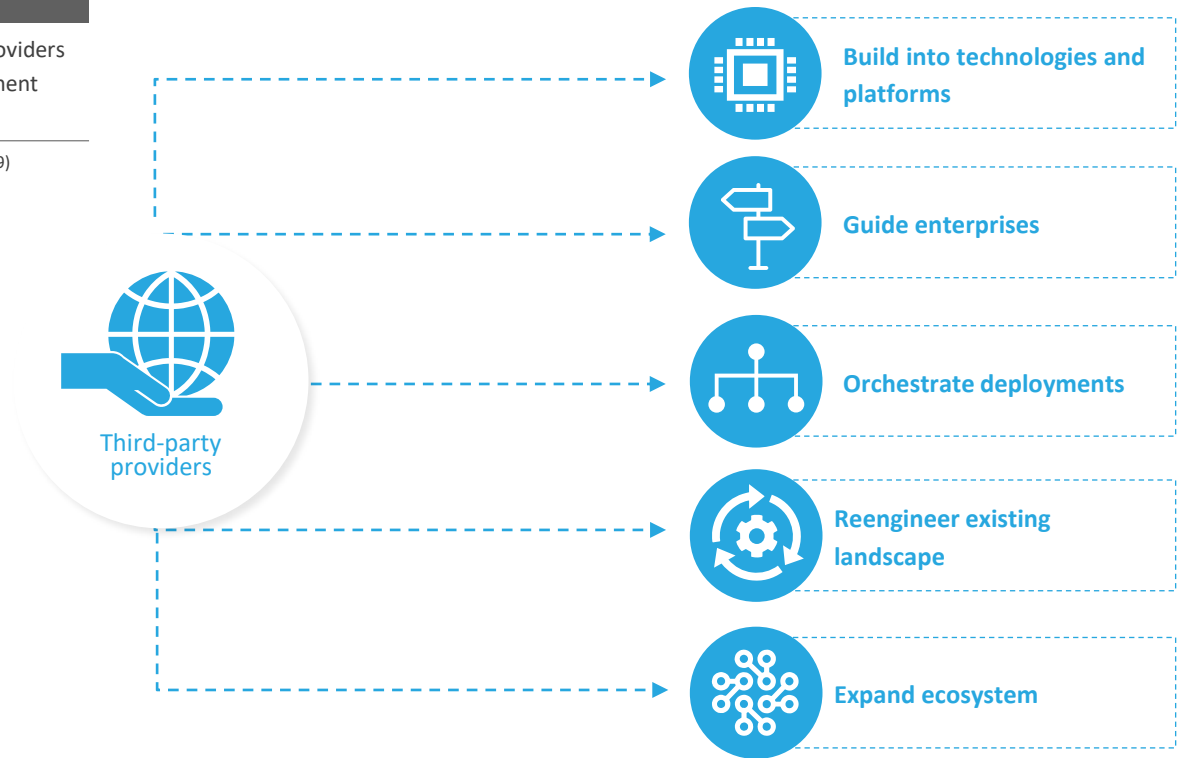


Enterprises, as the end beneficiaries, need to clearly articulate the business value they expect to derive from blockchain. Further, they must identify the right uses and invest in them based on their potential impact and ease of adoption. And finally, they must determine the best technology approach (in-house infrastructure development vs. cloud-based) and select the right enterprise blockchain platform.

EXHIBIT 8

Role of third-party providers in blockchain enablement in F&A

Source: Everest Group (2019)



ERP vendors, with their very large client bases, have a great potential to drive adoption. For example, they can utilize blockchain in accounting processes by offering permissioned private blockchain, enabling participating entities to manage intra- and inter-company settlements within the ERP ecosystem. Similarly, technology vendors have a great advantage to onboard multiple parties on the blockchain and accelerate adoption. They should invest in developing F&A-specific utilities to enable the entire ecosystem to grow along with them. For example, procurement/e-invoicing vendors have the potential to accelerate adoption by developing a completely integrated, blockchain-enabled platform for the end-to-end Procure-to-Pay (P2P) cycle.

Service providers must realize that enterprises are in the initial stages of blockchain engagement; as such, enterprises are looking to partner with them to guide them through implementation, from developing a winning business case with relevant objectives to selecting the right technologies for effective blockchain implementation.

In addition, other market constituents, such as banks and regulators, must collaborate and align on responsibilities and incentives and create a governance structure for shared value creation. An ecosystem approach is critical to the ultimate success of blockchain implementation in F&A.

Conclusion

Though still a relatively new technology in the digital ecosystem, blockchain has evolved quickly and significantly in the past few years. Given its transactional nature, F&A stands to benefit from blockchain in multiple cost, operational, and business outcome areas. There are, however, significant challenges to F&A realizing the full potential of blockchain.

Some transactions are more suited to blockchain (and/or at least easier to adapt for blockchain), so it is vital for organizations to identify and start with the right areas for adoption. Further, in order to fully benefit from blockchain, enterprises should combine it with other digital levers such as smart contracts and/or AI. However, while these tools amplify the value of blockchain, they can also make blockchain adoption more complicated.

Additional key challenges include talent shortages, scalability concerns, regulatory issues, and governance and change management concerns.

And finally, some challenges are beyond the scope of an individual organization to address, including the integration of blockchain into the existing technology landscape, common data and communication standards, interoperability, consolidation of the blockchain ecosystem, the development of on- and off-chain components for enterprise applications, and a governance mechanism for blockchain in F&A.

Ultimately, blockchain holds significant opportunity for F&A organizations. Enterprises need to articulate the benefits for themselves, make decisions about the best path for adoption, and push industry constituents to give them what they need to take full advantage of the blockchain promise.


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