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Blockchain for MENA telecom operators

Seizing the opportunity

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Andreas Freund and Ahmad Hammoudi from ConsenSys also contributed to this report.

Executive summary



Blockchain has the potential to transform the public and private sectors, with significant impact on the national economy. For telecom operators, blockchain is an opportunity to use their in-built strengths to lead this transformation. Blockchain is a decentralized register that maintains a permanent and tamper-proof record of transactions data. By vesting authority in the consensus decisions of many participants rather than in a single third-party intermediary, blockchain builds the trust that is needed for an economy to function smoothly and more efficiently. The blockchain model accelerates verification and confirmation. Moreover, due to its encryption technology and the dispersal of information, it is very difficult to hack and is not susceptible to a single point of technical failure. It can also greatly reduce transaction costs by removing unnecessary middlemen and document duplication.

Telecom operators in the Middle East and North Africa (MENA), with their developed digital infrastructure and strong customer relationships, are positioned to gain internally and externally from blockchain by creating additional services and revenue streams through greater efficiencies in handling data or through new business models.

Internally, blockchain can streamline telecom operators' storage of customer identities, reduce the costs of number portability, and facilitate roaming services between multiple operators. Externally, there are four main opportunities for telecom operators. They can: use their infrastructure to host clients' blockchains; employ their existing cloud infrastructure to manage clients' blockchain software; offer industry-specific, blockchain-based applications; or supply blockchain professional and advisory services.

The success of these approaches depends on several factors. Telecom operators must carefully analyze their own capabilities before selecting their value proposition and a target market. A portfolio of relevant use cases for each target market is needed for more effective marketing and business development. Telecom operators should engage with regulators to ensure a supportive regulatory system for blockchain adoption. Furthermore, telecom operators can enable national blockchain ecosystems by, for example, engaging in national and global blockchain alliances and partnerships.

The importance of trust

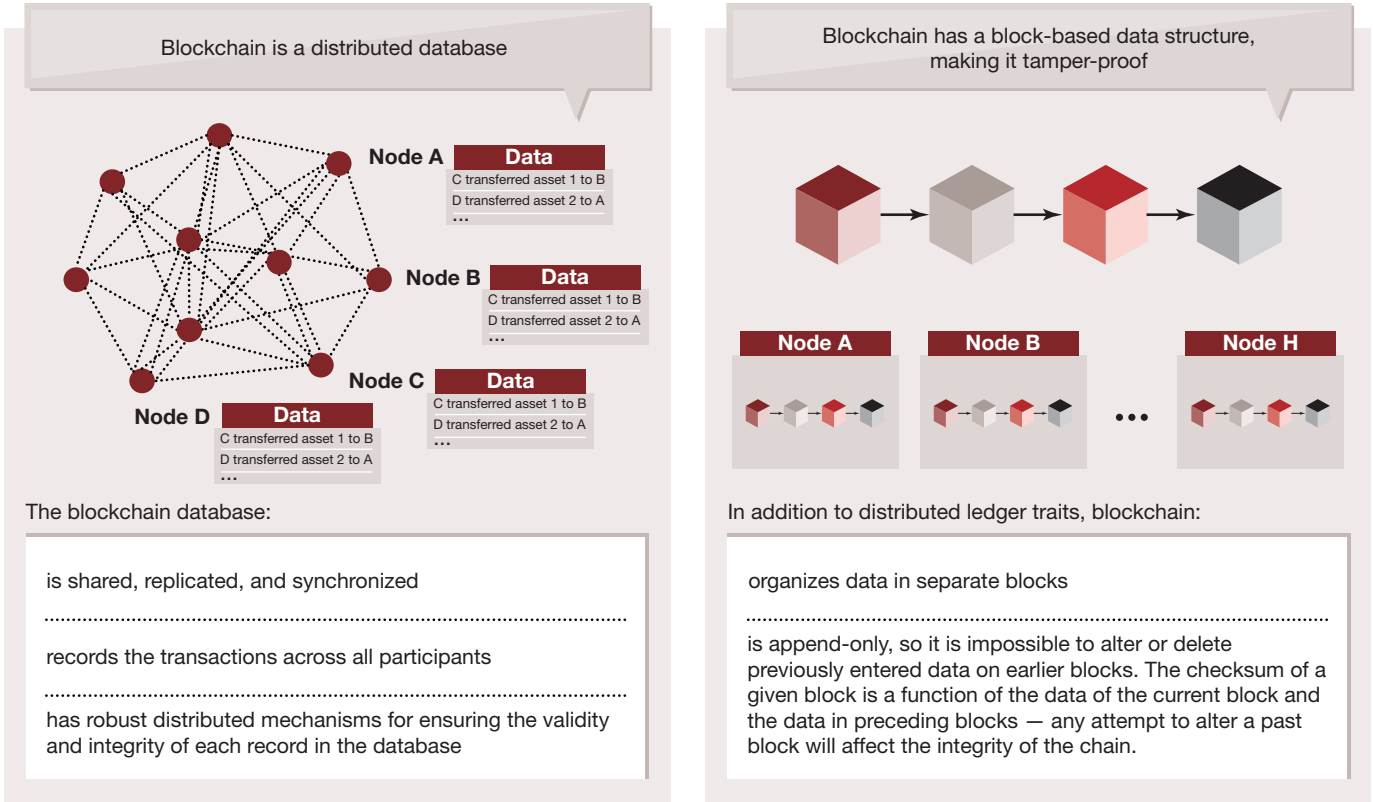
Blockchain's most important function is that it builds trust in a new and reliable way. Trust plays a fundamental role in facilitating transactions and interactions. Two or more parties can build the necessary trust between them over time through repeated successful interactions and transactions. These parties can build trust without using the traditional approach, which centralizes trust within a few third parties such as governments, banks, and associations.

One of the attractions of blockchain as a means of building trust is that the traditional data transactions model is falling out of favor. Many believe that the third-party intermediaries at the heart of the traditional model have accrued disproportionate power and influence. The traditional model also has not fared well in the digital era, in which massive numbers of often complex transactions occur daily and require verification and completion with minimal delay and efficient cost. Indeed, the very centralization of power, the main feature of the traditional model, invites internal or external malicious intent, such as insider threats or hacking attempts by outsiders.

By contrast, blockchain offers a different trust model, through distributed ledger technologies, that does not rely on such third-party intermediaries. Blockchain achieves this by functioning through the verification of the nodes within a network, organizing data in separate blocks that are appended one after the other (*see Exhibits 1 and 2*).

Exhibit 1

Blockchain is more than a database

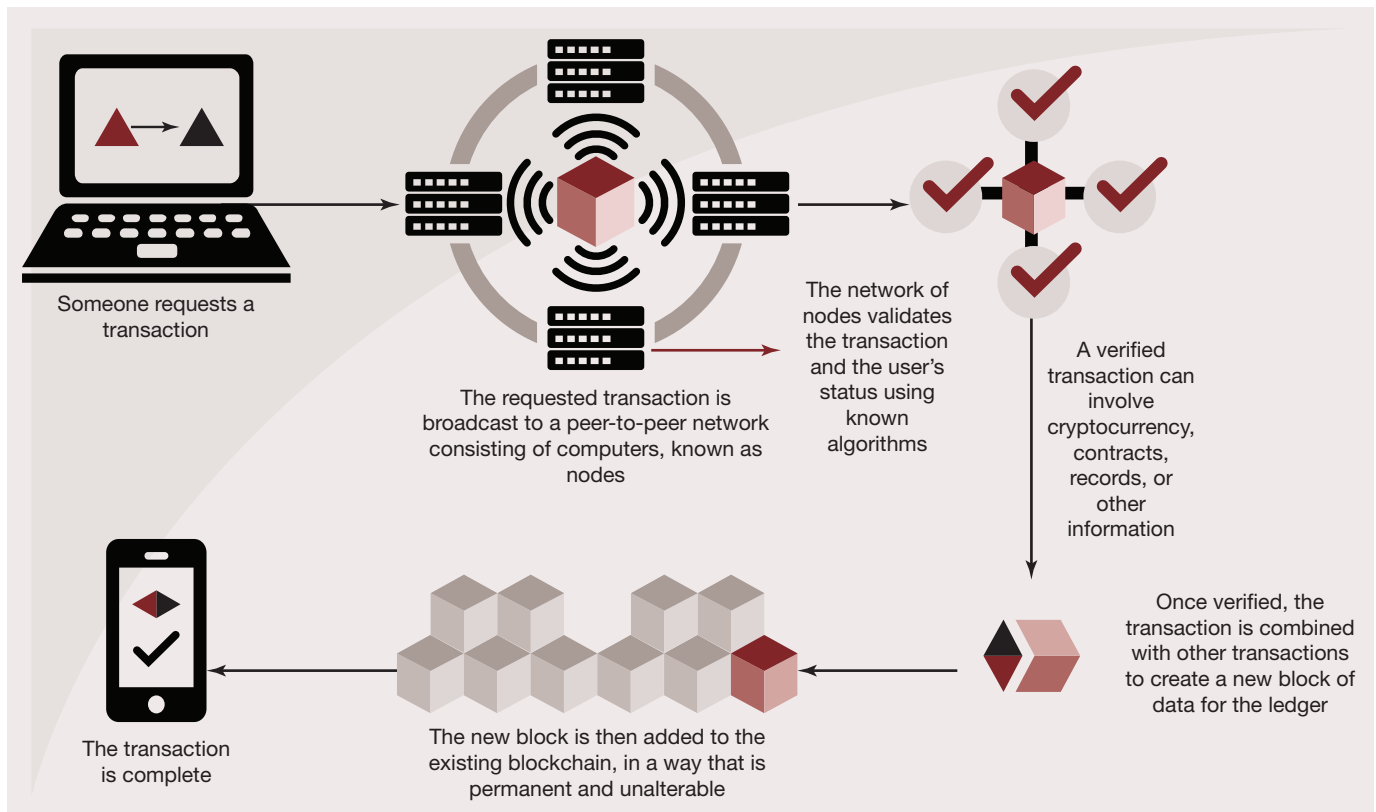


Note: “Blockchain” and “distributed ledger” are often used interchangeably.

Source: Strategy&

Exhibit 2

How blockchain works



Source: PwC

Blockchain eliminates the need for third parties by combining two components: encryption technology and consensus protocols. Together, these do not allow data to be altered or deleted, thereby making fraud extremely difficult. Encryption technology ensures the authenticity and integrity of any data that are to be added to the blockchain. The consensus protocols judge whether or not new data, which are organized in blocks, can join the blockchain. This provides the distributed trust element of the system.

Blockchain has other advantages. It is faster and more transparent than the traditional model. The use of encryption to ensure transaction authenticity and the exploitation of digital certificates, to verify participants, enhances security. The distributed nature of blockchain's data storage is more fail-safe than traditional ledgers or databases, which store all data in one centralized location. Finally, blockchain facilitates smart contracts, which are self-executing instructions written in code that run automatically without the need for third-party intermediaries.

Use cases and challenges

The advantages of blockchain yield multiple use cases in various industries. Blockchain started to gain momentum in 2016, with much of the early adoption focused on cryptocurrency applications. In 2017, blockchain began to be tested beyond the financial services industry, in verticals as different as education, logistics, retail, and telecom. Examples of recent exploratory trials include Walmart's experimentation with blockchain-based supply chain management, Blockcerts' verification of educational credentials, the INS Ecosystem direct grocery shopping and delivery service, and mobile number portability implemented by several global telecom operators. Already, Gartner is forecasting global market potential for blockchain of US\$96 billion by 2024, including \$3.2 billion in the MENA region.

Other use cases include identity management, as blockchain's immutability and decentralization allow the distributed, secure registration of identities for applications in which authentication is required, such as for permits and licenses. In supply chain management, for example, blockchain applications increase transparency and provide tamperproof tracking of shipments. Meanwhile, blockchain offers radically new processes for fast and efficient payments and international money transfers. A number of blockchain applications are in development in multiple verticals and market niches, such as automatic insurance premium collection, banking, defense messaging and equipment procurement, energy trading, health records, and tax audit and collection.

GCC organizations are creating the very partnerships that telecom operators should consider.

There has been limited adoption of blockchain within the MENA region, although there is considerable interest in the countries of the Gulf Cooperation Council (GCC).¹ Interestingly, GCC organizations are creating the very partnerships that telecom operators should consider. The Dubai Future Foundation has established the Global Blockchain Council to “explore and discuss current and future applications” of blockchain. Dubai’s government is planning for all visa applications, bill payments, and license renewals to be transacted digitally using blockchain. Recently, Smart Dubai and the Ministry of Finance of the United Arab Emirates (UAE) announced the integration of blockchain technology into the online payment portal, DubaiPay. Saudi Arabia’s central bank, the Saudi Arabian Monetary Authority, has declared a joint initiative with the Central Bank of the United Arab Emirates to use blockchain to issue a digital currency for cross-border transactions.

However, as blockchain is such a new technology, its adoption requires careful consideration. Among the challenges of implementing blockchain can be its large computational power requirements (blockchain consumes huge amounts of energy), inflated expectations about market potential, a shortage of relevant skills and talent, a lack of market validation (adoption has been limited to date), potential regulatory obstacles, and still undeveloped technological and commercial capabilities within companies.

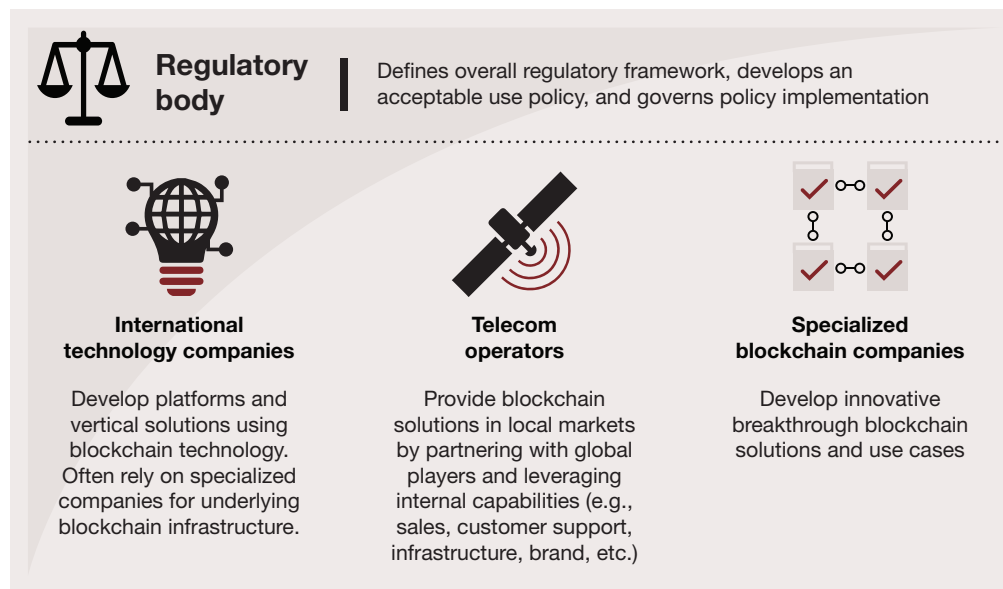
¹ The GCC countries are Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates.

Why telecom operators are well positioned for blockchain

There are several types of organization developing blockchain use cases. These players include international technology companies, specialized blockchain companies, and telecom operators. Regulators also have a role (*see Exhibit 3*).

Exhibit 3

Regulators and different kinds of companies have a role in defining blockchain use cases

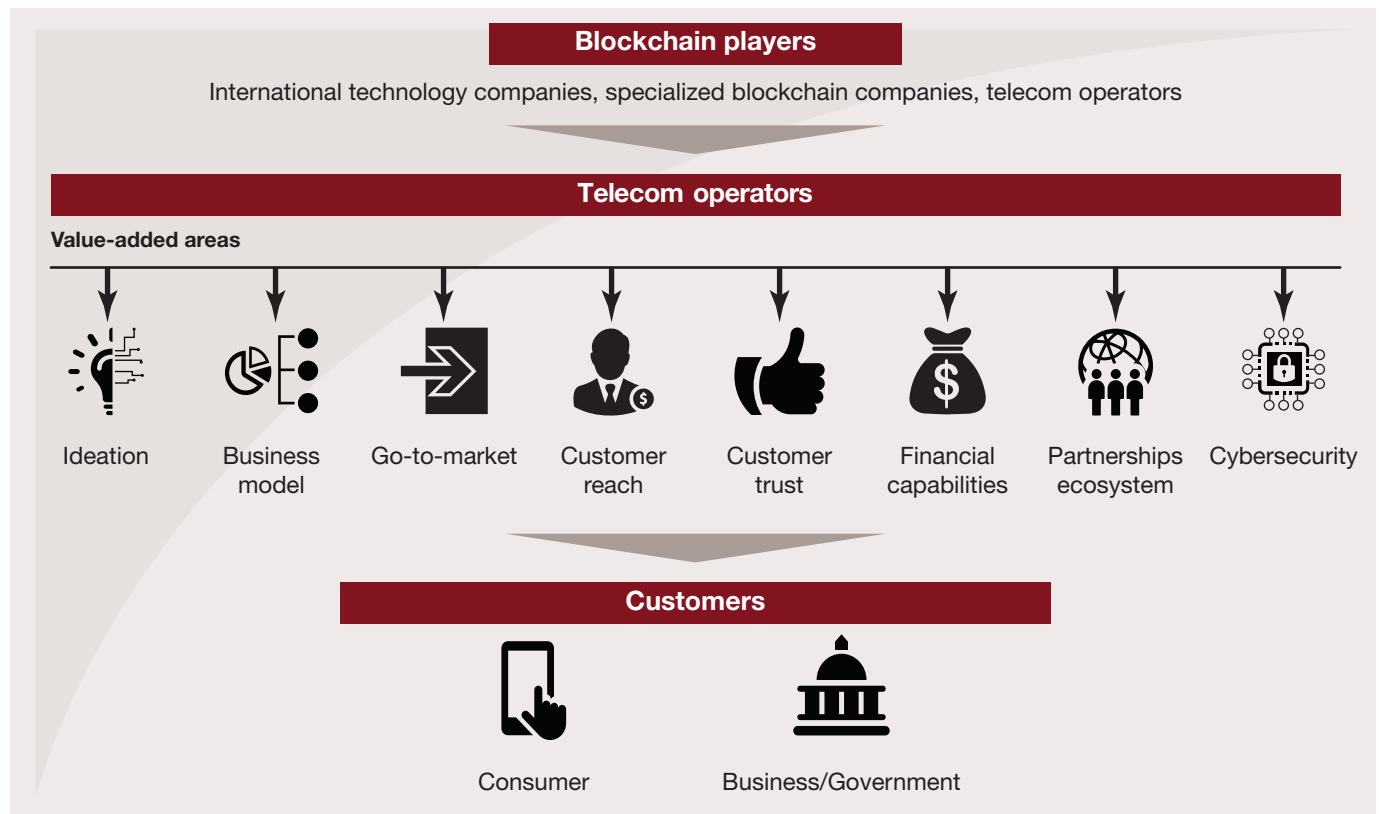


Source: Strategy&

Of these players, telecom operators possess a unique combination of attributes and capabilities that place them in a strong position to profit from the technology (see Exhibit 4).

Exhibit 4

Telecom operators have unique capabilities they can deploy for blockchain



Source: Strategy&

In terms of attributes, telecom operators have:

Business model flexibility

Telecom operators have flexibility in their business model, ranging from service provider models to public-private partnerships and joint ventures. It will be critical for them to experiment with different business models for each blockchain use case.

Easy access to the market

Telecom operators have large sales and distribution channels that they can use to commercialize blockchain applications.

Customer reach

Telecom operators have strong relationships with many customers in the public and private sectors, including corporates, consumers, and governments.

Trust

Telecom operators have built trust through their long history of serving clients in both the private and public sectors. Trust is critical for blockchain applications.

In terms of existing capabilities, telecom operators have:

Partnership ecosystem

Telecom operators already have a large database of partners that they can draw upon. These companies include those specializing in blockchain, which could become partners for developing core blockchain propositions. The operator and its specialist partner can then use the telecom operator's go-to-market capabilities to push the relevant product into the market. Telecom operators can also augment all their capabilities across the value chain, or build core blockchain capabilities in-house, by utilizing the expertise of these blockchain partners.

Ideation and product development

Telecom operators typically know all of their clients' most pressing issues. They also employ developers capable of developing blockchain-based platforms or applications that can address these problems.

Financial

Telecom operators usually have significant financial resources and a willingness to invest in emerging technologies or projects.

Cybersecurity

Telecom operators are investing heavily in cybersecurity capabilities to secure all their operations and assets. Some of this investment can be used to enhance security through blockchain.

How telecom operators can seize the blockchain opportunity

Before embarking on a chosen strategy, telecom operators should assess the status of the blockchain market to see where the opportunities lie. They can use their attributes and capabilities to gain internal efficiency, such as improved handling of data, or to attract external clients, such as by enabling new business models.

Internal opportunities

Telecom operators can use blockchain to optimize their operations and improve service delivery. This is particularly relevant to services involving multiple operators, such as roaming, number portability, and settlement:

Identity management

Telecom operators can use blockchain to streamline identity management to prevent fraud. By storing customer identities on the blockchain, authentication and validation of services become faster, more resilient, and more efficient. Telecom operators can also extend access to blockchain-based customer identity records by building an ID-as-a-Service (IDaaS) offering. This is an authentication infrastructure that is built, hosted, and managed by a third-party service provider. This offering will be useful for the digital services platforms, such as customer relationship management or billing, which telecom operators are already building.

Number portability

Telecom operators can register their number-portability database on blockchain to facilitate lookups and portability transactions, and reduce the costs of these transactions. Blockchain would complete the transfers faster, with minimum disruption to subscriber service, and eliminate the reliance on third parties or on potentially time-consuming and expensive integration efforts to connect to different operator databases.

Roaming

Blockchain can facilitate roaming services between multiple operators as it can check subscriber permissions to determine if a user has the right to roam. If the user can roam, then blockchain gives the subscriber access to the host network and creates a smart contract to track the roaming service charges. When a user roams, this generates a Call Data Record (CDR) for network usage, which is published anonymously and securely on blockchain. The smart contract can then calculate the charge for the call and settle the charge between the operators automatically.

Customer experience and service-level agreements (SLAs)

Blockchain's smart contracts can improve SLA monitoring and customer experience. Smart contracts can have service levels and the associated rewards or penalties coded into them so that they execute automatically and autonomously. They thereby apply any penalties or grant rewards in line with the SLA. Blockchain's immutability prevents any changes or tampering with the record.

Smart bandwidth metering

Subscribers can use blockchain to monitor what data service providers are selling them in real time, and then compare this to their permitted quota. They can then deal with any overselling and make any necessary adjustments.

External opportunities

Telecom operators can develop and offer new innovative blockchain-based services to clients in multiple verticals if they understand the blockchain value chain, and carefully analyze their strengths in each area (see Exhibit 5).

MENA telecom operators have four main value propositions:

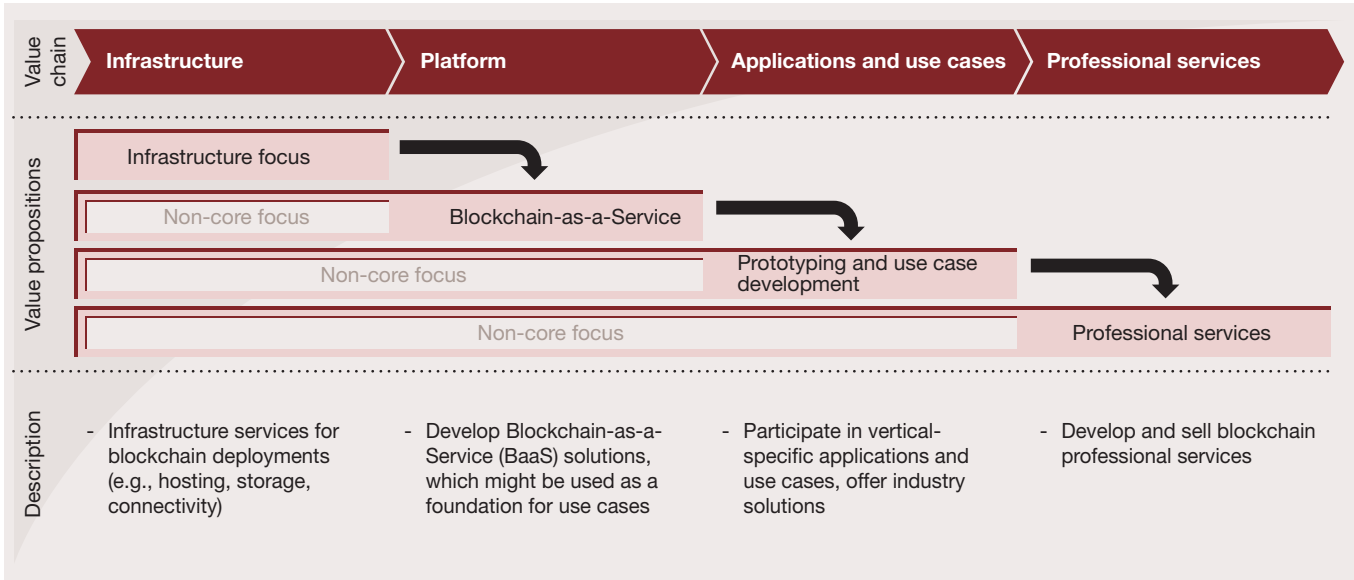
Infrastructure focus

Blockchain infrastructure is the most straightforward, but possibly the least profitable, opportunity. Telecom operators could provide infrastructure on which to host their clients' blockchains. They can do this using their existing cloud infrastructure (hardware, storage, hosting, and networking).

This is relatively inexpensive. It does not require extensive investment in blockchain-specific capabilities and skills. Also, the actual deployment and management of blockchain remains the client's responsibility. Consequently, this is already a crowded market. Several digital technology companies already provide this service, such as blockchain hosting on Amazon Web Services, Google Cloud Platform, and Microsoft Azure. Examples of telecom operators or cloud providers that offer, or plan to offer, this service are SwissCom and Verizon.

Exhibit 5

Telecom operators have four main external value propositions



Source: Strategy&

Blockchain-as-a-Service

Telecom operators can offer their clients Blockchain-as-a-Service (BaaS) by exploiting their existing cloud infrastructure and forming partnerships with blockchain technology providers. The operators and their partners would assume the responsibility for deploying and managing blockchain software, while clients can focus on building their own applications and use cases. This approach would increase the size of the blockchain market as it makes it easier for companies of all sizes to experiment with blockchain and create their own use cases.

The differentiating capabilities required for the platform opportunity are cloud infrastructure, in-house technical capabilities that can be developed further, and ongoing technology partnerships that can provide additional capabilities. Examples of providers of BaaS are Softbank Cloud and Ethereum Blockchain-as-a-Service, a platform released by Microsoft in partnership with ConsenSys.

Prototyping and use case development

Telecom operators could offer industry-specific applications for a large number of verticals. Operators would need to establish technology partnerships, and invest in building their technological knowledge for specific blockchain-based industry applications. In this way, they could offer these applications to clients as packaged solutions.

Telecom operators can also co-invest with vertical industry players to develop prototypes and proofs of concept for blockchain in specific industry use cases. These could include banking, government, healthcare, and real estate. Such co-investment is particularly valuable as a means of mitigating risk in the early stages of blockchain development.

Telecom operators already possess many of the differentiating capabilities for this approach, including in-house development capacity, agile prototyping techniques, a partner ecosystem, relevant talent, and go-to-market capabilities. Companies currently experimenting with this value proposition include Amazon Web Services, IBM, and Swisscom Blockchain.

Professional services

Telecom operators can offer blockchain professional services. These services include strategy development, research, use case prioritization, business model development, proof-of-concept development, technology consulting, initial coin offering expertise, training, and use case design services.

To seize the professional services opportunity, telecom operators would need extensive investment in their internal blockchain capabilities, including technology and talent. However, the professional services approach is risky because of the shortage of blockchain professionals and the competition from specialist blockchain firms. NTT Data and Swisscom Blockchain are examples of telecom operators providing these services.

Key success factors

Telecom operators must craft their value propositions in line with the following success factors:

Positioning

Telecom operators must carefully analyze their capabilities against the potential value proposition and target markets, and choose the positioning that offers the best fit for them. In those areas where the chosen value proposition requires enhanced capabilities or talent development, telecom operators should weigh the market opportunity against the necessary investment, and ensure that their decisions are based on a solid business case.

Go-to-market strategy

Telecom operators must identify their target market, define their value proposition, and craft a go-to-market strategy to penetrate that market.

Operating model

A thoughtfully designed operating model is crucial to success. Developing a compelling blockchain value proposition involves major new technologies, skills, and processes. The operating model should include the required organizational structure, talent acquisition strategy, and decision rules and tools.

Regulatory environment

Undesirable or outmoded regulations could pose a risk to entrants and players in the blockchain market. Telecom operators must therefore proactively engage with regulators to ensure that suitable regulations are applied to support blockchain adoption, and that they meet the needs of the overall market.

Use case portfolio

Investing in focused development of use cases is a key determinant of success. A telecom operator must have a portfolio of relevant use cases for its target market segments, which will assist active marketing and business development.

Business model

Telecom operators must overcome the lack of blockchain business models by finding effective working models for each application or market segment. This is critical for the early adoption of use cases and then large-scale deployments.

Conclusion

Blockchain technology is likely to have a tremendous impact on many industries and companies, with potentially large effects on the national economy. Telecom operators should respond by developing the right strategy, operating model, partnerships, and capabilities for their selected blockchain value proposition. In this way, they can position themselves as key players in this fast-developing market, enhance their internal operations, and diversify their revenue. By entering the market early, MENA telecom operators can become blockchain pioneers, thereby realizing their ambition to become the enablers of the region's digital ecosystem.

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