

Chapter 1

Blockchain 2.0: An Edge Over Technologies

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ABSTRACT

Blockchain is a shared and distributed ledger across an open or private processing system that expedites the process of recording transactions and data management in a business network. It empowers the design of decentralized transactions, smart contracts, and intelligent assets that can be managed over internet. It formulates the revolutionary decision-making governance systems with more egalitarian users, and autonomous organizations that can control over internet without any third-party involved. This disruptive technology has tremendous opportunities that open the doors to detract the power from centralized authorities in the sphere of communications, business, and even politics or law. This chapter outlines an introduction to the blockchain technologies and its decentralized architecture, especially from the perspective of challenges and limitations. The objective is to explore the current research topics, benefits, and drawbacks of blockchain. The study explores its potential applications for business and future directions that is all set to transfigure the digital world.

INTRODUCTION

It takes a revolution to challenge the stigmas and stereotypes prevalent in the spectrum of technology and open the window for new methodologies and ways to gush in and take over, to lead the next generation. By the same token, blockchain technology is nothing short of a revolutionary sensation for the digital world today and it would require exponential efforts to realize and utilize the potential to its full capacity.

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Blockchain was developed to annihilate the need of an efficient and secure system for recording and tracking transaction volumes. A blockchain is a decentralized, shared, encrypted-database of records that have been administered and distributed among engaged users (Pilkington, M., 2016). It is a digital decentralize mechanism that helps the participating users to reach a consensus on the existence of a transaction/event eliminating the need of third-party/central authority. Each transaction in the distributed and shared ledger is authenticated by consensus of a majority of the users in the network (Atzori, 2015). The information is irreversible and incorruptible once it is stored in the database (Yli-Huumo et al., 2016). In fact, it is an authenticated record of each, and every transaction ever made. It provides the user's a unique experience to transfer the assets (tangible or intangible) in safe, secure and immutable way, thus eliminating the middleman from the society who plays an important role in the economic and regulatory bodies (Underwood, 2016; Mettler, 2016; Peters et al., 2015). This disruptive technology can provide digital currencies, smart contracts, decentralized communications, marketplace, smart property to name a few and to enter in a new epoch focused on decentralize, immutable, secure and transparent governance; and legal systems (Mainelli and Smith, 2015). Financial administrations, democratic institutions and healthcare are the other transforming areas that could impact using blockchain solutions. Financial administrations core elements of verifying and reassigning financial data and resources very closely resemble with the blockchains key transformative impact. Cross-border outflows and trade finance are the significant current pain sockets that can be solved by blockchain-based solutions, which reduce the number of necessary intermediaries and are geographically skeptic (Nguyen, 2016).

Apart from the above-mentioned avenues of opportunity, the blockchain technology has tremendous potential to essentially change the manner in which users prepare their affairs and can create new ventures for software-primarily based businesses. The decentralized aspect of blockchain can re-implement certain attributes of traditional governance, permitting parties to obtain the advantages of formal corporate and autonomous structures, while on the same time keeping the flexibility and scale of informal online groups, with no human intercession (Wright and Filippi, 2015). This section throws light on the basic characteristic of blockchain that makes it a cost-effective and reliable solution for business while also exploring the challenges that still needs to overcome.

The history has observed a drastic shift to simplify the transfer of value and protect trust between buyers and sellers in terms of minted note and banking systems. Internet and mobile technologies have been the important technological revolutions that expedited the process of transactions while minimizing the distance between buyers and sellers. The digital economic scenario today relies heavily on a certain trusted authority. Each transactions take place via third parties — it can be an email service provider to confirm the delivery of mail; certification authority certifying the digital certificate; online social network like Facebook to make users believe that our posts/events have been shared with the ones whom they have given permission like friends/friends of friends or it can be a bank playing a significant role in managing and delivering currency remotely. The facet of trusting third-party remains same for the security and safety of the information/data in the digital world (Reid and Harrigan, 2013; Miers et al., 2013; Decker and Wattenhofer, 2013). This revolutionizing trend of transactions still possesses major concerns that remain intact like inefficiency, expensive, and vulnerability and prevents the business from efficiently exploiting services, thus suffers from the limitations as listed in Figure 1.

The growing complexity of doing business over web have emerged the need of the growth of transaction volumes that will magnify the efficient, secure and reliable transaction system (Wust and Gervais, 2017; Peck, 2017). Given the high volume and veracity of transactions, it deserves the energies of faster bookkeeping open payment networks to establish trust and ensuring transparency. Blockchain as the

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