

Chapter 1

Blockchain Technology in Ecosystems

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ABSTRACT

The complex human society needs a robust technological ecosystem that may interoperate cordially among the systems. As the systems are components, these components offer a variety of services for humankind. Services evolve and interact in a different manner and cater to numerous capabilities. These activities have many issues that need to be taken care of with the most advanced and secure technology. Blockchain is one such approach among the many approaches available. This study of blockchain technology will discuss its categorization. Also, it will address how and where all this recent technology has contributed to the ecosystem.

INTRODUCTION

Since the human evolution data has been of utmost importance from counting to barter system and other related activities. These data with human wisdom have meaningful information. Data in early history was inscribed on stone and then on paper with the invention of paper (Hunter, 1978). Years ago, in the ancient Mesopotamians

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civilization started to record quantities on tablet of clay. The tablet consists of rows and columns. Data in those fields are stored as symbolically with number of dots to indicate the quantities. Thus, making it a kind of ledger. Later in the fourteenth century a new technique has been proposed and it gave a logical relationship to the entries. In this approach has been referred as double entry system. As this system maintain two entries one as debit and other as credit. Primal intention of humans is to accumulate wealth and in the form of intangible form rather than tangible form. Birth of internet and its security protocol developed in the 1998 allowed and encouraged to carry out financial transactions online. Most of the initial transaction were business to business. The technology got popularity among the people and transaction also covered the retails segment of the commerce in many folds. Thus, electronic commerce covered all aspect of the business i.e., business to business, business to consumers, consumers to consumers, etc. This growth of the electronic commerce has certain challenges that need to be addressed. Most important among the many challenges are cybersecurity, competition and order fulfillment.

Cybersecurity is the most challenging issue that is to be addressed for all the online transaction and appropriate policy and procedure need to formulate to safeguard the interest of the parties involved in the transaction. In order to safeguard the interest of the parties involved and avoid fraud etc. (Nakamoto, 2008a) (Nakamoto & Bitcoin, 2008) An anonymous person called “Satoshi Nakamoto” introduced the concept of “Bitcoin: A peer-to-peer Electronic Cash System”. This is a distributed ledger, and this new approach was referred as “Blockchain”. Core idea of the blockchain was to run over de-centralized peer-to-peer network. All the participant in the network must have agreement on the entries in the ledger. This is a public decentralized ledger not owned tool by any person, group, or government. Thus, blockchain can be simple be seen as a new way to create ledgers.

The proposed technique enables users in community to record transaction in a peer-to-peer ledger such that under normal situation alteration in the transaction cannot be done by individuals once it is published. Thus, it is a digital transaction that has been once executed, shared among all the entities participating into it. As all the events are public and the transactions are verified by all the participating entities and consensus of all the parties are mandatory for transaction to be recorded. A transaction once agreed and recorded cannot be deleted from the chain. Bitcoin is the most controversial entity since its inception as it has bypassed many governmental regulatory bodies.

Technology itself is well established and accepted by the scientific community to work without any glitch. This approach has been successfully applied to both non-financial and financial real-world problem. Current scenario of technology is all about the trustworthiness and reliability this blockchain technology has gain trust on both the areas. As an example, if Instagram post shared with the trusted

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