

## Chapter 2

# A Secure Blockchain–Powered Land Record Modernization System for Documenting Land User’s Rights: Land Transparency Initiative

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## ABSTRACT

*Proving ownership of the land should preferably be done with a legal document that proves it decisively. Many authorities retain various documents, any of which could be used to assert a claim on the land. To prevent document falsification, the land administration mechanism ought to be robust, accessible at all times, and quick to accomplish exercises. But, any such solutions are prone to a slew of issues, including data accuracy, security, and dispute resolution. Usage of blockchain technology in land administration is considerably advanced to solve issues that plague current LAS. With the adoption of blockchain, the problem of cooperation among a variety of land records is articulated. The proposed model has integrated units to digitally sign the land assets to store securely into the blockchain using cryptography algorithms after which land assets are verified. The proposed approach eliminates deception, improves administration. The results show that the time complexity for registering, signing, and verifying land facts to establish a system using blockchain is relatively secure.*

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## **INTRODUCTION**

In the field of land administration, numerous research and development activities are specifically engaged in blockchain-based transactions. The use of Blockchain technology in primary residence transactions like transfer of proprietorship, mortgage registration, and surveying exercises is gaining prominence because it improves efficiency and accountability in establishing the limits of a new parcel, split parcel, merged parcel, etc. Commercial investment property has usually represented the foremost prevalent consequence of modern creativity and the most visible manifestation of material worth. They are likely to be of significant societal, economical, and governmental consequence in every nation. Land and developed properties account for a significant amount of the country's economy. As a consequence, multiple registers about land and building properties had to be established from the beginning of modern development (Anand, A. et al, 2017). The vital feature of such records is security and reliability, which has been achieved in a variety of methods over time.

Blockchain is a method of storing data in a manner that it is extremely difficult to modify information. It's basically a digital ledger of transaction records that's replicated and spread throughout the blockchain's whole network of nodes. Blockchain comprises sequences of blocks in which each block may represent the records set pertaining to a land plot. With the aid of consensus mechanisms and smart contracts, Blockchain's core technology will significantly alter the way information and value are stored and exchanged. A legal interpretation and assessment of the notion's possible impact in a real-world context are required for such a unique concept.

Blockchain technology is a variant of a Distributed Ledger Technology (DLT) which can be treated as either permissionless (open DLTs) or permissioned (closed DLTs) (De Meijer, C. R.W. 2020). With the help of consensus between decentralized peers relying on no central decision-making mechanism, information can be distributed among the blocks, in favor of a unified administration. Consensus mechanisms entail the miner completing a difficult computational task in order to contribute a transaction to the blockchain and receiving a remuneration. The veracity of the information recorded and encoded is guaranteed by distributed ledger technology. The remaining nodes will recognize the possible errors occurred due to the data tampered by a particular node. Parties involved can deal in a blockchain ecosystem without having to know each other and any intermediary, whereas Regulators face a particularly difficult task when it comes to user privacy in general financial transactions.

Land rights are still important for poverty alleviation since land production is related to basic services like education and healthcare. Land ownership entails access to basic amenities, occupation, and financial services, among numerous

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