Chapter 7
Geospatial Blockchain Applications for Land Administration in Pakistan

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ABSTRACT

In an era characterized by rapid technological progress, the persistent challenges of land administration are on the verge of a groundbreaking transformation through the adoption of blockchain technology. Originating with the advent of Bitcoin in 2008, blockchain has emerged as a beacon of hope, promising transparency, trust, immutability, and security in recording transactions. This innovative technology holds immense potential to revolutionize the landscape of land administration in Pakistan, a nation burdened by antiquated paper-based systems, corruption, land disputes, and inefficiencies. Embracing blockchain can offer Pakistan the prospect of an era marked by improved governance, diminished fraud, streamlined record-keeping, and equitable access to vital land information. Nonetheless, the path forward is strewn with challenges, necessitating the establishment of robust legal frameworks, capacity-building initiatives, and the resolution of privacy concerns.

INTRODUCTION

Land Administration (LA) refers to the procedure of ascertaining, documenting, and distributing data concerning land ownership, valuation, and utilization, as delineated by the United Nations Economic Commission for Europe (UNECE) (UNECE, 1996).

Land administration assumes a pivotal role in fostering economic development, ensuring social stability, and preserving the environment. It can establish the essential infrastructure for transparent land transactions, mitigate land-related conflicts, and promote responsible land utilization and governance.

The realm of land administration systems has undergone a surge of pioneering technologies with the overarching goal of revolutionizing the systematic and legal documentation of various aspects related to real estate and land ownership. Among these transformative developments, a particularly noteworthy revolution has emerged in the form of transitioning towards a blockchain-based approach to land administration. Blockchain can serve as a collaborative and unalterable ledger employed for the registration of transactions and asset monitoring within a network. This technology can store information in blocks, which are then interlinked in a sequential manner, forming a chain. Blockchain is a decentralized ledger system where each block represents a collection of data. Its applications extend beyond cryptocurrencies; it can also serve as a repository for land-related information.

Land administration in Pakistan grapples with a multitude of challenges, encompassing an antiquated and inefficient registration system that contributes to delays and impediments in economic development. Furthermore, complex and undocumented land tenure systems fuel disputes, while insufficient digitalization hinders transparency. Issues related to unauthorized land occupation and encroachments persist, and urbanization pressures strain the management of urban land. Corruption within land agencies remains pervasive, access to justice for land disputes is limited, and land fragmentation is prevalent. Resistance to policy and institutional reforms is also observed, emphasizing the necessity for more inclusive stakeholder engagement. To effectively address these issues, a holistic approach is required, involving comprehensive legal, technological, and governance reforms. These reforms aim to establish secure property rights, reduce disputes, and promote equitable land management, ultimately facilitating sustained economic growth.

Against this backdrop, the main objective of this chapter is to explore how blockchain technology can offer potential solutions to the challenges encountered in land administration in Pakistan. To achieve this objective, the chapter is structured as follows: The second section will illustrate the background knowledge of blockchain technology and land administration. The third section will delve into the specific challenges faced by the land administration in Pakistan. The subsequent section will explore how blockchain technology can be applied to address the challenges faced by the land administration in Pakistan. The final section will provide a concluding overview of the chapter's findings and insights.

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