


Chapter 5


Tokenization of Real-World Assets: Theoretical and Practical Perspectives

Honnur Md Thazuddin

 <https://orcid.org/0009-0006-2491-4730>

Dayananda Sagar College of Engineering, India

Vinod Krishna Makkimane

 <https://orcid.org/0009-0009-5150-3701>

Dayananda Sagar College of Engineering, India

ABSTRACT

The tokenization of real-world assets (RWAs) is increasingly recognized as a significant application of blockchain technology, with transformative implications for ownership structures, liquidity, and investment accessibility. This chapter presents a descriptive and interdisciplinary study that examines both the theoretical foundations and practical applications of asset tokenization. It identifies key gaps in existing literature and practice, including regulatory uncertainty, limited infrastructure integration, and underrepresentation of developing economies. Guided by these gaps, the research aims to evaluate conceptual frameworks, analyse real-world implementations through case studies, and provide insights into the benefits, challenges, and future directions of tokenized ecosystems. By offering a comprehensive academic and policy-oriented perspective, the chapter seeks to support efforts to align innovation with regulation and promote global inclusivity in digital asset markets.

DOI: 10.4018/979-8-3373-3371-7.ch005

1. INTRODUCTION

Tokenization refers to the digital representation of real-world assets (RWAs) on a blockchain or distributed ledger. It enables the division of ownership of an asset into tradable digital units, commonly known as tokens. Whether applied to real estate, commodities, debt instruments, or intellectual property, tokenization allows assets to become more accessible, divisible, and liquid. These characteristics position tokenization as a disruptive force in traditional finance and a foundational element in the evolution of decentralized finance (DeFi).

The global interest in tokenization has accelerated over the past five years, driven by advancements in distributed ledger technologies (DLT), increased institutional experimentation, and the potential to streamline asset issuance and transfer. Policymakers and regulators are gradually acknowledging this shift. For instance, the European Union's DLT Pilot Regime, Switzerland's legal recognition of tokenized securities, and India's IFSCA guidelines for FinTech entities reflect regional efforts to craft enabling legal and infrastructural environments for tokenized assets (World Economic Forum, 2020; IFSCA, 2023; Zetzsche et al., 2020).

Despite this momentum, critical uncertainties remain. Regulatory fragmentation, lack of legal enforceability, technological interoperability, and limited inclusion of emerging economies are persistent issues. Furthermore, existing research often treats tokenization from either a purely technical or financial angle, without integrating socio-legal, institutional, and governance considerations.

This chapter seeks to address these gaps by offering a comprehensive academic investigation of tokenization from theoretical, empirical, and policy standpoints. The research is guided by the following objectives:

- To examine the conceptual foundations and classification of tokenized assets;
- To evaluate the technical infrastructure enabling tokenization and its limitations;
- To analyze real-world case studies across sectors and jurisdictions;
- To identify the benefits and challenges of tokenization as a financial innovation;
- To propose policy recommendations and outline future research directions.

Methodologically, the chapter adopts a qualitative, exploratory approach rooted in embedded case study analysis. Eight global use cases are examined across real estate, trade finance, public infrastructure, and commodities. By integrating academic theory, technological design, and practical experience, the chapter aims to support a broader understanding of how tokenization may evolve from a speculative innovation into a mainstream mechanism for global capital formation.

44 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage: www.igi-global.com/chapter/tokenization-of-real-world-assets/402831

Related Content

Elevating Medical Imaging: AI-Driven Computer Vision for Brain Tumor Analysis

A. Vijayalakshmi and Hemlata Joshi (2024). *Intersection of AI and Business Intelligence in Data-Driven Decision-Making* (pp. 331-350).

www.irma-international.org/chapter/elevating-medical-imaging/355859

High Performance Online Image Search with GPUs on Large Image Databases

Ali Cevahir and Junji Torii (2013). *International Journal of Multimedia Data Engineering and Management* (pp. 24-41).

www.irma-international.org/article/high-performance-online-image-search-with-gpus-on-large-image-databases/95206

Comparison of Image Decompositions Through Inverse Difference and Laplacian Pyramids

Roumen Kountchev, Stuart Rubin, Mariofanna Milanova and Roumiana Kountcheva (2015). *International Journal of Multimedia Data Engineering and Management* (pp. 19-38).

www.irma-international.org/article/comparison-of-image-decompositions-through-inverse-difference-and-laplacian-pyramids/124243

An Improved Arabic Handwritten Recognition System using Deep Support Vector Machines

Mohamed Elleuch and Monji Kherallah (2016). *International Journal of Multimedia Data Engineering and Management* (pp. 1-20).

www.irma-international.org/article/an-improved-arabic-handwritten-recognition-system-using-deep-support-vector-machines/152865

Mitigating Data Imbalance Issues in Medical Image Analysis

Debapriya Banik and Debotosh Bhattacharjee (2021). *Data Preprocessing, Active Learning, and Cost Perceptive Approaches for Resolving Data Imbalance* (pp. 66-89).

www.irma-international.org/chapter/mitigating-data-imbalance-issues-in-medical-image-analysis/280911