Chapter 8
Leveraging Blockchain and AI to Advance Digital Public Infrastructure:
Boosting FinTech Development in Emerging Economies

Samarth Saksena
https://orcid.org/0009-0008-3354-2427
Amity University, Noida, India

ABSTRACT

Strong, easily available, and digital financial services which are creative are becoming increasingly important for the growth of world economy, the financial industry is undergoing a revolution in the emerging economies due to the convergence of digital public infrastructure (DPI), blockchain technology, and artificial intelligence (AI), which offers an unprecedented chance to promote financial inclusion, increase efficiency, along with establishing confidence in digital finance. And due to these game-changing technologies, the emerging FinTech industry has accelerated and established itself as both a force behind and a recipient of the extensive digitisation initiatives around the globe. In this proposed chapter "Leveraging Blockchain and AI to Advance Digital Public Infrastructure: Boosting FinTech Development in emerging economies" we aim to thoroughly investigate the ways in which blockchain, AI, and DPI work together to influence the course of FinTech expansion in the emerging markets. We will be presenting a holistic approach, which offers a comprehensive analysis, exposing the complexities of this technological shift and its influence on the emerging economies.

DOI: 10.4018/979-8-3373-6380-6.ch008

INTRODUCTION

1.1 Background on DPI, Blockchain, AI, and FinTech in Emerging Economies

The rise of FinTech has been a global phenomenon, but its impact is arguably most transformative in emerging economies. In these markets, FinTech is not merely an improvement on existing services but often represents the first point of access to the formal financial system for millions of previously unbanked citizens. This "leapfrogging" phenomenon has been made possible by three converging technological pillars: DPI, Blockchain, and AI.

Digital Public Infrastructure (DPI) refers to a set of shared digital systems—such as digital identity, secure data exchange protocols, and instant payment interfaces—that are often developed or sponsored by the government to serve as open, interoperable platforms for both public and private services.[1] DPI significantly reduces the cost of customer acquisition (Know Your Customer/KYC) and transaction processing, thereby acting as the fundamental scaffolding for a scalable digital economy.[2] The success of India's Aadhaar-UPI system and Brazil's Pix exemplifies the potential of robust DPI to accelerate financial inclusion from incremental growth to exponential scale.[3]

Blockchain technology, or Distributed Ledger Technology (DLT), offers a mechanism for trustless and transparent record-keeping.[4] In emerging economies, where institutional trust in traditional banking or legal systems may be weak, Blockchain provides an immutable and auditable layer for securing property titles, streamlining supply chain finance, and facilitating cross-border remittances at significantly reduced costs. Furthermore, it underpins the emerging wave of Decentralized Finance (DeFi), offering alternatives to centralized financial institutions.

Artificial Intelligence (AI), encompassing machine learning (ML) and predictive analytics, provides the intelligence layer.[5] AI excels at processing large volumes of alternative data (e.g., mobile usage, utility payments, social interactions) to perform dynamic risk assessment, enabling FinTech lenders to build alternative credit scores for the unbanked.[6] It is also crucial for sophisticated fraud detection and enhancing operational efficiency through automation and hyper-personalized customer service.

The confluence of these three technologies provides a unique opportunity to design financial ecosystems that are inherently more inclusive, resilient, and efficient than legacy systems, specifically tailored to address the challenges of regulatory fragmentation and high financial exclusion rates characteristic of emerging economies.