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GLOBAL BANKING AND EMERGING TECHNOLOGIES

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ABSTRACT

The global banking sector is undergoing a profound transformation driven by emerging technologies such as artificial intelligence (AI), block chain, cloud computing, big data analytics, and Central Bank Digital Currencies (CBDCs). This paper examines how these innovations are reshaping core banking functions, enhancing operational efficiency, improving risk management, and expanding financial inclusion. AI and machine learning enable predictive analytics, fraud detection, and hyper-personalized services, while block chain and distributed ledger technology introduce secure, transparent transaction mechanisms. Cloud adoption accelerates scalability and cost reduction, and CBDC pilots signal a shift toward state-backed digital currencies. Despite these opportunities, challenges persist, including regulatory fragmentation, cyber security threats, and organizational resistance. This study synthesizes recent literature, identifies key trends, and proposes a framework for banks to leverage emerging tech sustainably while mitigating risks in a rapidly evolving global landscape.

Keywords: Block Chain, Global Banking, Technologies.

1. INTRODUCTION

The global banking and finance industry is in the midst of a profound transformation driven by emerging technologies. Innovations such as artificial intelligence (AI), block chain, cloud computing, 5G, and quantum computing are reshaping how money moves, risk is managed, and financial inclusion is achieved. AI-driven algorithms now spot fraud in milliseconds, while robot-advisors and Chabot's deliver hyper-personalized services. Block chain and distributed ledgers create transparent, tamper-proof transaction records, and cloud platforms enable scalable, cost-efficient operations. Meanwhile, 5G powers real-time, low-latency banks, and quantum computing promises breakthroughs in cryptography and risk modeling. Together, these technologies are redefining the banking landscape, compelling institutions to adopt digital-first strategies or risk being left behind in an economy where data is the new currency and connectivity is the new capital. The term global banking refers to a banking model where financial institutions operate across national borders, delivering a wide spectrum of services—from trade finance and corporate lending to investment banking and wealth management—in multiple currencies and jurisdictions. In recent decades, globalization, deregulation, and rapid advances in information technology have accelerated the expansion of banks beyond domestic markets, turning global banking into a key driver of worldwide economic integration. Historically, international banking grew out of trade financing and investment activities in the 19th century, but the post-World War II era saw a surge as banks sought new growth avenues amid saturated home markets, reduced trade barriers, and liberalized capital flows. Today, global banks operate through a network of foreign subsidiaries, branches, correspondent relationships, and increasingly, digital platforms that transcend geographic boundaries. However, global banking also introduces significant challenges: heightened credit, liquidity, and operational risks; cross-jurisdictional compliance; cyber security threats; and the need for robust capital and risk-management frameworks .

Understanding these dynamics is essential for scholars and practitioners alike, as the global banking landscape continues to evolve in response to technological innovation, shifting regulatory environments, and changing geopolitical currents.

2. REVIEW OF LITERATURE

Amer D W, et al(2020) the study examines FinTech drives financial inclusion, which is essential for achieving the UN Sustainable Development Goals (SDGs) and balanced, sustainable development. Realizing FinTech's potential requires a progressive infrastructure strategy built on four pillars: Digital identity, simplified account opening, and e-KYC. Open, interoperable electronic payments systems. Government electronic services and payments (leveraging pillars 1 & 2). Digital financial markets and systems for broader finance and investment access implementing these pillars can transform finance, economies, and societies, advancing both inclusion and the SDGs.

Fosso Wamba, S., et al. (2022). This paper addresses the literature gap on Bitcoin, block chain, and FinTech by first defining these concepts. It employs a systematic review combined with supply-chain case studies to highlight

applications, benefits, and challenges across industries. The research methodology includes a classification framework applied to 141 articles from five top academic databases, providing a baseline assessment of current knowledge and its evolution. Findings reveal that the technologies are rapidly evolving and increasingly adopted for competitive advantage, urging organizations to leverage research insights to refine strategies and support data-driven decision-making.

3. OBJECTIVES

- To Identify Technological Disruptions
- To Assess Impact on Core Banking Operations
- To Examine Regulatory and Compliance Challenges
- To Explore Financial Inclusion Opportunities

4. RESEARCH METHODOLOGY

This methodology provides a comprehensive framework for the researching global banking and emerging trends of the Banking practices in India. The research conducted is combination of mixed method approach which includes qualitative and quantitative data. This study is basically on secondary data was collected from various journals, research articles and other related reports. The information was collected is qualitative which provides comprehensive understating of the banking impact in the green banking system.

5. SCOPE OF THE STUDY

This study focuses on global banking institutions operating across multiple regions, with an emphasis on how emerging technologies are reshaping their strategies, operations, and regulatory environments. The scope is defined across the following dimensions:

Customer Experience and Engagement: Digitalization provides 24/7 access to services, from account management to loan applications and investments, via mobile and web platforms. Technologies like AI-powered chatbots and virtual assistants offer instant, personalized support and financial advice, enhancing convenience and satisfaction.

Operational Efficiency and Cost Reduction: Automation and Robotic Process Automation (RPA) streamline internal tasks like customer onboarding, data verification, and transaction monitoring. This significantly reduces manual errors, lowers operational costs, and increases overall efficiency.

Product and Service Innovation: Banks are developing new offerings such as digital wallets, real-time cross-border payments (like UPI), contactless payments, and even metaverse banking experiences. Open banking and APIs facilitate collaboration with third-party fintech firms to create integrated financial ecosystems and embedded finance options within non-financial platforms (e.g., e-commerce sites offering instant credit).

Data Analytics and Decision Making: Banks leverage big data and AI/Machine Learning (ML) to analyze customer behavior, assess risks, predict market trends, and detect fraud in real-time. This data-driven approach enables hyper-personalization of services and informed strategic decisions.

Security and Compliance: The rise of digital threats has made cyber security a top priority. Banks are implementing robust measures, including multi-factor authentication, biometric verification, and AI-based fraud detection systems, to protect sensitive data and comply with evolving global regulations (like GDPR and AML).

Global Reach and Financial Inclusion: Digital platforms remove geographical barriers, allowing banks to reach underserved populations in remote areas and offer low-cost, accessible financial products, thereby promoting global financial inclusion.

6. CONCLUSION

In conclusion, the convergence of global banking and emerging technologies is reshaping the financial landscape at an unprecedented pace. Technologies such as artificial intelligence block chain, cloud computing, and central bank digital currencies (CBDCs) are not merely incremental upgrades; they are foundational pillars driving a paradigm shift toward more efficient, inclusive, and resilient banking ecosystems. While these innovations present vast opportunities—enhanced customer experiences, reduced operational costs, and new revenue streams—they also introduce complex challenges, including regulatory uncertainty, cyber security risks, and the need for up skilling the workforce.

To harness the full potential of this transformation, banks must adopt a strategic, forward-looking approach: invest in interoperable infrastructure, cultivate agile governance frameworks, and foster collaborative ecosystems with fintechs, regulators, and technology providers. Simultaneously, policymakers need to craft proportionate regulations that balance innovation with stability, ensuring that the benefits of digital finance reach all segments of society, thereby

advancing financial inclusion and sustainable development goals. The future of global banking lies in its ability to integrate emerging technologies responsibly and extensively. Those who successfully navigate this dual mandate will not only secure a competitive edge but also contribute to a more equitable and prosperous financial future for all.

7. REFERENCES

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