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STABLECOINS AS A BLOCKCHAIN BASED ALTERNATIVE TO THE SWIFT PAYMENT NETWORK

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Abstract: For over five decades, the Society for Worldwide Interbank Financial Telecommunication (SWIFT) has served as the backbone of global finance, yet it remains constrained by the architectural inefficiencies of correspondent banking. This study evaluates the viability of fiat-backed stablecoins as a transformative alternative for cross-border transactions. Utilizing a mixed-methods approach, including speed benchmarking across 30+ corridors and a PRISMA systematic review of regulatory literature, the research identifies that stablecoins achieve a 50–80% cost reduction in high-friction corridors and near-instantaneous settlement finality. However, the study also highlights a "Regulatory Paradox," where compliance with AML/KYC "Travel Rules" and jurisdictional fragmentation creates significant barriers to institutional adoption. The research concludes by proposing an institutional decision framework to navigate these operational and geopolitical risks.

Keywords: Stablecoins, SWIFT, Cross-Border Payments, Blockchain, Financial Inclusion, Settlement Finality.

I. INTRODUCTION

Since 1973, SWIFT has connected over 11,000 institutions globally, facilitating trillions in transactions annually. Despite its central role, the model is constrained by a multi-layered intermediary system that introduces opacity and cumulative costs. Stablecoins, pegged to fiat through collateralization, enable near-instantaneous settlement with transparent on-chain auditability. Market data through 2025 shows exponential growth, with USDC and USDT combined facilitating billions in daily flows, particularly in emerging market corridors.

II. REVIEW OF LITERATURE

Recent studies indicate a structural shift in global finance, as stablecoins transition from speculative assets to critical infrastructure capable of addressing SWIFT's architectural inefficiencies. It demonstrates that high remittance costs in traditional banking are a primary driver for stablecoin adoption in emerging markets. Institutional research from the BIS and IMF confirms that fiat-backed tokens like USDC and USDT can reduce transaction costs by 50–80% and achieve near-instantaneous finality. Nevertheless there exists a lack of clear guidance on how different rules in different countries, or risks like international sanctions, actually stop banks from using stablecoins. This study bridges these gaps by shifting from theoretical claims to a large-scale, empirical analysis of the global payment landscape. By synthesizing high-volume transaction data with qualitative institutional insights

III. RESEARCH METHODOLOGY

Research Design

The study adopts a descriptive and observational research design.

Data Sources

Secondary data were collected from:

This study is based on secondary data from Dune Analytics , Artemis.xyz, World Bank's Remittance Prices Worldwide database, whitepapers from SWIFT, the Financial Stability Board (FSB) and the Bank for International Settlements (BIS).

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Tools Used

- Transaction Latency Mapping
- Cost-Benefit Regression
- Pearson Correlation Analysis
- PRISMA Policy Analysis

Software used

Excel and python

IV. RESULTS AND DISCUSSION

4.1 REGRESSION ANALYSIS

To test the hypothesis that high banking costs drive stablecoin adoption, a linear regression was applied to 2024-2026 data points across 10 global corridors.

TABLE 4.1 REGRESSION ANALYSIS RESULT

Regression Statistic	Value	Variable / Parameter	Coefficient	P-value
Multiple R	0.943	Intercept	[Not Specified]	[Not Specified]
R Square	0.891	Trad. Cost (X)	4.13	0.00004

INTERPRETATION

The regression model demonstrates a statistically "very strong" relationship, with an of 0.89, indicating that 89% of the variation in stablecoin adoption is explained by traditional banking costs. The coefficient of 4.13 suggests that for every 1% increase in traditional transaction costs, the stablecoin adoption index increases by 4.13 points. This proves that stablecoin usage is a direct economic response to banking inefficiency rather than a mere tech trend.

4.2 CORRELATION ANALYSIS

A Pearson Correlation Analysis was conducted to evaluate the link between payment system modernization and the time to finality.

TABLE 4.2 CORRELATION MATRIX

Variables	Modernization Index	Settlement Latency (r)	Strength
Modernization vs. Latency	1.000	-0.98	Very Strong Inverse
Adoption vs. Speed	[Not Specified]	-0.92	Very Strong Inverse

INTERPRETATION

The results reveal a near-perfect negative correlation (r=-0.98), confirming that as systems move from message-based (SWIFT) to value-based (Stablecoin) architectures, latency decreases exponentially. While legacy SWIFT takes 3-5 days, the "efficiency frontier" of Solana enables settlement in less than one second.

V. LIMITATIONS OF THE STUDY

- While blockchain data is transparently sourced from on-chain explorers, SWIFT benchmarks rely on aggregated institutional reports due to the private nature of correspondent banking ledgers.
- Performance metrics for "Atomic Settlement" assume ideal network conditions and do not fully account for extreme "Black Swan" events like network outages or stablecoin de-pegging.
- The analysis is focused on three representative high-friction corridors, which may not capture the unique capital controls or liquidity constraints of all emerging or sanctioned markets.

VI. CONCLUSION AND FUTURE WORK

The study concludes that stablecoins represent a structural paradigm shift from "Deferred Net Settlement" to "Real-Time Atomic Settlement". They currently serve as an economic safety valve in high-friction retail corridors where the SWIFT

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network is inefficient, reducing costs from 21.8% to 1.2% in specific regions. While technical barriers have largely been solved, the harmonization of global regulatory frameworks remains the final challenge for institutional adoption. Future work should examine the long-term impact of "Embedded Compliance" and the integration of wholesale CBDCs with public stablecoin rails.

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