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Stablecoins in Digital Payouts: Bridging Traditional and Crypto Payments

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Abstract: Stablecoins represent a revolutionary bridge between conventional financial systems and digital currency markets, offering the stability of traditional assets combined with the efficiency and transparency of blockchain technology. This article explores the multifaceted role of stablecoins in digital payment ecosystems, examining their architectural foundations, implementation challenges, and transformative potential across various use cases. From cross-border remittances to corporate treasury operations, gig economy compensation, and humanitarian aid distribution, stablecoins demonstrate significant advantages in transaction speed, cost efficiency, and accessibility compared to traditional payment rails. The technical requirements for implementing stablecoin solutions involve carefully considering blockchain protocol selection, security frameworks, and scalability approaches, often resulting in hybrid architectures that balance performance with decentralization benefits. Meanwhile, the regulatory landscape continues to evolve rapidly, with jurisdictional approaches varying considerably and central bank digital currency initiatives representing potential competition and complementary infrastructure. Despite implementation complexities and regulatory uncertainties, stablecoins offer promising pathways for innovation in digital payouts, particularly for entities operating across borders or serving populations with limited access to conventional banking services. As the ecosystem matures, forward-thinking organizations proactively addressing technical, operational, and compliance considerations will be best positioned to leverage stablecoins' benefits while navigating an increasingly complex digital currency landscape.

Keywords: Stablecoins, Digital Payments, Blockchain Technology, Cross-Border Transactions, Financial Inclusion

INTRODUCTION

The evolution of financial technology has witnessed a significant transformation with the emergence of blockchain-based solutions that challenge traditional payment mechanisms. Among these innovations, stablecoins have emerged as a promising bridge between conventional financial systems and

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cryptocurrency markets. According to the Bank for International Settlements' comprehensive assessment, the global stablecoin ecosystem has demonstrated substantial growth, with the market capitalization of stablecoins increasing from approximately \$5 billion in 2019 to more than \$130 billion by 2023, representing a compound annual growth rate of 125% [1]. This exponential expansion reflects growing market confidence in stablecoins as a viable medium for value transfer across traditional and digital financial domains.

Unlike typical cryptocurrencies known for their price volatility, stablecoins are designed to maintain a stable value by being pegged to conventional assets such as fiat currencies, commodities, or a basket of currencies. The BIS report highlights that this stability mechanism is critical for maintaining user confidence, with their analysis showing that leading stablecoins have maintained a 99.7% price correlation with their reference assets during normal market conditions. However, this correlation can decrease to 97.3% during extreme market stress [1]. This stability feature positions stablecoins as an appealing option for digital payouts, particularly in contexts requiring predictable value transfer.

This paper explores the transformative potential of stablecoins in digital payout ecosystems. By combining the stability of traditional currencies with the efficiency, transparency, and security of blockchain technology, stablecoins offer a novel approach to addressing longstanding challenges in payment processing, particularly for cross-border transactions. The research by Eichengreen and Viswanath-Natraj indicates that stablecoin-based remittances can reduce transaction costs by 50-80% compared to traditional money transfer operators, with average fees declining from 7.21% to approximately 1.43% of transaction value [2]. Their empirical analysis demonstrates that settlement times decrease from a global average of 43 hours to under 30 minutes, representing a 98.8% improvement in transaction efficiency.

As financial institutions, corporations, and payment service providers seek more efficient payout mechanisms, stablecoins present an opportunity to reduce costs, increase processing speeds, and improve accessibility while maintaining compliance with evolving regulatory frameworks. Eichengreen and Viswanath-Natraj's survey of 37 international regulatory bodies reveals that 86% have initiated formal regulatory frameworks for stablecoins, emphasizing reserve requirements, operational resilience, and consumer protection [2]. The BIS assessment further notes that 71% of central banks are exploring potential regulatory approaches that balance innovation with financial stability, with 23 jurisdictions implementing specific licensing regimes for stablecoin issuers between 2020 and 2023 [1].

Understanding Stablecoin Architecture and Mechanisms

Stablecoins maintain price stability through various mechanisms, each with distinct characteristics influencing their utility in digital payout applications. According to the Financial Stability Board's comprehensive assessment framework, stablecoins can be categorized into multiple architectural types based on their stabilization mechanisms and reserve structures [3]. The FSB report highlights that stablecoins currently represent a relatively small portion of the global financial system, with an estimated market capitalization of \$150 billion as of their assessment period, but notes that this figure could expand

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significantly with widespread adoption, particularly as certain "global stablecoin" arrangements could rapidly scale to achieve significant transaction volumes. Their analysis indicates that the current transaction volume of major stablecoins averaged approximately \$24 billion daily in the first half of 2020, demonstrating substantial payment activity even at relatively early stages of adoption.

Fiat-collateralized stablecoins, as examined by Oefele et al., currently dominate the market with the top three fiat-backed stablecoins (Tether, USD Coin, and Binance USD) collectively accounting for over 90% of the total stablecoin market capitalization [4]. These stablecoins are backed by reserves of traditional currencies held by centralized entities, with reserve composition analysis revealing significant similarities to money market mutual funds (MMMFs). Their examination of Tether's reserves shows that as of their study period, approximately 84.5% was held in cash and cash equivalents, with commercial paper comprising 65.4% of this portion, creating structural parallels to traditional monetary instruments. Examples like USDC and USDT aim to maintain a 1:1 ratio with the US dollar, with Oefele et al. documenting that these instruments experienced maximum daily deviations from their pegs of 0.43% and 1.3%, respectively during the market turbulence of March 2020 [4].

Crypto-collateralized stablecoins, such as DAI, utilize over-collateralization with other cryptocurrencies to maintain stability, often employing smart contracts to manage collateral ratios. The FSB's examination of these arrangements notes that they typically maintain higher collateralization ratios, with the protocol-mandated minimum often set at 150%. However, ratios frequently exceed 250% during anticipated market volatility [3]. Their analysis further indicates that these arrangements processed an average of 21,000 daily transactions with a mean value of \$9,400 during the assessment period, demonstrating significant usage for larger-value transfers. Algorithmic stablecoins represent the most technically sophisticated approach, using algorithmic mechanisms to adjust supply based on demand fluctuations, theoretically enabling a self-sustaining stable value without physical backing. However, the FSB cautions that these models remain largely experimental, with limited deployment in high-value payment scenarios due to stability concerns [3].

Each architecture presents distinct advantages and limitations in the context of digital payouts. The FSB's consultation with 51 regulatory authorities across 25 jurisdictions revealed that 80% expressed significant concerns regarding the regulatory oversight of fiat-collateralized models, particularly regarding reserve management and transparency [3]. Oefele et al. quantify these concerns through their comparative analysis with money market mutual funds, noting that during the 2008 financial crisis, the Reserve Primary Fund "broke the buck" with a 3% loss, while in 2022, the algorithmic stablecoin Terra experienced a catastrophic 99.7% devaluation over a 48-hour period, demonstrating the range of stability risks across different architectures [4]. Their econometric modeling suggests that stablecoins with more transparent reserve compositions experience 42% less volatility during market stress events, underscoring the importance of clear disclosure practices. Understanding these distinctions remains critical for organizations implementing stablecoin-based payout solutions, as the choice of stablecoin architecture significantly impacts system resilience, compliance capabilities, and operational efficiency across the payment value chain.

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Table 1: Risk and Collateralization Profiles of Different Stablecoin Models [3, 4]

Stablecoin Type	Reserve Composition
Fiat-collateralized (Combined)	Traditional currencies
Fiat-collateralized (USDC)	Cash and equivalents
Fiat-collateralized (USDT)	84.5% cash equivalents (65.4% commercial paper)
Crypto-collateralized (DAI)	Cryptocurrencies

Applications in Digital Payout Ecosystems

Stablecoins offer transformative potential across various digital payout scenarios, with emerging evidence demonstrating efficiency gains over traditional methods. In cross-border transactions, stablecoins circumvent the conventional correspondent banking model, addressing inefficiencies highlighted in Van Bon Nguyen's comprehensive analysis of remittance markets in developing economies. His research identifies that the average cost of sending remittances globally remains stubbornly high at 6.51% of the transaction amount as of 2022, well above the United Nations Sustainable Development Goal target of 3% by 2030, with corridors to Sub-Saharan Africa experiencing even higher costs averaging 8.72% [5]. Nguyen's analysis of 564 remittance corridors reveals that the digitalization of payment infrastructure correlates with a 2.31 percentage point reduction in transaction costs, suggesting significant potential for blockchain-based solutions, including stablecoins. His examination of settlement timeframes indicates that traditional remittance channels require an average of 24-48 hours for fund availability, with 22% of transactions in developing markets taking over three business days to complete, creating liquidity challenges for recipients [5].

For multinational corporations and various economic sectors, stablecoins enable streamlined payment processing across jurisdictions, eliminating currency conversion delays and reducing treasury management complexity. The MITRE Corporation's regulatory design framework examines implementation scenarios across diverse use cases, finding that traditional cross-border corporate payments typically involve 4-6 intermediaries, each adding costs ranging from 0.1% to 1.5% per intermediary [6]. Their analysis of settlement efficiency indicates that corporate treasury operations involving multiple currencies typically experience 2-5 business days delays for international settlements, with approximately 40% of transactions requiring manual intervention due to compliance checks or reconciliation issues. Gallic et al. note that stablecoin implementation tests have demonstrated settlement time reductions from days to under one hour in 97% of test cases, with reconciliation workloads reduced by approximately 70% due to the shared ledger architecture [6].

In the gig economy and digital content creation sectors, stablecoins facilitate immediate compensation for freelancers and contractors, addressing the payment delays that frequently plague independent workers. Nguyen's research on digitalization impacts in developing economies, where gig work represents an average of 30% of urban employment, indicates that workers receive payments with an average delay of 15 days

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when using traditional payment methods, with 37% reporting that payment delays represent their most significant operational challenge [5]. His survey of 1,246 gig workers across six developing economies reveals that 76% would accept a 5% lower fee in exchange for same-day payment settlement, highlighting the significant value placed on payment immediacy in these economic segments. E-commerce platforms leveraging stablecoins can optimize supplier payments across complex international supply chains, improving cash flow management and reducing currency risk exposure. The MITRE report documents that traditional e-commerce payment chains involve an average of 3.4 intermediaries, with cumulative fees averaging 3.8% of transaction value and settlement times averaging 3.2 business days for cross-border merchant settlements [6].

Humanitarian aid organizations have begun pilot programs utilizing stablecoins for disaster relief fund distribution, particularly in regions with limited banking infrastructure but high mobile phone penetration. Nguyen's research highlights the particular challenges in these contexts, noting that in the 57 least-developed countries, banking penetration averages just 32.6%. In contrast, mobile phone penetration reaches 72.4%, creating a significant opportunity for mobile-based financial solutions [5]. His analysis of humanitarian aid distribution indicates that traditional cash disbursement mechanisms in crises result in an average of 27% of funds consumed by administrative and distribution costs, with average disbursement times of 12-21 days from program initiation to beneficiary receipt. The MITRE Corporation's assessment of blockchain-based aid delivery pilots indicates potential administrative cost reductions to approximately 7% of program value, with disbursement times potentially reduced to 24-72 hours in regions with sufficient digital infrastructure [6]. These applications demonstrate stablecoins' versatility in addressing pain points across diverse payout scenarios, offering improvements in transaction speed, cost efficiency, and accessibility while maintaining the value stability essential for reliable financial operations.

Payment Use Case	Traditional Cost	Stablecoin Potential Cost	Traditional Settlement	Stablecoin Settlement
			Time	Time
Global		4.2% (2.31	24-48 hours	Minutes to
Remittances	6.51%	percentage point	(22% over 3	hours
		reduction)	days)	nours
Corporate	0.1%-1.5% per	Significantly	2.5 husiness	Under 1 hour
Treasury	intermediary (4-6	raducad	2-5 Dusiness	(07% of ansas)
Operations	intermediaries)	Teduced	uays	(97% of cases)
Gig Economy		5% lower fee	15 days average	
Payments	Higher fees	acceptable for	15 uays average	Same day
		speed	uelay	
E-commerce	2.8% cumulativo	Lower	3.2 business	Significantly
	5.0% cumulative	LUWCI	days	faster

Table 2: Cost and Settlement Time Improvements Through Stablecoin Implementation [5, 6]

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Technical Integration and Infrastructure Requirements

Implementing stablecoin solutions for digital payouts necessitates careful consideration of technical architecture and integration requirements. According to industry analysis by Foote, enterprise blockchain implementations face significant integration challenges, with approximately 30% of projects falling short of stakeholder expectations due to inadequate consideration of technical requirements during the planning phase [7]. His examination of implementation pathways indicates that organizations typically undergo a four-stage adoption process, with proof-of-concept development requiring an average of three to six months before progressing to pilot implementations. Organizations must develop or adapt existing payment infrastructure to accommodate blockchain-based transactions, including wallet management systems, blockchain nodes, and API connectors to bridge legacy financial systems with distributed ledger technology. Foote notes that integration complexity increases substantially when implemented across multiple departments, with cross-departmental implementations requiring 2.5 times more resources than single-department deployments due to technical coordination overhead and disparate system architectures [7].

Security considerations become paramount, requiring robust key management protocols, multi-signature authorization frameworks, and comprehensive audit mechanisms to protect digital assets. In Foote's analysis of enterprise implementation challenges, security concerns were cited by 87% of surveyed organizations as a critical factor influencing technology selection, with particular emphasis on key management protocols and authorization frameworks [7]. His review of industry best practices highlights the predominance of multi-signature security models in financial implementations, with minimum signatory requirements increasing proportionally to transaction values. Additionally, integrating hardware security modules represents an emerging standard for enterprise deployments. However, this approach introduces implementation complexities that can extend development timelines by 20-30%, according to industry practitioners surveyed in the research.

The technical stack typically includes blockchain protocol selection (public or private), consensus mechanism considerations, smart contract frameworks for automated payouts, and Oracle services for price feed integration. Alrehaili et al.'s comparative analysis of blockchain implementations identifies significant performance variations across protocol types, with permission-based networks demonstrating transaction throughput of 3,000-20,000 transactions per second (TPS) compared to Bitcoin's 7 TPS and Ethereum's 15-30 TPS [8]. Their research indicates that consensus mechanism selection represents a critical architectural decision. Proof of Authority mechanisms delivers 2-3 orders of magnitude higher throughput than Proof of Work systems at the cost of increased centralization. Organizations must establish reliable fiat on-ramp and off-ramp processes, often requiring partnerships with cryptocurrency exchanges or specialized payment processors. Foote's analysis indicates that fiat connectivity remains one of the most challenging integration points, with 64% of organizations reporting significant implementation hurdles when establishing reliable conversion pathways between traditional and digital assets [7].

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Scalability represents a significant technical challenge, particularly for solutions built on public blockchains where network congestion can impact transaction throughput. Alrehaili et al.'s comprehensive benchmarking of scaling approaches reveals that on-chain solutions typically deliver throughput improvements of 10-100x compared to base protocols. In contrast, off-chain approaches, including state channels and sidechains, can achieve 1000x or more improvements in controlled testing environments [8]. Their comparative analysis of Layer-2 scaling solutions indicates that Optimistic Rollups achieve finality in 1-2 weeks due to fraud-proof challenge periods. Zero-Knowledge Rollups deliver near-immediate finality at the cost of increased computational complexity. The researchers' performance testing across these solutions demonstrates that transaction latency remains inversely proportional to security guarantees, with the most secure implementations demonstrating average confirmation times of 10-15 seconds versus 1-3 seconds for less secure alternatives [8]. From an infrastructure perspective, organizations must balance decentralization benefits with operational requirements, often resulting in hybrid approaches that leverage private blockchain implementations while maintaining interoperability with public networks for broader market access and liquidity. Foote's analysis of enterprise implementations indicates that 74% of organizations opt for hybrid deployment models that combine private networks for transaction processing with periodic anchoring to public networks for enhanced security and transparency, noting that this approach optimizes for both performance and trust characteristics [7].

Technical Aspect	Key Metrics and Considerations	Value/Performance
Implementation Success Rate	Projects meeting stakeholder expectations	70%
Development Timeline	Proof-of-concept phase	3-6 months
Integration Complexity	Resource multiplier for cross-departmental implementations	2.5x
Security Concerns	Organizations citing security as critical factor	87%
Security Implementation Impact	Timeline extension with hardware security modules	20-30%
Fiat Connectivity	Organizations reporting significant integration challenges	64%
Hybrid Deployment Models	Organizations opting for hybrid approaches	74%
Transaction Throughput	Permission-based networks	3,000-20,000 TPS
Transaction Throughput	Ethereum	15-30 TPS
Transaction Throughput	Bitcoin	7 TPS
Scaling Improvement	On-chain solutions	10-100x
Scaling Improvement	Off-chain approaches	1000x+
Transaction Confirmation	High security implementations	10-15 seconds
Transaction Confirmation	Lower security alternatives	1-3 seconds

Table 3: Blockchain Protocol Performance and Enterprise Implementation Challenges [7, 8]

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Regulatory Landscape and Compliance Frameworks

The regulatory environment surrounding stablecoins continues to evolve rapidly, presenting challenges and opportunities for organizations implementing digital payout solutions. According to Clifford Chance's comprehensive global overview, regulatory approaches to stablecoins vary significantly across jurisdictions, with major economies adopting divergent frameworks that reflect their existing financial regulatory structures [9]. Their analysis reveals that despite the global nature of stablecoin operations, regulatory responses remain primarily national or regional in scope, creating compliance complexities for cross-border implementations. The report identifies that across the surveyed regions of Asia Pacific, Europe, the UAE, and the US, regulators have predominantly focused on applying existing regulatory frameworks rather than developing bespoke stablecoin regulations, with particular emphasis on securities laws, payment system regulations, and banking statutes [9]. This approach has created a fragmented landscape where a stablecoin may be classified differently across multiple jurisdictions, potentially subjecting issuers and service providers to overlapping and sometimes contradictory compliance requirements.

Key regulatory considerations include anti-money laundering (AML) and know-your-customer (KYC) requirements, often extending traditional financial regulations to stablecoin operations. Clifford Chance's jurisdictional analysis indicates that AML/KYC requirements represent the most consistently applied regulatory framework across the surveyed regions, with all major jurisdictions implementing some form of customer due diligence requirements for stablecoin issuers and service providers [9]. Their analysis highlights that the European Union's Fifth Anti-Money Laundering Directive (5AMLD) specifically brought virtual asset service providers, including certain stablecoin operators, within the scope of AML regulations, requiring member states to ensure these entities are registered or licensed and subject to AML/KYC obligations comparable to traditional financial institutions. Organizations must implement robust identity verification processes, transaction monitoring systems, and suspicious activity reporting mechanisms, with implementation approaches necessarily varying based on the specific requirements of each operating jurisdiction.

Additionally, securities regulations may apply to certain stablecoin models, particularly those utilizing investment mechanisms for stability maintenance. The Clifford Chance review identifies that the US Securities and Exchange Commission has assumed that many stablecoins may qualify as "securities" under the Howey test, particularly when the token's value is maintained by actively managing a reserve pool that generates returns [9]. Their analysis of regulatory approaches in Hong Kong similarly indicates that stablecoins may fall within the definition of "securities" depending on their specific characteristics, potentially triggering licensing requirements under the Securities and Futures Ordinance. This regulatory classification significantly impacts implementation requirements, as securities regulatory frameworks typically impose more stringent governance, disclosure, and operational controls than payment-focused regulations.

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Evolving central bank digital currency (CBDC) initiatives represent potential competition and complementary infrastructure for stablecoin-based payouts. Dionysopoulos et al.'s critical review of CBDC developments indicates that as of their publication date, 93 countries representing over 90% of global GDP have engaged in CBDC research and development activities, with 11 countries already launching CBDCs and 17 in the pilot phase [10]. Their analysis of central bank motivations reveals that 85% of surveyed central banks identified providing an alternative to cryptocurrencies or stablecoins as a significant motivation for CBDC development, highlighting the competitive relationship between these technological approaches. The researchers note that central banks in developing economies primarily emphasize financial inclusion benefits, with 84% citing this as a primary motivation. In contrast, advanced economies focus more on maintaining monetary sovereignty, with 79% identifying concerns about private digital currencies as a driving factor [10].

Consumer protection requirements, data privacy regulations, and tax implications further complicate the compliance landscape, requiring comprehensive legal frameworks for stablecoin implementations. Clifford Chance's jurisdictional survey highlights that consumer protection approaches vary substantially, with the EU's proposed Markets in Crypto-Assets (MiCA) regulation establishing some of the most comprehensive requirements, including mandatory reserve management, redemption rights, and disclosure obligations [9]. Despite these challenges, forward-thinking regulators have established clear guidelines for stablecoin operations, creating pathways for compliant innovation. Dionysopoulos et al. identify that 28% of surveyed central banks expressed interest in public-private partnerships for digital currency implementation, potentially creating opportunities for stablecoin operators to integrate with emerging CBDC infrastructure [10]. Their analysis suggests that such integration could reduce compliance burdens by leveraging central bank-established payment rails while maintaining the innovation advantages of privately issued digital assets. Organizations that proactively engage with regulatory stakeholders and design systems with compliance capabilities embedded throughout the architecture will be best positioned to navigate this complex landscape while leveraging stablecoins' benefits for digital payouts.

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Table 4: Central Bank Digital Currency Initiatives and Stablecoin Regulatory Landscape [9, 10]

Aspect	Metrics			
CBDC Development				
Countries engaged in CBDC R&D	93 countries			
Countries with launched CBDCs	11 countries			
Countries in CBDC pilot phase	17 countries			
Central Bank Motivations				
Alternative to crypto/stablecoins	85% of surveyed central banks			
Financial inclusion (developing economies)	84% of central banks			
Monetary sovereignty (advanced economies)	79% of central banks			
Interest in public-private partnerships	28% of central banks			
Regulatory Approaches				
Geographical scope	Primarily national/regional			
Regulatory framework type	Existing frameworks adapted			
Most consistent regulatory area	AML/KYC requirements			
EU framework specificity	5AMLD and proposed MiCA			
US regulatory approach	Securities framework (Howey test)			

CONCLUSION

Stablecoins represent a significant innovation in the evolution of payment systems, offering a unique combination of stability, efficiency, and technological advancement that addresses longstanding challenges in digital value transfer. By bridging traditional financial infrastructure with blockchain capabilities, stablecoins create opportunities for enhanced payment experiences across diverse contexts, from crossborder remittances and corporate treasury operations to gig economy compensation and humanitarian aid distribution. The architectural diversity within the stablecoin ecosystem provides flexibility for different use cases. However, each implementation model presents distinct trade-offs between centralization, security, and efficiency that must be carefully evaluated based on specific operational requirements. Technical integration demands substantial consideration of infrastructure design, security protocols, and scalability approaches, with successful implementations typically adopting hybrid architectures that balance performance needs with trust considerations. The fragmented regulatory landscape presents the most significant challenge for widespread stablecoin adoption, with jurisdictional inconsistencies creating compliance complexities for cross-border operations. However, the emergence of more coherent regulatory frameworks and potential synergies with central bank digital currency initiatives may provide clearer pathways for compliant innovation. Organizations that proactively engage with regulatory stakeholders and design systems with compliance capabilities embedded throughout the architecture will be best positioned to navigate this evolving landscape. Looking forward, the continued maturation of the stablecoin ecosystem promises to enhance digital payment capabilities further, potentially transforming financial inclusion for underserved populations while optimizing efficiency for established market participants. The integration of

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stablecoins into broader financial infrastructure represents a technological evolution and a fundamental reimagining of value transfer in an increasingly connected global economy.

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