

# The Core Role, Challenges, and Future Trends of Stablecoins in DeFi Lending Platforms

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## ABSTRACT

Decentralized finance (DeFi) lending platforms have rapidly evolved within financial markets, with stablecoins playing a pivotal role in these ecosystems by providing price stability and enhancing capital efficiency. However, DeFi lending platforms still face challenges including market volatility, smart contract security, regulatory uncertainty, and liquidity constraints. This paper analyzes the function of stablecoins within DeFi lending platforms, explores their advantages and challenges, and forecasts future development trends. The article first introduces the fundamental concepts and classifications of stablecoins, then analyzes their advantages and challenges within lending markets, and finally looks ahead to innovations and future developments for stablecoins. Through this analysis, the paper provides in-depth insights for researching stablecoin applications in DeFi lending.

## KEYWORDS

Stablecoins; decentralized finance; DeFi Lending; smart contract; financial innovation

## INTRODUCTION

In the realm of digital currencies, stablecoins—digital currencies pegged to fiat currencies or other assets—aim to address the price volatility inherent in traditional cryptocurrencies. With the rapid expansion of the decentralized finance (DeFi) ecosystem, stablecoins have assumed a pivotal role within DeFi lending platforms. DeFi lending platforms such as Aave, Compound, and MakerDAO leverage blockchain technology to provide intermediary-free lending services. This enables stablecoins to be widely utilized within these platforms as collateral or lending assets, offering price stability and effectively mitigating the impact of market volatility on both borrowers and lenders. According to recent research, the total market capitalization of stablecoins has surpassed \$230 billion, with major stablecoins like Tether (USDT), and USD Coin (USDC) becoming integral components of the DeFi market. This paper aims to conduct an in-depth analysis of stablecoins' role within DeFi lending platforms, exploring their advantages in areas such as lending rates, capital efficiency, and liquidity provision. It identifies challenges faced by stablecoins in these platforms—including price volatility, smart contract vulnerabilities, and regulatory uncertainty—and forecasts future market trends. Specifically, this paper will first introduce the fundamental concepts and mechanisms of stablecoins and DeFi lending platforms. It will then analyze the advantages of stablecoins in DeFi lending, examine the challenges and risks they face, and finally assess the future development trends of stablecoins in the DeFi lending market through market analysis. Through this framework, this paper strives to provide a comprehensive perspective and in-depth analysis for research on stablecoins in the DeFi lending domain.

## LITERATURE REVIEW

### *Overview of Stablecoins and Decentralized Lending Platforms*

#### *Definition and Classification of Stablecoins*

Stablecoins are cryptocurrencies designed to minimize price volatility, typically pegged to fiat currencies (e.g., the US dollar), crypto assets, or commodities (e.g., gold). Stablecoins emerged to address the price volatility inherent in traditional cryptocurrencies like Bitcoin, thereby enhancing their reliability as a medium of exchange and store of value. Based on their backing mechanisms, stablecoins can be broadly categorized into three types: fiat-collateralized, crypto-collateralized, and algorithmic stablecoins.

**Fiat-backed stablecoins:** These stablecoins are supported by fiat currency reserves, typically pegged at a 1:1 ratio to a specific fiat currency. For example, Tether (USDT) and USD Coin (USDC) are both USD-collateralized stablecoins, with issuers pledging to hold equivalent USD reserves to support their value. This type ensures holders can redeem stablecoins for fiat currency at a fixed ratio at any time, guaranteeing value stability.

**Crypto-Asset Collateralized Stablecoins:** Unlike fiat-collateralized stablecoins, crypto-asset collateralized stablecoins maintain value stability by using other cryptocurrencies (such as Ethereum) as collateral. These stablecoins typically employ over-collateralization strategies to mitigate risks from price volatility in the collateral assets. For example, MakerDAO's DAI stablecoin is generated by locking crypto assets (like Ethereum) as collateral within smart contracts. To withstand market volatility, DAI's issuance volume often exceeds the market value of its collateral, creating a buffer.

**Algorithmic Stablecoins:** Algorithmic stablecoins regulate their supply through algorithms and market mechanisms to maintain value stability without relying on any physical assets as backing. Their issuance and redemption mechanisms are controlled by smart contracts and algorithms, dynamically adjusting supply based on market demand to sustain value stability. For example, TerraUSD (UST) previously employed a "minting and burning balance" mechanism, attempting to maintain a 1:1 peg to the US dollar through algorithmic supply adjustments. However, a collapse in market confidence led to significant value fluctuations in May 2022, exposing the inherent risks of algorithmic stablecoins (Qi and Zhang, 2021). By categorizing these three types of stablecoins, we can see that each possesses unique characteristics and suitable use cases. Fiat-collateralized stablecoins suit users seeking extreme stability, finding broad application in cross-border payments and risk hedging. Crypto-collateralized stablecoins better serve users already engaged in the crypto asset market, offering higher leverage potential. While algorithmic stablecoins demonstrate innovation, they still face significant challenges in stability and market acceptance. Consequently, stablecoin development remains dependent on ongoing technological refinement and market adaptation.

#### *Overview and Case Studies of Decentralized Finance Lending Platforms*

Decentralized Finance (DeFi) lending platforms leverage blockchain technology and smart contracts to deliver intermediary-free financial services. They aim to provide users with more open, transparent, and efficient financial transactions through decentralized means. Compared to traditional banks or financial institutions, DeFi platforms eliminate reliance on centralized entities, with lending processes fully automated by smart contracts. These platforms operate on blockchain technology, using cryptocurrencies as primary lending assets. Users conduct lending activities directly on the platform, with fund flows, loan disbursements, and interest payments automatically processed through decentralized protocols. This approach reduces intermediary fees and operational risks.

Representative DeFi lending platforms include Compound, Aave, and MakerDAO, each achieving decentralized lending through distinct mechanisms and functionalities. Their

success stories offer clear insights into how DeFi lending platforms achieve breakthroughs in the market—particularly in stablecoin applications—enhancing capital efficiency, mitigating risks, and advancing the decentralization of the global financial system through technological innovation and market mechanisms.

**Compound: Pioneer of Stablecoin Lending:** Compound stands as one of the earliest and most representative decentralized lending platforms. It enables users to deposit crypto assets into "fund pools," earning interest based on the deposited amount and market demand. Interest rates are dynamically determined by market supply and demand, requiring borrowers to provide overcollateralized crypto assets to secure loans. The automatic adjustment mechanism for borrowing and deposit rates, calculated in real-time by smart contracts based on market capital flows, enables Compound to respond flexibly to market changes.

This mechanism not only provides users with decentralized lending opportunities but also ensures the security of funds for both borrowers and lenders. Operating entirely on blockchain technology, Compound guarantees transparency of funds and traceability of transactions. Borrowers must provide overcollateralized assets, and the platform continuously monitors the value of collateral via smart contracts to ensure lending security and manageable risk.

Saengchote's research indicates that Compound users primarily utilize borrowing to support leveraged investment strategies (such as yield farming), with relatively short loan durations (average 31 days). This suggests Compound holds an advantage in attracting investors seeking short-term high returns (Saengchote, 2023).

**Aave: Diversified Lending Models and Innovative Features** Aave stands as one of the leading decentralized lending platforms, its success rooted in introducing multiple innovative features to cater to diverse user needs. Aave's lending services offer both fixed and variable interest rate options, allowing users to select the most suitable borrowing method based on market conditions. Additionally, Aave introduced Flash Loans, enabling users to borrow funds without collateral, provided the borrowing and repayment are completed within the same transaction block. This innovation significantly enhances platform flexibility, particularly for arbitrage trading and rapid capital flow requirements.

Another innovation lies in Aave's security module. The platform provides user protection through protocol insurance, effectively compensating losses when smart contracts exploit vulnerabilities or encounter other risks. This safeguard mechanism strengthens user trust in the platform and fosters further development within the DeFi lending market.

According to research by the Bank for International Settlements (BIS), Aave V2 protocol users primarily deposit funds motivated by "yield seeking," while borrowing is driven mainly by speculative purposes or to increase voting power for governance tokens. Additionally, large investors borrow more for governance purposes, whereas retail investors are primarily motivated by speculation. These findings reveal the strategies and effectiveness of the Aave platform in attracting different types of users (Gambacorta et al., 2024).

**MakerDAO: The Successful Application of the Decentralized Stablecoin DAI** Unlike Compound and Aave, MakerDAO's core mechanism revolves around the decentralized stablecoin DAI. DAI is a stablecoin pegged to the US dollar, maintaining a value close to \$1 to ensure stability during user lending and borrowing. The MakerDAO platform enables users to generate equivalent DAI stablecoins by locking crypto assets (e.g., Ethereum) as collateral within its smart contracts. This mechanism achieves DAI's value stability through smart contracts and decentralized governance, avoiding reliance on fiat currency reserves and preserving the platform's decentralized nature.

DAI's stability relies not on centralized financial institutions but on MakerDAO's governance mechanisms and algorithmic adjustments to maintain its peg to the US dollar. When repaying loans, users must return DAI stablecoins proportionally and release the corresponding collateral assets. MakerDAO's decentralized governance is collectively managed by users holding MKR tokens, ensuring the platform's operations remain free from control by any single entity.

According to Melnikov's research, MakerDAO's loan portfolio demonstrated high stability in 2023 despite market volatility. This study indicates MakerDAO has achieved significant success in risk management and stability maintenance (Melnikov et al., 2025).

The success of platforms like Compound, Aave, and MakerDAO demonstrates the immense potential for stablecoin applications within decentralized lending markets. Through innovative lending models, stablecoin utilization, and decentralized governance implementation, these platforms not only deliver more efficient, secure, and transparent financial services but also advance the decentralization of the global financial system.

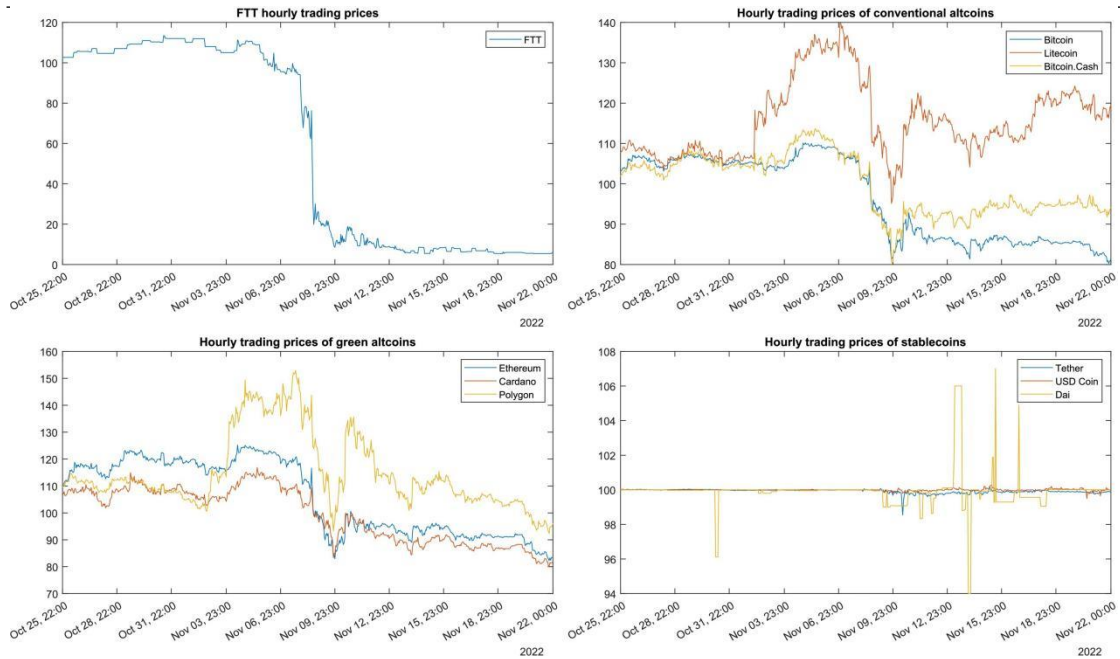
Compound offers flexible lending services through market-driven interest rate mechanisms and decentralized governance token incentives; Aave caters to diverse user needs with multi-collateral lending models and innovative features; MakerDAO ensures platform stability and sustainable growth via its decentralized stablecoin DAI and decentralized governance framework.

These innovations have not only enhanced platform competitiveness but also played a pivotal role in accelerating the maturation of the decentralized finance ecosystem. The following section will delve into the specific roles that stablecoins play within these platforms. Simultaneously, ongoing innovations in stablecoin protocols will drive platforms toward greater decentralization, flexibility, and diversity, unlocking new possibilities for future financial systems.

### *The Role of Stablecoins in Decentralized Lending*

Stablecoins play a central role in decentralized finance (DeFi) lending platforms, with their functions and advantages primarily manifested in price stability, capital efficiency, market acceptance, and decentralized characteristics.

**Price Stability:** Price stability forms the foundation for stablecoins' utility in DeFi lending. Stablecoins aim to maintain a fixed value peg to fiat currencies (e.g., USD), such as Tether (USDT) and USD Coin (USDC), typically anchored at a 1:1 ratio to the dollar to mitigate cryptocurrency market volatility. This stability is crucial for DeFi lending platforms, as lending activities rely on asset value assurance. In traditional financial markets, highly volatile assets can harm both borrowers and lenders, whereas stablecoins effectively mitigate this risk (Baughman et al., 2022). For borrowers, stablecoins help avoid repayment pressures caused by market fluctuations; for lenders, the stable value ensures interest income isn't eroded by asset depreciation<sup>0</sup>. For instance, dollar-pegged stablecoins (such as Tether, USD Coin, and Binance USD) have demonstrated hedging properties against Bitcoin's return volatility, helping investors maintain stable asset values (Kakinuma, 2023). Despite their stability objectives, research indicates stablecoins are not entirely immune to market volatility. Certain stablecoins like Tether, USD Coin, and DAI have exhibited instability during specific periods, particularly amid significant market turbulence (Thanh et al., 2022, Duan and Urquhart, 2023).



**Figure 1.** Hourly trading prices for FTT, traditional altcoins, green altcoins, and stablecoins (Duan and Urquhart, 2023).

**Capital Efficiency:** Stablecoins enhance capital efficiency, particularly in crypto-collateralized lending. Users can borrow stablecoins by over-collateralizing crypto assets such as Ethereum. On DeFi platforms, users typically pledge a certain amount of crypto assets, and the platform lends out stablecoins of equivalent value based on the collateral's worth (Collier et al., 2022). This over-collateralization mechanism ensures controllable risk during lending while improving capital utilization efficiency. Borrowers gain liquidity support without selling their crypto holdings, enabling them to utilize borrowed stablecoins for further investments or trading, thereby enhancing asset appreciation potential. This efficient capital utilization not only boosts liquidity in crypto markets but also provides expanded financing opportunities for investors and borrowers. For instance, MakerDAO's DAI stablecoin exemplifies maintaining stability through crypto over-collateralization (Feng et al., 2024).

**Market Acceptance:** Stablecoins, valued for their stable worth and broad market acceptance, serve as the most commonly used lending assets and collateral on DeFi lending platforms. Typically pegged to fiat currencies, stablecoins enjoy widespread market acceptance, particularly in transactions or payment scenarios requiring avoidance of extreme volatility (Lapuh and Bele 2025, Barucci et al., 2022). Within DeFi lending platforms, stablecoins serve as common lending assets, enabling users to borrow, invest, or earn interest. This broad acceptance not only drives the adoption of DeFi platforms but also positions stablecoins as ideal tools for cross-border payments and fund transfers. Furthermore, as a form of digital currency, stablecoins facilitate fast, low-cost global remittances, offering extensive application prospects across both DeFi and traditional financial sectors.

**Decentralized Characteristics:** Decentralized stablecoins (such as DAI) feature decentralized governance structures, reducing reliance on traditional centralized financial institutions (Sun et al., 2024, Auer et al., 2023). The DAI stablecoin maintains its stability through smart contracts and community governance mechanisms. Decision-making authority is distributed among community members and collectively managed by users holding MKR tokens, ensuring transparency and fairness in the governance process (Feng et al., 2024, Sun and Sermpinis, 2024). This decentralized nature enables DAI to avoid

management risks inherent in traditional financial systems while enhancing the platform's censorship resistance and resilience (Sun et al., 2024, Auer et al., 2023). Within DeFi platforms, decentralized stablecoins like DAI are highly favored for their decentralized nature. They empower users with greater control and enhance the platform's resilience against attacks<sup>0</sup>. Without a single governing authority, smart contracts and decentralized governance mechanisms ensure system stability and transparency, providing users with more trustworthy financial instruments.

Through these advantages, stablecoins in DeFi lending not only provide price stability and improve capital efficiency but also promote market adoption and empower platforms with decentralized governance structures. This makes them pivotal within the decentralized finance ecosystem. Collectively, these factors render stablecoins particularly crucial in DeFi lending platforms, driving further development and innovation in decentralized finance.

## **RESEARCH METHODS**

### ***Advantages of Stablecoin Lending Platforms***

Decentralized finance (DeFi) lending platforms achieve transparent, intermediary-free lending services through the automated execution of smart contracts. The introduction of stablecoins enables DeFi lending platforms to demonstrate unique advantages over traditional financial platforms in multiple aspects, including competitive lending rates, enhanced capital efficiency, increased liquidity, and the assurance of decentralization and transparency. These advantages not only boost user participation but also drive the sustainable development of the DeFi ecosystem.

### ***Transparent Lending Rates***

In traditional financial markets, lending rates are typically set by banks or other financial intermediaries, often constrained by market supply and demand, government policies, and banks' risk control strategies. In contrast, DeFi lending platforms utilize smart contracts to automatically determine interest rates, making rate-setting more transparent and equitable. Lending rates on DeFi platforms are generally driven by market supply and demand dynamics, with smart contracts adjusting rates in real-time based on fluctuations in deposit and borrowing volumes. This mechanism enables rates to respond swiftly to market shifts, enhancing capital allocation efficiency while offering more competitive rates to borrowers and lenders. For instance, Compound's interest rates correlate with total deposits and loans in its liquidity pools, with dynamic adjustments ensuring balanced interests for both supply and demand sides. Compared to traditional financial institutions, DeFi platforms reduce information asymmetry costs through this mechanism, making rates more market-driven and facilitating efficient capital flow.

### ***High Capital Efficiency***

The application of stablecoins in DeFi lending significantly enhances capital efficiency. In traditional financial systems, lending often requires borrowers to provide substantial collateral, typically illiquid assets like real estate or stocks. However, on DeFi platforms, users can utilize crypto assets as collateral while borrowing stablecoins for lending purposes. The use of stablecoins not only provides higher liquidity but also improves capital utilization efficiency. Borrowers can access needed funds through stablecoin loans without selling their crypto assets, enabling them to pursue other investments or operations. This effectively boosts capital utilization efficiency. Through this mechanism, DeFi platforms enable borrowers to deploy capital more efficiently while lenders earn returns by providing liquidity. For instance, the Aave platform offers multiple lending

models, including fixed-rate and variable-rate options, allowing borrowers to select the most suitable borrowing method based on market demand, thereby increasing capital flexibility and utilization.

### ***Liquidity Provision***

Stablecoins play a pivotal role as liquidity providers within DeFi lending platforms. Unlike traditional markets, these platforms bypass banks or financial intermediaries, connecting borrowers and lenders directly via smart contracts. As a price-stable digital currency, stablecoins' broad market acceptance and ease of exchange make them the most commonly used medium of exchange on DeFi lending platforms. Through stablecoin utilization, platforms can effectively deliver high liquidity—particularly in large-scale lending transactions—ensuring swift capital flow to meet market demands. Within decentralized lending markets, stablecoins not only enhance liquidity pools but also guarantee rapid, transparent transactions for both borrowers and lenders. Furthermore, stablecoins' high liquidity enables platforms to maintain sufficiently deep pools, ensuring timely capital transactions for all parties and thereby boosting market stability and efficiency.

### ***Decentralization and Transparency***

One of the greatest advantages of DeFi lending platforms is their decentralization and transparency. Smart contracts, as the core mechanism of decentralization, guarantee the automated execution and immutability of lending processes, thereby eliminating the trust costs inherent in traditional finance. In traditional finance, borrowers and lenders often rely on banks or financial institutions as trust intermediaries, which not only increases costs but may also introduce transaction risks due to information asymmetry. On DeFi platforms, all transactions are automatically executed via smart contracts, with contract terms and transaction records publicly accessible, ensuring transparency and fairness. The use of stablecoins further enhances this, as their stable value and decentralized nature ensure fund security and transaction transparency. Borrowers and lenders no longer need to rely on the credibility of centralized institutions but instead depend on the transparent and automated characteristics of blockchain technology and smart contracts. This significantly boosts market trust and effectively reduces default risks.

Through the application of smart contracts and stablecoins, DeFi lending platforms not only enhance capital liquidity and improve fund utilization efficiency but also provide the market with a more transparent, decentralized lending environment. These advantages have positioned DeFi lending platforms at the core of the decentralized finance ecosystem and propelled the cryptocurrency market toward greater openness and efficiency.

## **RESULTS AND DISCUSSION**

### ***Challenges Facing Stablecoin Lending Platforms***

#### ***Market Volatility and Risk Management***

Although stablecoins provide relative price stability by pegging to fiat currencies, the overall volatility of the DeFi market can still significantly impact lending platforms. DeFi lending platforms rely on cryptocurrencies (such as Ethereum, Bitcoin, etc.) as collateral, and the high price volatility of these assets can destabilize lending markets. Research indicates that factors like high leverage usage, liquidity mismatches, and fluctuating market sentiment on DeFi platforms expose them to systemic risks—such as funding chain disruptions—under extreme market conditions (Doerr et al., 2021). For instance, liquidity risk studies on the Aave platform reveal that concentrated borrowing by specific borrowers can trigger liquidity fluctuations, undermining overall stability (Okia et al., 2025). During

periods of intense market price volatility, borrowers may fail to repay loans on time, causing the platform to face insufficient liquidity in its funding pool. Therefore, DeFi platforms must strengthen risk management measures—such as dynamically adjusting collateral ratios, establishing liquidation mechanisms, and introducing insurance mechanisms—to effectively address potential risks during market fluctuations, ensuring the security of lending processes and the liquidity of funds.

### *Platform Risks and Smart Contract Vulnerabilities*

The security of DeFi platforms directly depends on the design and execution of smart contracts. However, while smart contracts enable decentralization and automation, code vulnerabilities and security flaws can expose platforms to significant risks. Security issues such as re-entrancy attacks, flash loan attacks, and oracle manipulation may result in financial losses or severe platform failures. Historically, multiple DeFi platforms have suffered hacking incidents due to smart contract vulnerabilities, leading to substantial fund thefts (Deol et al., 2025). To address these challenges, platforms must enhance code audits and security testing for smart contracts, ensuring transparency and vulnerability-free code. Additionally, platforms should consider implementing decentralized insurance mechanisms (e.g., Nexus Mutual) as risk mitigation measures to reduce potential losses from smart contract flaws. Strengthening smart contract audits and security safeguards not only lowers platform risks but also enhances user trust and engagement (Okia et al., 2025).

### *Regulatory Uncertainty*

Another significant challenge for DeFi lending platforms is global regulatory uncertainty. As the DeFi market rapidly expands, governments worldwide exhibit divergent regulatory stances toward decentralized finance and stablecoins. Some nations adopt relatively lenient approaches, supporting innovation and development, while others impose strict regulations or even ban certain crypto assets, substantially increasing compliance costs and legal risks for DeFi platforms (Bains, 2022). For instance, the European Union is actively advancing a unified regulatory framework for crypto assets, aiming to provide clearer legal foundations and compliance pathways for cross-border DeFi platforms. However, in the United States and other regions, the legal status of stablecoins remains highly contentious, with relevant policies still undergoing exploration and adjustment. To address these challenges, DeFi platforms must closely monitor global regulatory shifts and adapt their operational models according to market-specific regulatory requirements to ensure platform legitimacy and compliance. While regulatory uncertainty poses challenges for DeFi platforms, it also presents opportunities for innovative development. Particularly as compliance frameworks gradually clarify, DeFi platforms can further expand their market scale and user base.

### *Capital Market Access and Liquidity Issues*

DeFi lending platforms typically rely on user-provided liquidity, which can be vulnerable to shifts in market sentiment or insufficient funding pools—especially during periods of surging demand when liquidity reserves may fail to meet large-scale borrowing needs. This highlights the challenge for DeFi platforms in attracting traditional capital and ensuring sufficient liquidity depth. Traditional financial institutions often approach DeFi platforms with caution, primarily due to concerns over security, transparency, and compliance issues (Ante, 2022). Consequently, DeFi platforms must strengthen connections with traditional capital markets to attract more institutional investors and market makers. They should enhance pool depth and market liquidity through innovative financial products like liquidity mining and lending pools. Additionally, establishing cross-platform liquidity

interoperability mechanisms can optimize capital allocation and liquidity supply, mitigating bottlenecks during large-scale borrowing.

Facing multiple challenges such as market volatility, smart contract security, regulatory uncertainty, and liquidity issues, the sustainable development of stablecoin lending platforms hinges on effective risk management mechanisms and technological innovation. Platforms can mitigate risks stemming from market fluctuations by dynamically adjusting collateral ratios, introducing insurance mechanisms, and enhancing liquidity pool designs. Simultaneously, strengthening smart contract audits and security safeguards ensures transaction safety. As global regulatory frameworks gradually mature, DeFi platforms should flexibly adapt to varying national policy requirements and bolster platform trust and legitimacy through compliance measures. By implementing these strategies, DeFi platforms can better navigate future challenges and propel the advancement of decentralized finance.

### ***Market Development and Trend Analysis***

With the rapid growth of decentralized finance (DeFi), stablecoins are increasingly prevalent in DeFi lending platforms. As price-stable digital assets pegged to fiat currencies, stablecoins have become one of the most popular assets on these platforms. They play a crucial role in enhancing financial efficiency, reducing transaction costs, and improving market transparency. The following sections provide an in-depth analysis of stablecoin market development and trends within DeFi lending platforms, covering market size and growth, competitive landscape and platform dynamics, stablecoin innovation and future development, as well as user behavior and market acceptance.

#### ***Market Size and Growth***

According to the latest market research, the Total Value Locked (TVL) in DeFi lending platforms exceeded \$68.3 billion in 2024, representing approximately 40% growth from \$48.9 billion in 2023 (Market Growth Reports, 2025). Within this ecosystem, stablecoins' share of the DeFi lending market continues to rise. In 2023, stablecoins accounted for 60% of total DeFi trading volume, up from 45% in 2022. This growth trend reflects increasing user recognition of stablecoins' utility within DeFi lending platforms.

Additionally, JPMorgan analysts predict that stablecoin adoption will generate an additional \$1.4 trillion in USD demand by 2027, further fueling stablecoin market growth (Reuters, 2025). However, JPMorgan also notes that despite the stablecoin market's significant potential, its adoption in everyday payments remains limited, primarily concentrated in areas such as crypto trading, DeFi, and collateralization.

#### ***Competitive Landscape and Platform Development Dynamics***

Among DeFi lending platforms, Aave, MakerDAO, and Compound dominate the market share. According to CoinLaw statistics, Aave currently holds approximately 60% to 62% of the DeFi lending market share (Burnett, 2025). Aave has further strengthened its competitiveness in the DeFi lending market by launching its native stablecoin, GHO. The introduction of GHO enables Aave to achieve higher capital efficiency within its platform and offers users expanded lending options (Valente, 2025).

As one of the earliest DeFi platforms to introduce the stablecoin DAI, MakerDAO has long dominated the stablecoin lending market. Through its decentralized governance mechanism and stablecoin innovations, MakerDAO has attracted substantial user participation. However, as the market matures and platforms like Aave emerge, competition within the DeFi lending space has intensified. This rivalry manifests not only

in market share but also in the introduction of innovative features and enhancements to user experience.

### *Stablecoin Innovation and Future Development*

As the DeFi lending market evolves, stablecoin innovation has entered a new phase. Traditional stablecoins primarily maintain value stability through fiat or crypto asset collateralization. Yet in recent years, innovations like algorithmic stablecoins and decentralized governance have continuously emerged, driving ongoing upgrades to stablecoin protocols.

Algorithmic stablecoins like TerraUSD (UST) and Frax dynamically adjust supply through smart contracts and algorithms to maintain value stability. This innovation enhances flexibility while reducing reliance on centralized reserves. However, limitations are becoming apparent—the UST collapse demonstrated potential instability under extreme market conditions.

Future innovations in stablecoin protocols will increasingly focus on decentralized governance and multi-asset backing. Decentralized governance mechanisms can make stablecoin protocol management more transparent and equitable. Users can participate in platform decision-making through voting and governance proposals, thereby enhancing the platform's decentralized nature. Additionally, stablecoin protocols may further explore multi-asset backing—anchoring not only to fiat currencies but also to other crypto assets, commodities, or securities—to increase the stablecoin's resilience and expand its application scenarios.

### *User Behavior and Market Acceptance*

The widespread adoption of stablecoins on DeFi lending platforms relies heavily on active user participation and broad market acceptance. Analysis of user behavior reveals that stablecoins, due to their stable value and extensive market acceptance, have become the most common lending asset on DeFi platforms. When selecting lending platforms, users often prioritize factors such as fund security, lending rates, and liquidity. As a low-volatility asset, stablecoins effectively meet these demands.

Furthermore, stablecoins' broad acceptance has expanded their applications into cross-border payments, asset tokenization, and decentralized financial services. As global demand for stablecoins grows, the user base of DeFi lending platforms is diversifying. Increasing numbers of institutional investors and high-net-worth individuals are turning their attention to the DeFi lending market, adopting stablecoins as a primary investment vehicle. This trend drives platform market expansion and provides fresh momentum for the future development of the DeFi lending market.

Analysis of the market size, competitive landscape, stablecoin innovations, and user behavior within DeFi lending platforms reveals that stablecoins, as core assets in this market, are driving its rapid expansion. With technological advancements and continuous innovation, DeFi lending platforms will increasingly prioritize user experience, platform security, and compliance to navigate intense market competition. Simultaneously, ongoing innovations in stablecoin protocols will drive platforms toward greater decentralization, flexibility, and diversification, unlocking new possibilities for future financial systems.

## **CONCLUSION**

### ***Key Findings***

This paper systematically examines the core role, inherent advantages, challenges, and future market trends of stablecoins within decentralized finance (DeFi) lending platforms.

Through analysis of existing literature and market data, the study yields the following key findings:

First, stablecoins provide a crucial store of value for the DeFi lending market through their price stability, effectively hedging against the high volatility of crypto assets and safeguarding the asset value and expected returns of both lenders and borrowers. Second, stablecoins significantly enhance capital efficiency. Users can borrow stablecoins by over-collateralizing volatile crypto assets (such as ETH), thereby gaining liquidity without sacrificing asset ownership, facilitating the recycling of funds. Moreover, stablecoins' broad market acceptance and status as primary mediums of exchange substantially deepen liquidity on DeFi lending platforms, enabling large-scale, efficient financial operations. Finally, decentralized stablecoins like DAI, through their decentralized governance mechanisms, reduce user reliance on traditional financial intermediaries while enhancing platform censorship resistance and transparency.

However, the application of stablecoins in DeFi lending still faces significant challenges. Market volatility remains a root cause of systemic risk, with sharp fluctuations in collateral value triggering chain liquidations. Security vulnerabilities in smart contracts pose another major threat, with frequent hacking incidents underscoring the critical importance of code audits and risk mitigation mechanisms. Furthermore, global regulatory uncertainty casts a shadow over the compliant operation and long-term development of DeFi platforms. The reliance on user-supplied liquidity also exposes these platforms to liquidity risks during mass redemptions or market panics.

Market trends indicate stablecoins are solidifying their dominance in DeFi lending, with continuous growth in market size and Total Value Locked (TVL). The competitive landscape shows platforms evolving from "modular" to "vertically integrated" models—for instance, Aave launched its native stablecoin GHO to control more value chain segments. Future innovation in stablecoin protocols will increasingly focus on decentralized governance, multi-asset collateralization, and exploring compliance pathways.

### **Future Research Directions**

Based on the findings of this study, future research could be deepened in the following directions:

- 1. In-depth Mechanism Analysis of Stablecoin Lending Markets:** Future research should leverage finer-grained on-chain transaction data to analyze how stablecoin lending rates form under varying market conditions (bull markets, bear markets, black swan events), the dynamic evolution of liquidity premiums, and user behavior patterns across different risk appetites. This will enable the construction of more precise market risk models.
- 2. Compliance Pathways for DeFi Platforms and RegTech Applications:** As global regulatory frameworks become clearer, it is crucial to examine specific requirements for DeFi lending platforms across jurisdictions (e.g., the EU's MiCA, regulatory developments in the US). Future exploration should focus on leveraging privacy-preserving technologies like zero-knowledge proofs (ZKPs) to maximize DeFi's privacy and permissionless characteristics while complying with Know Your Customer (KYC) and Anti-Money Laundering (AML) regulations.
- 3. Design and Risk Assessment of Algorithmic Stablecoins and Novel Stabilization Mechanisms:** Following the collapse of TerraUST, the design of algorithmic stablecoins requires fundamental reevaluation. Future research should focus on designing more resilient algorithmic stability mechanisms, conducting stress tests and simulations to evaluate their robustness under extreme market pressures. Additionally, in-depth exploration of the feasibility, legal structures, and risks

associated with tokenizing real-world assets (RWAs) as stablecoin collateral represents a highly promising direction.

4. **Impact of Cross-Chain Interoperability on the DeFi Lending Ecosystem:** As the multi-chain landscape deepens, the flow of stablecoins across different blockchain networks becomes increasingly vital. Future research should focus on the security of cross-chain bridges and the development of cross-chain lending protocols, analyzing their effects on liquidity fragmentation, interest rate arbitrage, and systemic risk propagation.

In summary, stablecoins have become an indispensable cornerstone of the DeFi lending ecosystem, their evolution resulting from the complex interplay of technological innovation, market demand, and regulatory evolution. Only through continuous deepening of research in the aforementioned areas can DeFi lending platforms evolve toward greater security, efficiency, compliance, and robustness, ultimately realizing their vision of reshaping the open financial system.

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