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Alchemy Pay

CRYPTO PAYMENTS INDUSTRY RESEARCH REPORT

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INTRO
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01

REPORT

As an emerging payment method, crypto payments have a promising application in both the digital and real economy. Since the "Bitcoin for pizza" incident in 2010, this industry has been around for more than ten years and developed into several sectors, including fiat-crypto on and off-ramp, off-chain crypto payments in the real economy, and emerging blockchain-native payments. The crypto payments industry has both the technology-driven nature of the technology sector and the obvious network effect of traditional Web2 platforms.

This report, jointly published by Bing Ventures and Alchemy Pay, aims to sort out the history, current status and prospects of the cryptocurrency payment industry from various perspectives including technology, commercialization and regulatory development, for the reference of industry followers and participants.

KEY TAKEAWAYS

Q2

01

The crypto payments market is growing rapidly. Based on the estimated growth of the global payments industry and a sensitivity analysis of the market size of crypto payments in the real economy, we forecast that the market size of the global crypto payments industry will reach hundreds of billion dollars in the next three years.

02

With the evolution of technologies, the usability and efficiency of crypto payments have been improved, but the security and trust issues still remain to be addressed with effective solutions.

03

The crypto payments industry can be divided into three major sectors: fiat-crypto on and off-ramp, off-chain crypto payments in the real economy and payments in innovative on-chain scenarios.

04

The penetration rate of cryptocurrencies into the real economy is less than 1%. This sector has a strong network effect, which means that the value of a product or service grows as the number of users increases. Benefiting from the network effect created by the existing user base, traditional payment methods still have a huge competitive advantage in this area. Developing countries with a high proportion of "digital natives" are expected to be a breakthrough.

05

The banking crisis earlier this year has created great uncertainty for the revenue forecast for the fiat-crypto on and off-ramp sector.

06

Cutting-edge innovation directions such as on-chain identity aggregation (DID) and money streaming are expected to open up new application scenarios for crypto payments.

07

Representative projects such as MoonPay and Alchemy Pay have different focuses in terms of bridging the upstream and downstream of the industry and geographical development.

08

Although there are already some large-scale and well-known projects in the crypto payments sector, the competitive landscape in the future will be affected by the dual factors of compliance and merchant networks, making it difficult for any single project to become a dominator.

OVERVIEW OF THE CRYPTO PAYMENTS INDUSTRY

03

The crypto payments market is seeing rapid growth as crypto assets become increasingly popular. First, the mainstream adoption of cryptocurrencies is increasing and the familiarity with cryptocurrencies is gradually growing among consumers and merchants in the real economy. Starbucks, Coca-Cola, Tesla and Amazon, Gucci and many other well-known brands in the traditional sector are beginning to experiment with accepting cryptocurrencies in their businesses. Additionally, the crypto payments industry is attracting a wide range of market players. Also, despite the crypto market suffering a cold winter in 2022, the crypto payments market is still showing strong growth. Based on the overall global payment industry growth rate forecast and a sensitivity analysis of the market size of crypto payments in the real economy, we forecast the global crypto payments market to reach hundreds of billions of dollars in the next three years.

Crypto payments are mainly used for cross-border transactions, on-chain payments and offline payments at physical stores. For cross-border transactions, especially for SMEs and individual users, crypto payments have the advantage of being fast, low-cost and borderless. For on-chain payments, crypto payments provide more payment options and security without needing the support of bank accounts and credit cards. In terms of offline payments at physical stores, crypto payments provide a convenient and secure payment method, freeing users and merchants from the burden of paying commissions and the trouble of dealing with cross-border payments and exchange of different fiats in traditional payment methods.

Current crypto payment methods include digital tokens, payment gateways, crypto cards and other emerging crypto payment methods. Of these, digital tokens are the most primitive method and are suitable for transactions between cryptocurrencies and for payments on platforms that support cryptocurrencies. A payment gateway is a service similar to a credit card payment processor that makes it easier for merchants and consumers to receive and send cryptocurrencies. Crypto cards, on the other hand, are a way to combine cryptocurrencies with traditional debit or credit cards, allowing users to make payments using cryptocurrencies anywhere fiat currencies are accepted. Other emerging crypto payment methods include aggregated payments on centralized exchanges and cryptocurrency retail terminals.

As the crypto payments market continues to expand, regulation is also gradually catching up in various countries. More and more countries and regions are beginning to bring crypto payments under regulation and oversight, as well as introducing cryptocurrency-friendly regulations. For example, Singapore is one of the pioneers in promoting the adoption of crypto payments. Last year, the Monetary Authority of Singapore (MAS) consecutively granted payment licenses to Circle, Paxos, Blockchain.com, Coinbase, Luno, Digital Treasures Center, Crypto.com, Genesis, etc. In February 2022, Colorado became the first US state to accept cryptocurrencies for payment of taxes and fees. The Central African Republic became the second country after El Salvador to approve Bitcoin as a legal currency. El Salvador adopted Bitcoin as its official currency in September 2021. These developments will drive the crypto payments market towards greater transparency, regulation and trustworthiness, allowing this sector to play an increasingly important role in the future of the global payment industry.

CRYPTO PAYMENT TECHNOLOGIES



04

HISTORY OF TECHNICAL INNOVATIONS

Payments are one of the main functions of currencies. Likewise, using cryptocurrencies for payments in everyday life has been the vision of developers and users since the inception of cryptocurrencies. However, this new form of economy and payment method did not happen overnight, it took time to develop and perfect. So let's first review how crypto payments have evolved from a technical perspective.

— Peer-to-Peer Payments

Appearing in 2009, Bitcoin was the first digital asset to enable purely peer-to-peer payments without relying on any third-party institutions. Satoshi Nakamoto's Bitcoin thesis was also titled *"Bitcoin: A Peer-to-Peer Electronic Cash System"*.

However, while peer-to-peer payments can only provide cryptographically-backed trust in the transaction process, the parties to a transaction cannot rely solely on the peer-to-peer payment system itself to reach trust in the transaction decision process. For example, the willingness of consumers to shop offline is based on the premise that "what you see is what you get", whereas when shopping online, users are willing to trust merchants because centralized internet platforms such as Amazon provide them with additional trust (shop ratings, etc.). The same applies to online transfers. The basis for trust by the transferring party also often comes in part from trust-enhancing support outside of the transaction payment system itself, such as the strict KYC procedures behind bank cards, and a user's online identity represented by their social accounts.

At the same time, peer-to-peer payments also make settlement and communication costs higher for the merchants. Specifically, peer-to-peer payments in cryptocurrencies require merchants to be responsible for receiving and processing payments themselves, which requires merchants to set up and maintain a payment system that manages operations such as receiving cryptocurrencies, validating the amount and converting cryptocurrencies to fiat currencies. This also means that merchants need to invest more time, effort and resources in processing and managing crypto payments. As a result, this increases the settlement costs for merchants.

In addition, peer-to-peer payments in cryptocurrencies also increase the cost of communication between the merchant and the customer. In traditional payment methods, merchants and customers can complete transactions through financial institutions, and these institutions provide a range of support and services, such as payment confirmation, refunds, dispute handling, etc. In crypto payments, however, these services usually need to be undertaken by the merchant, which requires frequent communication and negotiation between the merchant and the customer to ensure a smooth transaction.

As such, peer-to-peer payments are technically incomplete and require a higher level of digital infrastructure to assist with building trust and enhancing ease of use. Current solutions tend to sacrifice some degree of decentralization of the system by establishing centralized tokens, settlement, clearing, KYC, accounts and other hosting systems to address the above issue.

— Centralized Tokens and Settlement - Ease of Use

Ripple encountered the same problems as peer-to-peer payment instruments like Bitcoin when it was first created. The Ripple protocol was originally designed on the basis of personal acquaintances and the chain of trust among them. For a user to use the Ripple network to send money or borrow money, a prerequisite is that the recipient and the payer must be friends that have a trust relationship, or have a friend in common from whom the trust can be passed, otherwise, no chain of trust can be established between them and the transfer cannot take place. Starting in 2012, OpenCoin took over the Ripple project and launched a new version in 2013, which introduced two measures.

The first was the introduction of gateways. The gateway is the entry and exit for funds to and from the Ripple system. It acts like an intermediary through which people can inject or withdraw all types of currencies, whether they are national fiat currencies or cryptocurrencies such as Bitcoin, into or out of the Ripple system. Thus, transactions would no longer be restricted to acquaintances only, as was the case in the old Ripple system. Even if users are strangers who do not trust each other, they can make transfers as long as they all trust the same gateway. If the role of the "gateway" is performed by a large bank or financial institution, the chain of trust will be a lot easier to establish. The introduction of gateways allows transactions between users to be extended from acquaintances to strangers.

The second is the introduction of Ripple's native token XRP. XRP is the liquidity instrument within the Ripple system. XRP acts as a bridge currency to other currencies. Ripple can circulate freely between any gateway. Other currencies cannot be transferred or withdrawn across gateways without being exchanged for Ripple (XRP).

However, as mentioned earlier, these improvements came at the expense of the decentralization of the peer-to-peer payment system. The vast majority (77 billion/100 billion) of XRP is in the hands of the builder of Ripple -- Ripple Labs, which is one of the reasons for some of the criticism of Ripple.

Separately, Stella has also made some technical innovations. It uses a technology called "Federation Protocol" that allows for fast transaction confirmation and settlement and enables payments and currency exchange across the globe by connecting different payment systems and currencies.

At the same time, projects such as the Bitcoin Lightning Network have made improvements in various aspects to make cryptocurrency transfers easier.

However, these technological innovations have only addressed the usability aspect of crypto payments and have not truly addressed the issue of trust between the parties with transaction needs.

— Centralized Clearing - Trust

The terms clearing and settlement are often confused. Before going any further, let's clarify the two concepts.

Clearing usually refers to the matching and reconciliation between the transaction parties. In securities trading, Clearing refers to the process of matching and confirming the securities positions and funds of the buyer and seller, making necessary adjustments and delivering the securities and funds accordingly by both the buyer and seller's brokers. In cash transactions, clearing refers to the process by which payment systems match, confirm and settle the flow of transaction funds between bank accounts. During the clearing process, both parties to a transaction submit the transaction information to a central clearing house or clearing agency for clearing processing and settlement confirmation.

Settlement usually refers to the outcome of the transaction and the payment of funds after clearing, which means the final confirmation and settlement of the transaction. In the case of securities transactions, settlement refers to the process of final delivery and payment of securities to ensure that the securities and funds securely reach both parties. In a cash transaction, settlement refers to the process by which the payment system transfers funds to the buyer's account and deducts the corresponding funds from the seller's account. During the settlement process, both parties to the transaction reconcile the results of the clearing and transfer the funds from one bank account to another.

At the core of clearing is trust. The establishment of trust often requires information outside of the transaction payment system to assist in enhancing trust. Most of the current solutions rely on KYC verifications of users' off-chain identities by large centralized platforms to help enhance trust between the transaction parties on the platform. Existing large-scale online crypto payments projects basically use this approach, such as MoonPay, Alchemy Pay, Transak, as well as various on and off-ramp platforms and virtual credit cards launched by exchanges. Although these products vary in form and function, their underlying core idea is all to achieve trust between the two sides of a transaction.

At the same time, these platforms sometimes act as counterparties to payment users, using the large stock of funds held by the platform to make markets and further enhance ease of use. Again, the cost of such solutions is a further reduction in decentralization.

CUTTING-EDGE RESEARCH DIRECTIONS

— On-chain Identity Aggregation (DID) - Another Kind of Trust

As mentioned earlier, solutions for large platforms often sacrifice decentralization. To address this issue, some emerging crypto payment platforms and protocols, such as Oasis Network and NEAR Protocol, have introduced an on-chain identity aggregation approach.

On-chain identity aggregation allows for the aggregation of multiple crypto wallet addresses and identity information into a single cryptographic identity, thus enabling unified authentication and management. This approach ensures user privacy and security and allows users to freely transact and manage their digital assets across different crypto payment platforms and protocols.

On-chain identity aggregation deters users from relying on a centralized institution to transact and manage their digital assets, facilitating the development and innovation of decentralized crypto payment networks.

— Money Streaming - Combining Crypto-native Trust with Usability

Traditional payments are limited by the one-way flow of information and settlement batches, and can only be done through bulk transfers. Money Streaming, as the name implies, allows money to flow like water in a fluid manner, constantly making payments every second. The advent of blockchain and crypto technology has made money streaming possible.

Trust - Blockchain technology enables a two-way, real-time flow of information, which is one of the key factors in enabling money streaming. In traditional payment systems, payment information and settlement information usually flow in one direction, which means that when a transaction occurs, the bank needs to send a payment instruction to the merchant, and this instruction contains a series of transaction information, such as the amount, time and location of the transaction.

Blockchain technology allows for a two-way real-time flow of information, meaning that when a transaction occurs, the transaction information can be broadcast and confirmed across the network in real time. This allows both the payer and the recipient to know the status of the transaction and the flow of funds in real time, thus enabling money streaming.

Ease of Use - In terms of settlement batches, the infinite divisibility of cryptocurrencies is one of the key factors in enabling money streaming. Traditionally, to realize real-time small payments, payment systems must collect and process a large amount of transaction data and funds flow information within a specific time frame to complete the settlement. This type of payment often experiences delays and causes inconvenience because the amount of payments is often too small to meet the minimum settlement thresholds of banks. Cryptocurrency is designed with infinite divisibility, allowing it to be divided into smaller bits. This is very beneficial for small payments. Cryptocurrencies can be used to make payments of any amount, thus increasing the efficiency and convenience of payments.

Currently, some of the more representative money-streaming projects on the market include Sablier, Zebec, Superfluid, Roketo and others. However, most of the projects are still constrained by factors such as high gas fees on the Ethereum network and limited performance, stability and trustworthiness of new public blockchains, and the user experience is not yet satisfactory. Perhaps the development of Layer2 technology will further promote the development of money streaming.

COMMERCIALIZATION



05

HISTORY

The origin of crypto payments can be traced back to May 22, 2010, when a programmer from Florida, USA, Laszlo Hanyecz, used 10,000 bitcoins to purchase two pizzas, which is regarded as the first payment using cryptocurrency. Since then, crypto payments have continued to innovate and can be summarized into the following development stages.

01 The Early Stage

In 2009, Bitcoin was created, ushering in the era of cryptocurrency. At this stage, the adoption of crypto payments was very limited, mainly focusing on transactions between technology enthusiasts and early investors.

02 The Exploration Stage

In 2011, some startups began to incorporate crypto payments into their business models. For example, Coinbase was founded in 2012 and became one of the largest Bitcoin trading platforms in the United States, thus promoting the development of crypto payments.

03 The Commercialization Stage

In 2014, as more and more merchants began to accept cryptocurrencies such as Bitcoin as a payment method, crypto payments entered the commercialization stage. At this time, some payment companies began to enter the field of crypto payments, such as BitPay and Coinify.

04 The Commercialization Stage

In 2014, with the continuous development and improvement of blockchain technology, many new crypto payment protocols and platforms emerged. For example, Ripple launched a fast cross-border payment solution based on blockchain technology, thereby improving the efficiency and convenience of payments.

05 The Platformization Stage

In 2017, with the boom of the crypto market and the related investment frenzy, more and more crypto payment platforms and protocols emerged. Projects such as OmiseGo and Request Network aimed to establish decentralized payment networks to support the flow of cryptocurrencies.

06 The Application Expansion Stage

Currently, with the continuous development of cryptocurrency technology and expansion of application scenarios, crypto payments are gradually becoming popular. Some leading payment companies have begun to integrate crypto payments into their payment systems to provide more convenient and efficient payment experiences.

CURRENT SITUATION AND COMPARISON WITH TRADITIONAL PAYMENTS

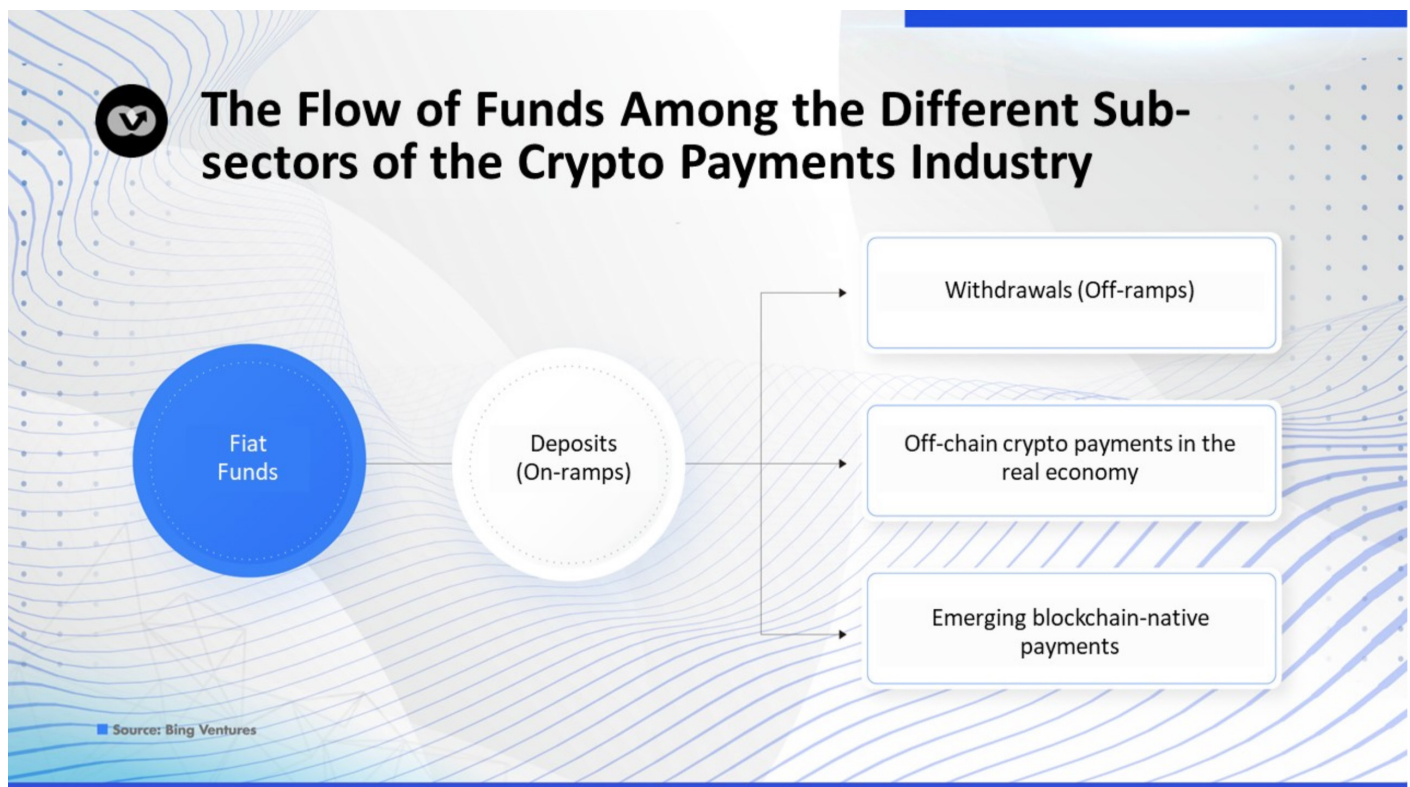
Currently, the crypto payments industry can be divided into the following main sectors:

Fiat-crypto On and Off-ramp - On-ramp refers to the process of exchanging fiat currency for cryptocurrency, while off-ramp refers to exchanging cryptocurrency for fiat currency.

Off-chain Crypto Payments in the Real Economy - Directly using cryptocurrencies to purchase goods or services in the real economy.

Emerging Blockchain-native Payments - Using cryptocurrencies to conduct transactions in blockchain-native scenarios, such as money streaming.

The connections between these sectors are shown in the following diagram from a capital flow perspective:



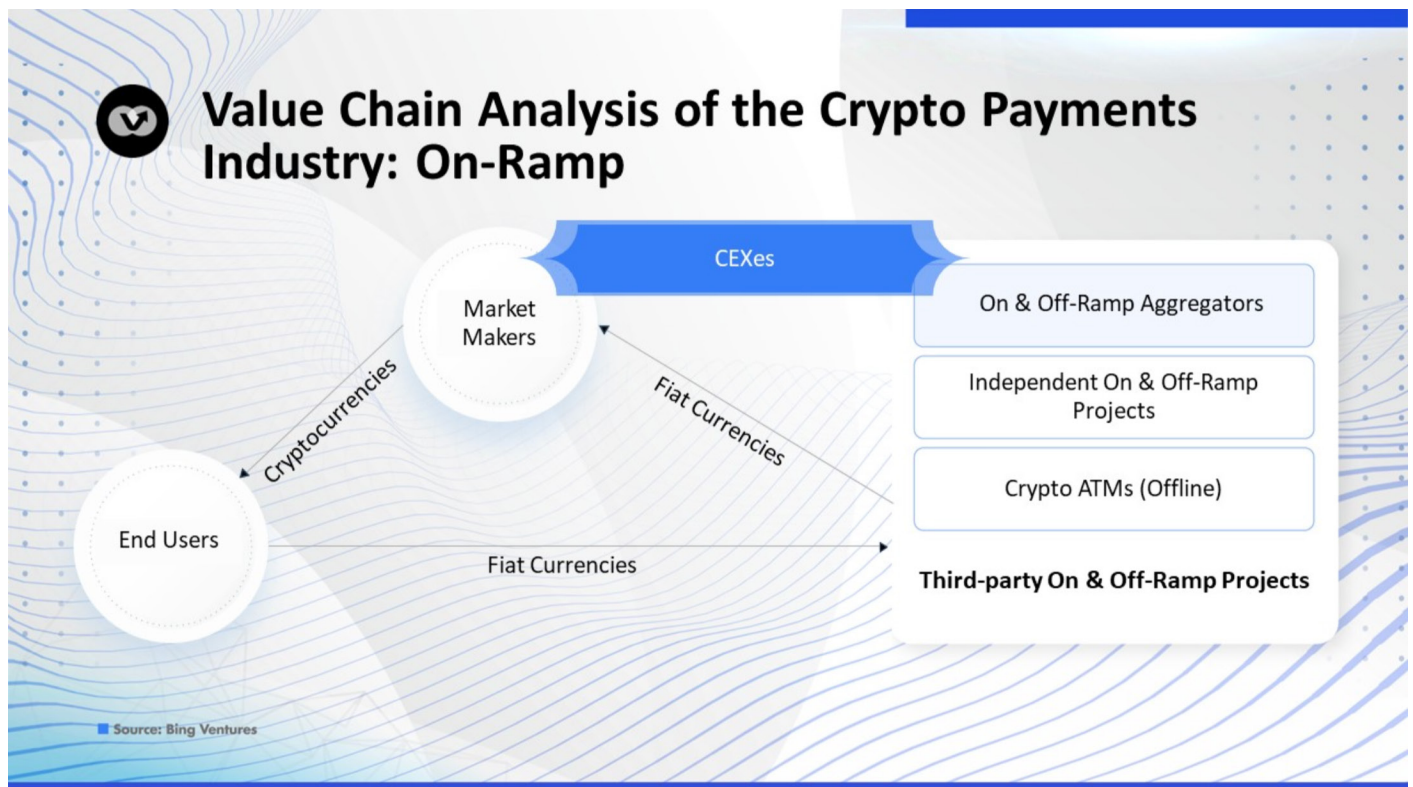
Companies engaged in crypto payments generally aim to capture the capital flow in these various sectors and charge fees accordingly.

— Value Chain Analysis

On-Ramp

Without considering OTC channels like C2C transactions, the process of on-ramp is roughly shown in the figure below. Users first transfer fiat to third-party projects, and the specific traffic portals they use are in various forms, for example:

- Users can transfer funds directly through the platforms of third-party on and off-ramp projects, such as Ramp Network, Transak, MoonPay, etc.
- Users can also transfer funds through an on and off-ramp aggregator. Aggregators are associated with multiple third-party on and off-ramp projects, allowing users to see the exchange rates and fee rates of multiple independent on and off-ramp projects at the same time, such as TransitSwap, KyberSwap, etc.
- At the same time, users can also buy crypto through centralized exchanges (CEXes), and the CEXes play the role of an on and off-ramp aggregator in this process. Currently, all mainstream CEXes provide such a service, with different fees for different currencies.



After receiving the fiat, the on and off-ramp project transfers the fiat to a market maker that provides liquidity for crypto/fiat currency trading pairs, e.g. transferring the user's fiat to the market maker's bank account. After the market maker confirms receipt of the funds, the cryptocurrency is transferred on-chain to the wallet address provided by the user. Market makers are typically large banks (such as Silvergate Bank (which has gone bankrupt) and Signature Bank), stablecoin issuers (such as Tether and Circle), or CEXes (Binance, Coinbase, Kraken, etc.) that hold a large amount of on-hand inventory.

In terms of rate structure, the sources of fees that may be incurred by an on-ramp project include:

- Fees charged by fiat payment channels: e.g. fees charged by credit card issuers, Paypal, Apple Pay, etc.
- Fiat-to-crypto exchange rate fees: a percentage of the transaction amount or the difference included in the seller's exchange rate.
- Intermediaries' cut: a percentage of the transaction amount or the difference included in the seller's exchange rate. For example, an independent on and off-ramp project will add to the exchange rate supplied by the CEX, and an on and off-ramp aggregator will add to the exchange rate supplied by the independent on and off-ramp project. Therefore, the higher the number of intermediaries, the higher the fees.
- Blockchain Network fee: The miner fee incurred for transferring cryptocurrency from the on and off-ramp platform wallet address to the user's wallet address when the user uses a self-hosted wallet (public key required).

Off-Ramp

Since the standard process for the off-ramp is similar to the on-ramp, except that it reverses the funds flow, and most project parties that offer on-ramp services also offer off-ramp services, many industry analyses tend to discuss on and off-ramp together.

However, crypto off-ramp is much more difficult than on-ramp for the following main reasons:

- 1. Different reversibility:** Traditional payment methods such as bank transfers are reversible, meaning that in the event of an error or fraud, the user can apply to the bank to reverse the transaction. Crypto transactions, on the other hand, are usually irreversible, and cannot be reversed once the transaction is completed. As a result, trading platforms and wallets usually apply stricter review and verification on off-ramp transactions to prevent fraud and erroneous transactions.
- 2. Higher security risk:** Since crypto transactions are based on blockchain technology, crypto off-ramp requires the user to provide the corresponding private key or password to confirm the legitimacy and security of the transaction. However, if the user's private key or password is stolen or leaked, then it will lead to the theft or loss of cryptocurrency, so cryptocurrency trading platforms are usually more careful in verifying and confirming off-ramp transactions.
- 3. Inadequate regulation:** Since the regulatory and legal safeguards in the crypto market are relatively weak, trading platforms and wallets usually need to handle off-ramp requests more carefully and prudently to avoid potential legal and regulatory risks. In addition, some countries and regions may have restrictions and bans on crypto trading, which may also lead to some restrictions on crypto off-ramps.

In all types of on and off-ramp projects, users often only need to open the most basic account and provide basic information and payment channels to complete the on-ramp. This is because these platforms can rely on the payment channels' review and verification process to confirm the authenticity and security of the on-ramp, and the source of the funds deposited is also relatively easy to verify.

However, users often have to go through a more stringent verification process when withdrawing funds. During the off-ramp process, platforms need to ensure the security and legitimacy of withdrawals to avoid fraud and other malpractices. To do so, the platform usually needs to verify the identity and transaction history of the applicant to confirm the authenticity and legitimacy of the transaction. At the same time, the platform will also review the source of funds to avoid any possible violation of regulations.

Off-chain Crypto Payments in the Real Economy

There is potential for cryptocurrencies to replace fiat as a medium of payment in the real economy in some scenarios. For example, merchants could accept crypto payments on their websites or apps and deliver the corresponding goods or services to their customers. Similarly, some brick-and-mortar stores and service providers are also beginning to accept crypto payments to meet the payment needs of different users.

However, crypto payments are still in an immature stage and face fierce competition from traditional payment methods.

First of all, traditional online payments (such as Visa, Mastercard and other credit cards, Paypal, Apple Pay, and Google Pay) already have a relatively mature and stable market position in the field, with a large number of merchants and consumer users and a good payment experience and solid capability to ensure payment completion. This means crypto payments face great challenges to compete for a share in the real economy.

Data shows that PayPal has 430 million active users in 2022, while MoonPay, the project with the largest number of users in the crypto payments field, has only about 5 million users, and the rest of the projects involving crypto payments in the real economy have even fewer users.

Crypto payments for real-life uses can be considered a business that relies on user traffic. This is because payments have a strong network effect. Network effect means that the value of a product or service depends on the number of its users, e.g., as the number of users increases, the value of the product or service increases as well. In the field of cryptocurrency payments, an increase in the number of users will lead to more merchants and service providers becoming willing to accept crypto payments, thus further promoting the adoption and spreading of cryptocurrency.

Specifically, the network effects of crypto payments are manifested in the following ways:

- 1. Increased adoption of crypto payments by merchants:** As more merchants accept crypto payments, the incentive for consumers to use it will also increase, which will in turn promote the adoption and spreading of cryptocurrency.
- 2. Convenience and low cost of crypto payments:** Compared with traditional payment methods, crypto payments have the advantages of higher convenience and lower cost, which is beneficial for crypto payments to become widespread.
- 3. Growth of the crypto payments ecosystem:** With the continuous progress and development of the crypto payments ecosystem, which includes payment platforms, wallets and payment gateways, etc., crypto payments will become more and more convenient and widespread.

However, traditional payment methods have similar characteristics and can greatly benefit from the network effects of their existing user bases.

Second, although crypto payments have the advantages of lower transaction fees and faster transactions, traditional online payment methods have a more complete payment ecosystem for merchants and consumer users, including payment platforms, payment gateways, payment processors, credit ratings, and other services. This provides merchants and consumer users with a more comprehensive and reliable payment experience and security. In contrast, crypto payments are relatively weak and unstable in these areas.

In addition, the spreading and popularity of crypto payments are subject to some policy and legal restrictions, for example, the uncertainty and differences in the regulatory policies, laws and regulations for cryptocurrencies in various countries. This brings certain challenges to the promotion of cryptocurrencies in real life.

In conclusion, due to the strong network effect of payments, emerging crypto payments face greater difficulties in competing with the already mature online payment tools. Efforts should be made to further expand the ecosystem of crypto payments, enhance the payment experience, improve platforms' capabilities to ensure transaction completion, and enhance regulatory compliance for crypto payments to better compete with online payment tools and further expand the payment market share and application scenarios.

— Emerging Blockchain-native Payments

NFT Checkout

The NFT market boom that started in 2021 provides another channel for funds to flow into the crypto space. To purchase NFTs, users need to convert fiat to cryptocurrency and then use cryptocurrency to make the purchase. This can be a painful and cumbersome process for amateurs, who will have to learn the technical aspects of cryptocurrency. However, in most cases, what they want is simply to exchange their money for their preferred NFT.

Some on and off-ramp platforms keenly seized this opportunity to roll out NFT Checkout products. They partnered with large NFT trading platforms such as OpenSea to provide users with a one-stop service to buy NFTs in fiat directly with their bank cards, and from the service they charge a higher fee than the rate for NFT purchases with cryptocurrencies. Take MoonPay's NFT Checkout product as an example, its workflow is as follows:

- MoonPay converts the user's fiat into cryptocurrency, buys the NFT, and then sends the NFT to the user's wallet.
- The seller, the project owner and the platform will receive settlements in USDC after T+1 days.

Moonpay's NFT Checkout transaction fee rate is 3.5% (at least \$4), as users of this service are more "lazy" and therefore willing to pay a relatively higher fee for it. Pioneer Nifty Gateway's fees are even higher, charging a 15% fee per transaction at the launch of the service, and its monthly transaction volume was close to \$100 million in 2021.

Although NFT Checkout products are not fundamentally different from the on and off-ramp services mentioned above, they did open up a new channel for crypto on-ramp.

Money Streaming

The workings of streaming payments have been briefly discussed in the previous section.

From the commercialization perspective, there's an immediate need for money streaming in the market. In the Web2 world, we are usually accustomed to paying a one-time fee to obtain services or goods. However, many services are not provided at once, and people may often face potential risks after paying a one-time fee. For example, when hiring a fitness instructor, purchasing an online course, watching a movie, listening to music, or reading an ebook, consumers are often asked to pay the entire amount upfront. However, in practice, if the products and services provided by the merchant do not meet expectations, it is difficult to protect consumers' rights and interests.

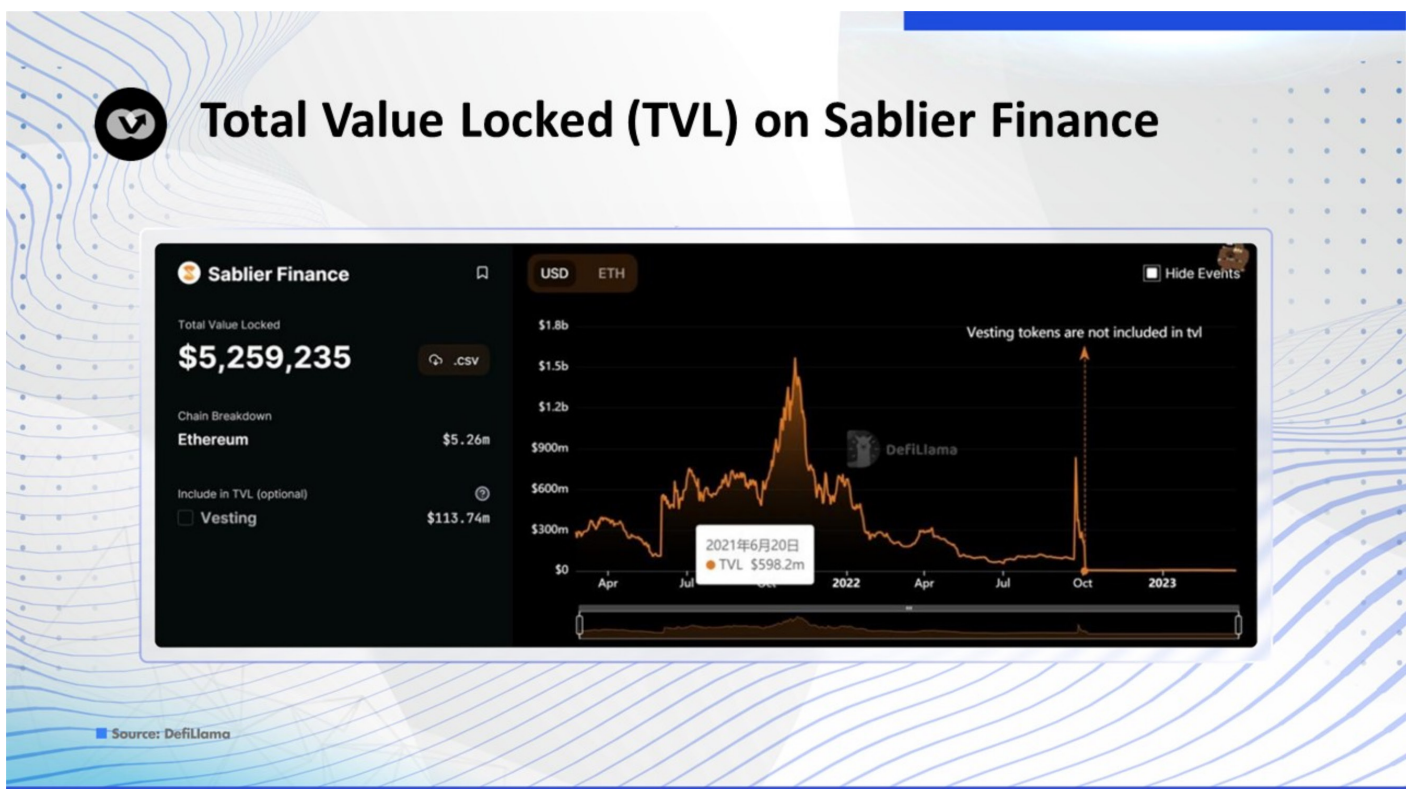
For similar customer-side scenarios, money streaming is a good solution. Both sides of the transaction can set the payment ratio pro rata to the total price of the service and the time in advance, and then execute the payment gradually according to the pre-set order through the stream payment process. When there are objections to the service, the consumer is able to stop payment and terminate the consumption of the service at any time. This reasonably protects the rights of the consumer.

In addition, in traditional businesses, using one-time payment may lead to a mismatch of supply and demand, as services or goods take time to provide. For example, for manufacturing companies that require advance payment, it takes time for the manufacturer to produce the required products after it acquires raw materials from the supplier. But the advance payment may not be able to cover the investment needed to complete the production, which may result in short of liquidity for the manufacturer, delays in production, or even unwilling cancellation of the orders. For such cases, by breaking down the payment process into multiple small payments, money streaming allows companies to make payments according to the progress of the service or goods provided, thus avoiding the financial pressure and risks associated with one-time payments, which can ultimately help improve the liquidity and efficiency of the manufacturer.

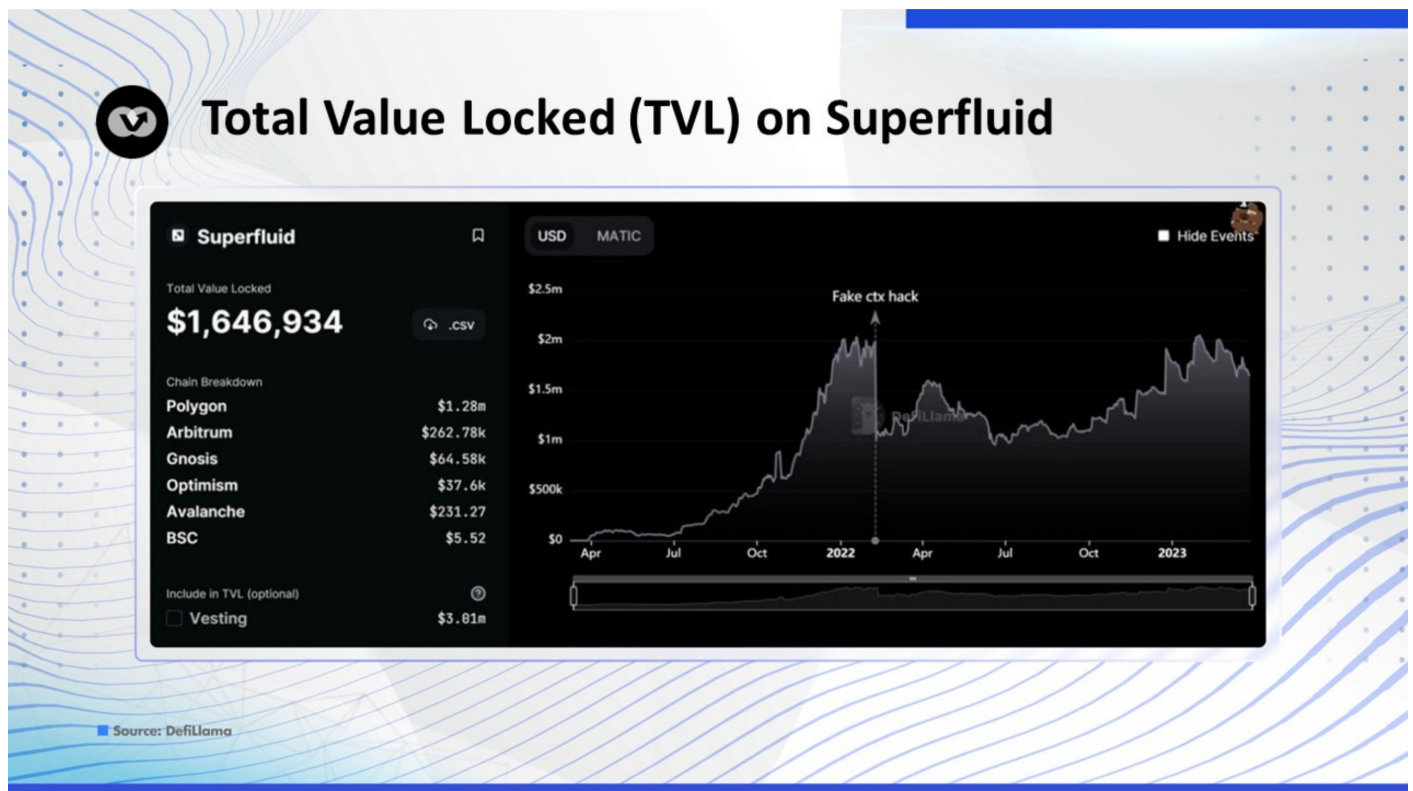
Therefore, money streaming can be applied to many scenarios, such as music streaming, e-book reading, membership purchases, renting, consultation, parking, and even investment and financing, etc. In the future, money streaming will have a profound impact on value streams, capital management, IoT payments, and even valuation models of large companies.

However, as discussed earlier, such scenarios are not suitable for implementation through banks or other traditional financial institutions, especially those that may involve cross-banking and cross-country scenarios. Thus, smart contracts and crypto assets have a natural advantage for such scenarios, as long as they guarantee low costs.

Sablier is the first protocol to enable money streaming. While poor functionality limited Sablier's mass adoption, Sablier laid the groundwork for many subsequent money-streaming protocols to flourish. Its founder, Paul Razvan Berg, proposed EIP-1620: Money Streaming in 2018, which aimed to develop a set of standards for money streaming for Ethereum. The proposal also led to Sablier going live in 2019. However, the subsequent development of the EIP-1620 proposal has stalled and is now in an unfinished state. Sablier's TVL historically peaked at 1.57B USD but is now down to a few million USD.



Superfluid, founded in 2021, is a latecomer and has made many improvements in its contract design compared to Sablier, providing users with a better experience. However, the current TVL is only \$1.64 million.



— Entry Barriers and Difficulties

As cryptocurrencies continue to gain more attention in the global economy, crypto payment gateways have become an important bridge between the traditional financial system and the digital asset space. These gateways provide a way for crypto payments to be used in various scenarios including the above-mentioned fiat-crypto on and off-ramp, off-chain crypto payments in the real economy, and emerging blockchain-native payments.

Currently, the following are the main barriers to conducting a crypto payment gateway business:

- **Regulatory Landscape** - One of the primary challenges facing crypto payment gateway businesses is the complex and ever-changing regulatory environment. Governments and financial authorities worldwide are grappling with how to regulate cryptocurrencies, leading to a lack of clear guidelines and policies for businesses. Operating in this uncertain landscape requires constant monitoring of regulatory developments to ensure compliance with anti-money laundering (AML), know-your-customer (KYC) regulations, and other regulatory requirements across different jurisdictions.

Moreover, crypto gateway companies need to obtain corresponding qualifications and financial service licenses to conduct business in different countries and regions. These licenses often take years to obtain and are very costly. It's also necessary that the crypto gateway team have relevant experience in risk control, compliance, or even government affairs.

- **Payment Channel Management** - To cater to users worldwide, payment gateways need to conduct thorough research on local payment markets, understand the preferred payment methods in different regions, and establish a strong local presence through localized operations. Operating in hundreds of countries and regions means encountering diverse payment markets and channels, each with unique characteristics. Consequently, effectively accessing and managing these payment channels requires a highly skilled and capable team.
- **Financial Strength** - The volatility of cryptocurrency prices presents a distinctive challenge for payment gateway businesses. The rapid price fluctuations observed in digital assets require these businesses to be adequately prepared to address such volatility. This preparation may involve maintaining a sufficient capital reserve, establishing appropriate conversion rates, or implementing hedging strategies to minimize risk. Moreover, the conversion process between fiat currencies and cryptocurrencies may encounter delays or face fund precipitation in both currencies. To ensure real-time payments, crypto gateway companies may have to pay the funds themselves instead to facilitate transactions. Without a proper capital reserve to cover various cases, gateway companies may stand a chance to have their users suffer financial losses in their business operation.
- **Security and Anti-fraud** - While cryptocurrencies offer numerous advantages, they also carry security risks and the potential for fraud. Cryptocurrency payment gateways must invest heavily in strong security measures to protect customer funds and transactions. Equipping gateways with reliable anti-fraud solutions, KYC verification and AML detection technologies, implementing multiple-factors authentication, and enhancing protection against hackers with encryption are critical measures to mitigating these risks. In addition, the decentralized nature of cryptocurrencies makes it challenging to reverse transactions or recover lost funds, adding additional complexity to the security landscape.
- **Users Education and Outreach Adoption** - Despite the growing popularity of cryptocurrencies, their adoption and awareness among consumers are still very low. Many individuals remain skeptical or unfamiliar with the concept of digital assets, which can hinder the adoption of crypto payment gateways. Businesses in this industry face the challenge of reaching out to their potential customers, building trust, and demystifying the complexities surrounding cryptocurrencies through education. This necessitates clear product descriptions and explanations, ready-to-go interfaces for novice users, and the availability of educational resources to bridge the knowledge gap.

— Market Size

On and Off-Ramp

In theory, the market size of the crypto on and off-ramp sector equals the annual transaction volume of market players multiplied by the average handling fee rate.

However, as mentioned earlier, the core of the on and off-ramp business lies in the capturing of user traffic. The way different types of on and off-ramp projects capture user traffic and the types of users they can reach vary greatly, making it difficult to measure top-down.

Additionally, impacted by developments such as Silvergate Bank's bankruptcy, Signature Bank's phasing out, and Binance's suspension of U.S. dollar deposits and withdrawals, the business volume of the on and off-ramp sector fluctuates tremendously, adding uncertainty to the future direction of the sug-sector.

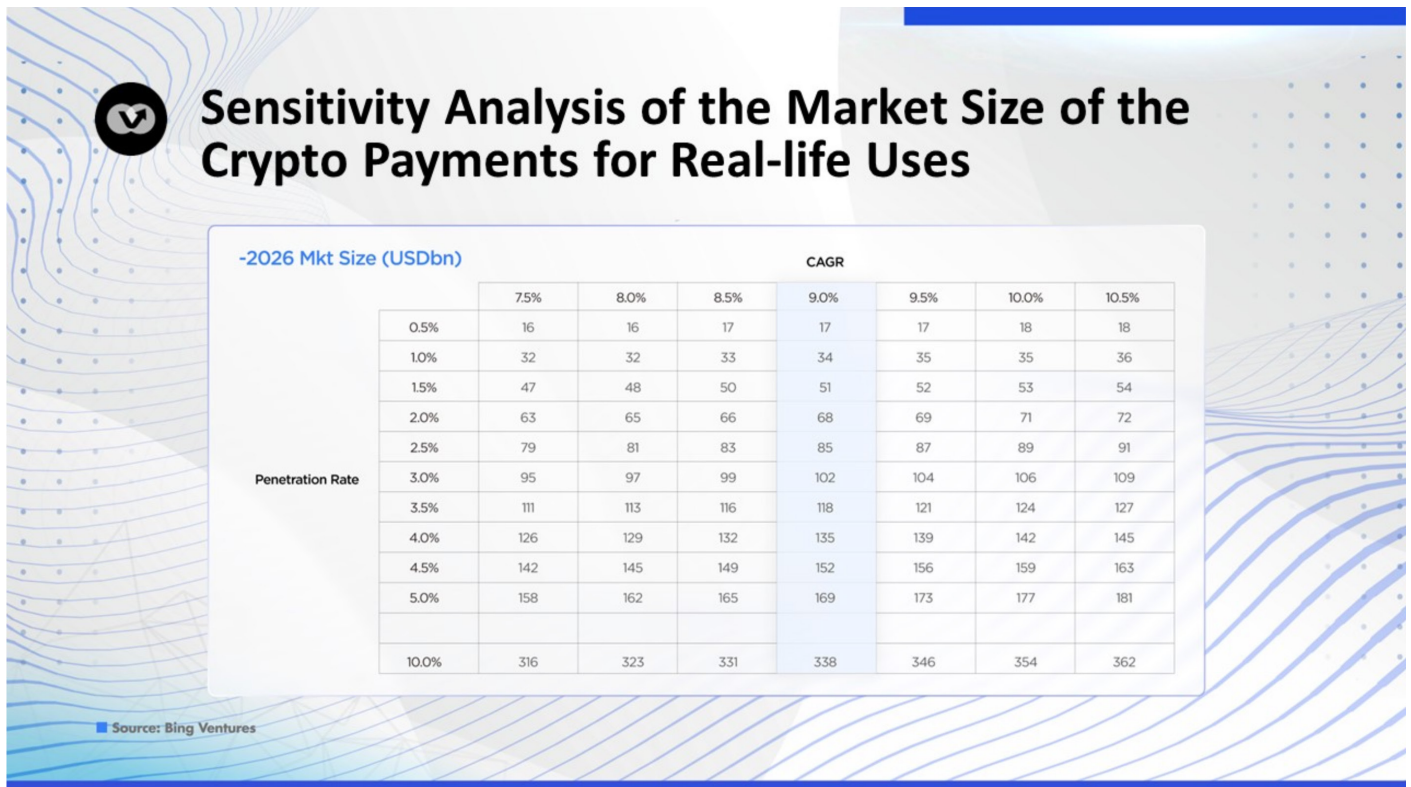
Off-chain Crypto Payments in the Real Economy

According to a McKinsey report, global payments industry revenue reached \$2.1 trillion in 2021. If calculated at an annualized growth rate of 9%, global payments industry revenue will reach \$3.3 trillion in 2026.



Crypto payments in the real economy are in direct competition with traditional online payments, effectively taking a slice of the above market size. Looking roughly at the top projects in terms of user amount (e.g., using PayPal's 430 million users vs. Alchemy Pay's 2 million users for comparison), crypto payments penetration was less than 1%.

We conducted a sensitivity analysis of the market size of crypto payments in the real economy based on different growth rates and penetration conditions. Specifically, we set the penetration rate of crypto payments at a relatively reasonable range of 0.5% to 10%, while setting a market growth rate bracket of 7.5% to 10.5%. According to these relatively conservative predictive conditions, the results are as indicated in the chart below. By 2026, the market size of crypto payments in the real economy is expected to reach a range of \$316 to \$362 billion.



Based on the above calculations, we predict that the future market size of crypto payments in the real economy is expected to reach hundreds of billions by 2026.

— Emerging Blockchain-native Payments

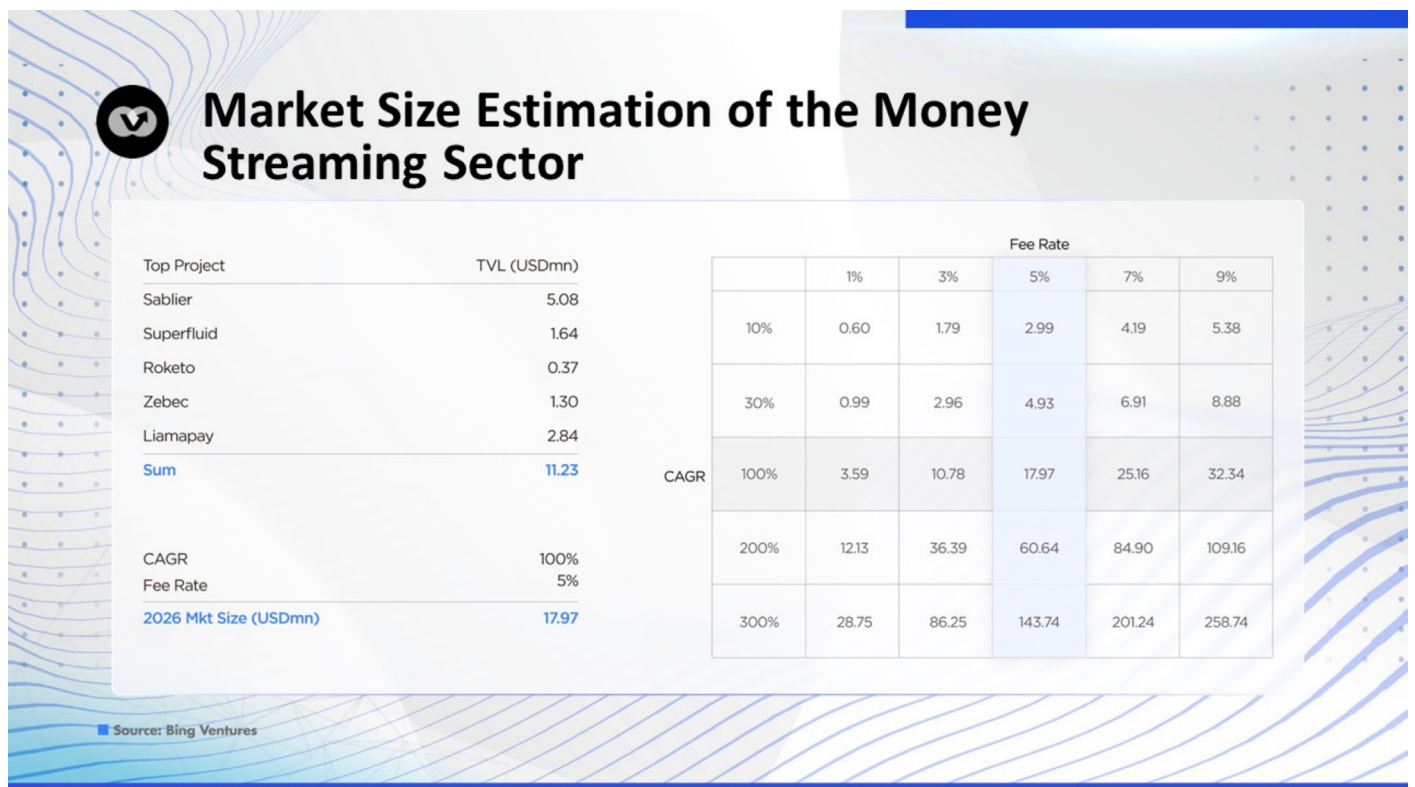
NFT Checkout

This business was mainly driven by the development that more and more Profile Picture (PFP) NFT projects got known by the mainstream audience. However, with the NFT market entering a bear market along with the broader crypto market, the business volume of NFT Checkout products has been gradually decreasing since 2022. Its future sustainability relies on the ability of the NFT market to penetrate more into the mainstream.

Money Streaming

Theoretically, the stream payment business can be measured using the same function of transaction volume * handling fee rate.

Given the time-sensitive nature of money streaming, it is rare for someone to top up a large amount of money at one time to a money streaming platform. Therefore, the TVL on a platform can reflect the potential future transaction volume to some extent. Assuming that the average user will spend the money already topped up in 3 months, the annual transaction volume will equal $TVL * 12/3$. Then, the market size is estimated as follows.



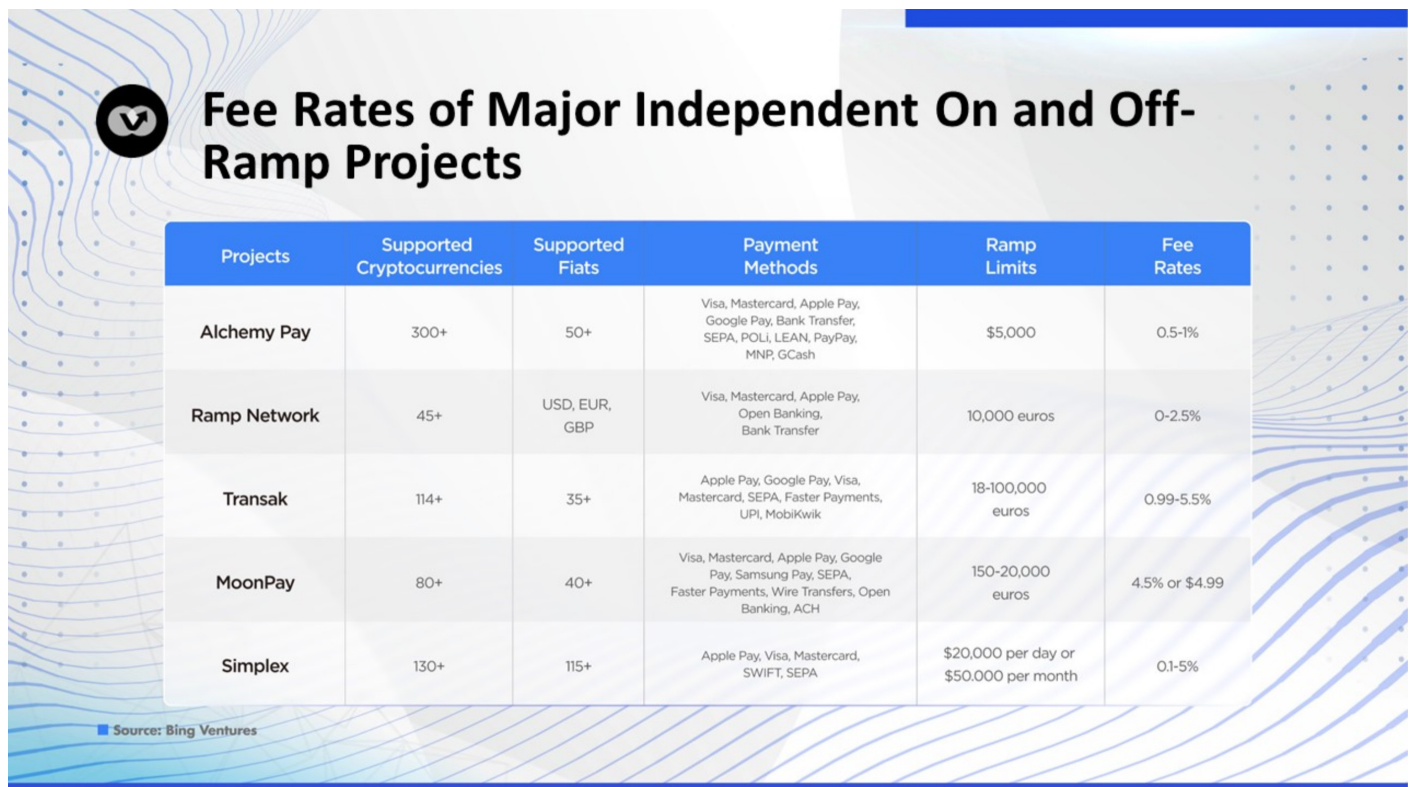
We set the fee rate for the money streaming sector within a relatively reasonable range of 1% to 9% while setting a market growth rate of 10% to 300%. Following these relatively conservative predictive conditions, we took the middle value, e.g. 5% fee rate and 100% market growth rate, and calculated the following results: The market size of cryptocurrency stream payment is expected to reach the level of \$17.97 million by 2026.

— Competition

Currently, the crypto payments industry is complicated, with top projects often having a presence in multiple sectors described above. At the same time, it is difficult to quantitatively analyze the competitive landscape within each of the aforementioned sector due to the limited availability of data. In the following, we provide an overview of the business condition of the top projects in each sector.

On and Off-Ramp

The fee rates of the major CEXes are as follows:



Fee Rates of Major Independent On and Off-Ramp Projects

| Projects | Supported Cryptocurrencies | Supported Fiats | Payment Methods | Ramp Limits | Fee Rates |
|--------------|----------------------------|-----------------|--|--|----------------|
| Alchemy Pay | 300+ | 50+ | Visa, Mastercard, Apple Pay, Google Pay, Bank Transfer, SEPA, POLI, LEAN, PayPay, MNR, GCash | \$5,000 | 0.5-1% |
| Ramp Network | 45+ | USD, EUR, GBP | Visa, Mastercard, Apple Pay, Open Banking, Bank Transfer | 10,000 euros | 0-2.5% |
| Transak | 114+ | 35+ | Apple Pay, Google Pay, Visa, Mastercard, SEPA, Faster Payments, UPI, MobilKwik | 18-100,000 euros | 0.99-5.5% |
| MoonPay | 80+ | 40+ | Visa, Mastercard, Apple Pay, Google Pay, Samsung Pay, SEPA, Faster Payments, Wire Transfers, Open Banking, ACH | 150-20,000 euros | 4.5% or \$4.99 |
| Simplex | 130+ | 115+ | Apple Pay, Visa, Mastercard, SWIFT, SEPA | \$20,000 per day or \$50,000 per month | 0.1-5% |

Source: Bing Ventures

The fee rates of the major independent on and off-ramp projects are shown in the table below. It is worth noting that these projects often set limits on the amount of money users can deposit or withdraw due to their liquidity constraints.

Fee Rates of Major Centralized Exchanges (CEXes)

| Trading Platforms | On-Ramp Methods | Fee Rates |
|-------------------|-----------------|-----------|
| Binance | Bank Card | 3.50% |
| | C2C | Free |
| | Crypto | Free |
| Coinbase | Bank Transfer | Free |
| | Credit Card | 3.99% |
| | Debit Card | 1.49% |
| Kraken | Crypto | Free |
| | Bank Transfer | Free |
| | SWIFT Transfer | \$5-10 |
| Bitfinex | Bank Transfer | 0.10% |
| | Crypto | Free |
| OKX | Bank Transfer | 0.10% |
| | Crypto | Free |

Source: Bing Ventures

The fee rates of the major on and off-ramp aggregators are as follows, with actual rates depending on the payment method and the transaction amount.

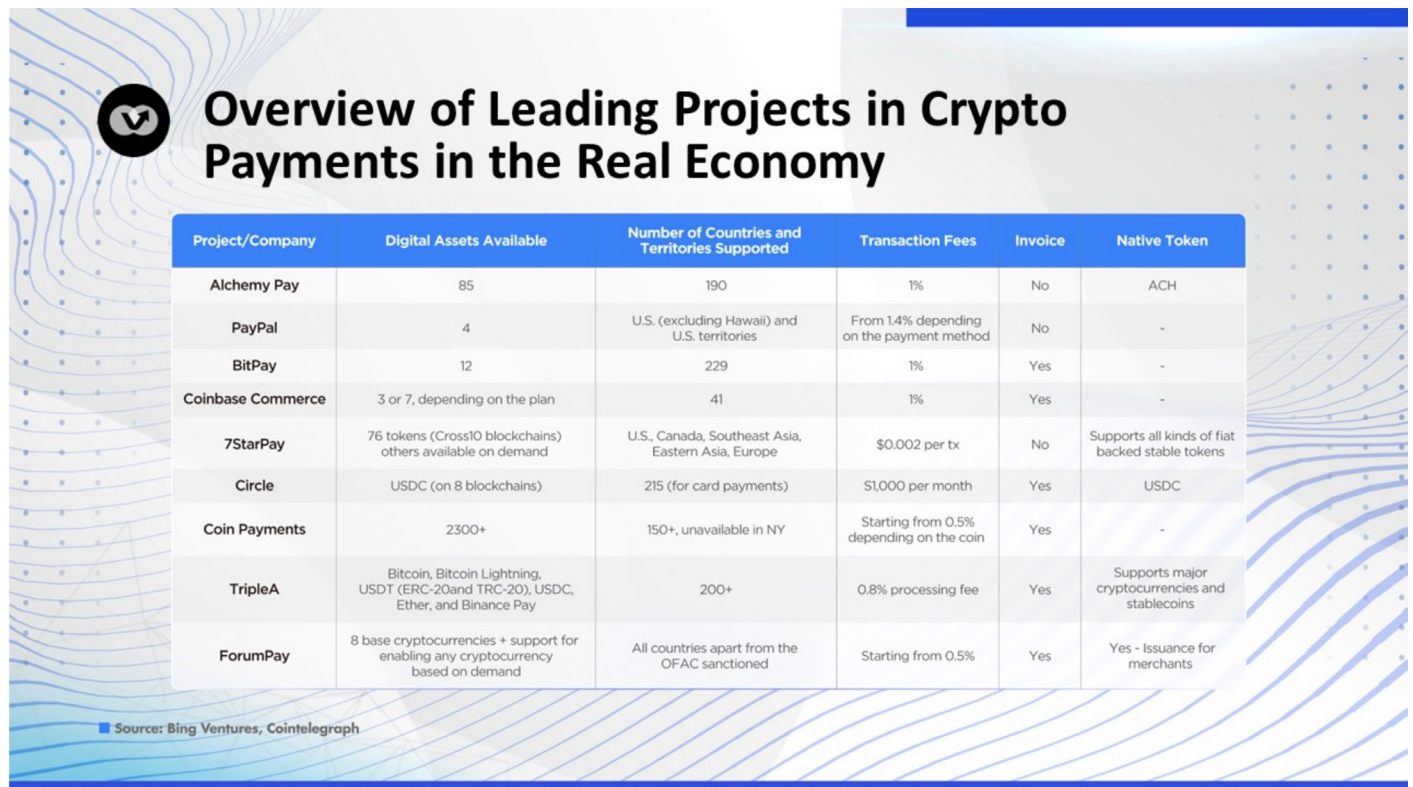
Fee Rates of Major Aggregators

| On-Ramp Aggregators | Supported Cryptocurrencies | Fee Rates |
|---------------------|---------------------------------|-----------|
| TransitSwap | BTC, ETH, USDT, DAI, BUSD, etc. | 0.5-1% |
| KyberSwap | BTC, ETH, USDT, USDC, DAI, etc. | 0.25-2% |
| MetaMask | ETH, DAI, USDC, USDT, etc. | 2.5% |

Source: Bing Ventures

Crypto Payments in the Real Economy

The table below shows the top projects that allow users to purchase products with cryptocurrencies in the real economy. Specifically, these top projects differentiate themselves in terms of the number of digital assets supported, number of markets covered, transaction fees, capability to issue invoices, native tokens, and other dimensions, essentially targeting the major pain points that users experience with traditional payments. Market players in the crypto payments sector are both competing and cooperating with those in the traditional payments sector, each striving to expand the border of their business. Whether the traditional players will be able to complete their Web3 transformation will be worth paying attention to.



Overview of Leading Projects in Crypto Payments in the Real Economy

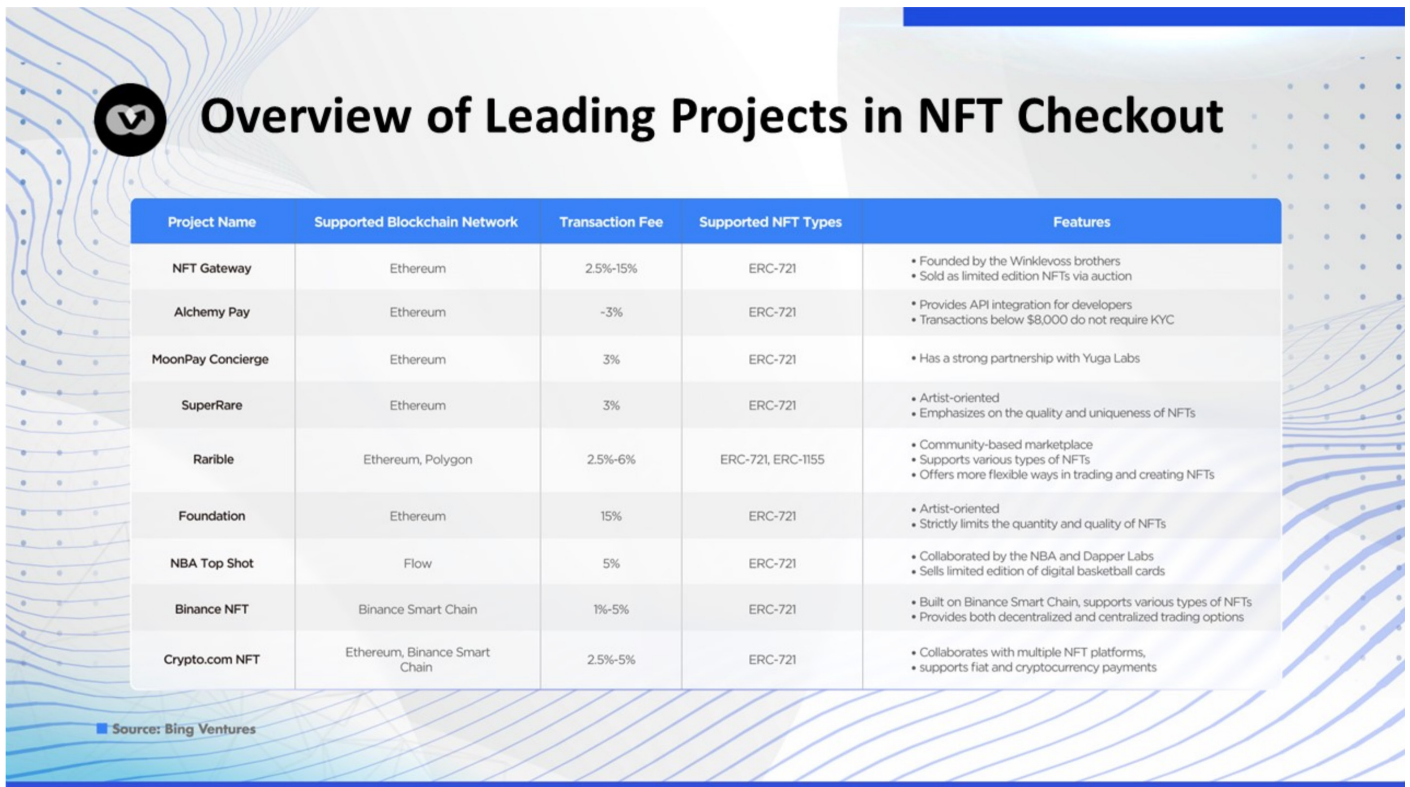
| Project/Company | Digital Assets Available | Number of Countries and Territories Supported | Transaction Fees | Invoice | Native Token |
|-------------------|--|--|---|---------|---|
| Alchemy Pay | 85 | 190 | 1% | No | ACH |
| PayPal | 4 | U.S. (excluding Hawaii) and U.S. territories | From 1.4% depending on the payment method | No | - |
| BitPay | 12 | 229 | 1% | Yes | - |
| Coinbase Commerce | 3 or 7, depending on the plan | 41 | 1% | Yes | - |
| 7StarPay | 76 tokens (Cross10 blockchains) others available on demand | U.S., Canada, Southeast Asia, Eastern Asia, Europe | \$0.002 per tx | No | Supports all kinds of fiat backed stable tokens |
| Circle | USDC (on 8 blockchains) | 215 (for card payments) | \$1,000 per month | Yes | USDC |
| Coin Payments | 2300+ | 150+, unavailable in NY | Starting from 0.5% depending on the coin | Yes | - |
| TripleA | Bitcoin, Bitcoin Lightning, USDT (ERC-20 and TRC-20), USDC, Ether, and Binance Pay | 200+ | 0.8% processing fee | Yes | Supports major cryptocurrencies and stablecoins |
| ForumPay | 8 base cryptocurrencies + support for enabling any cryptocurrency based on demand | All countries apart from the OFAC sanctioned | Starting from 0.5% | Yes | Yes - Issuance for merchants |

Source: Bing Ventures, Cointelegraph

— Emerging Blockchain-native Payments

NFT Checkout

NFT Checkout projects are mainly concentrated on a few leading Layer1 blockchains like Ethereum and tend to have close connections with specific NFT projects or trading platforms. At present, payment platforms such as MoonPay and Alchemy Pay have rolled out NFT Checkout services. The revenue of NFT Checkout services correlates to the popularity of the NFT market. For the time being, there is no significant sustainable revenue coming from these services.




Overview of Leading Projects in NFT Checkout

| Project Name | Supported Blockchain Network | Transaction Fee | Supported NFT Types | Features |
|-------------------|-------------------------------|-----------------|---------------------|---|
| NFT Gateway | Ethereum | 2.5%-15% | ERC-721 | <ul style="list-style-type: none"> • Founded by the Winklevoss brothers • Sold as limited edition NFTs via auction |
| Alchemy Pay | Ethereum | -3% | ERC-721 | <ul style="list-style-type: none"> • Provides API integration for developers • Transactions below \$8,000 do not require KYC |
| MoonPay Concierge | Ethereum | 3% | ERC-721 | <ul style="list-style-type: none"> • Has a strong partnership with Yuga Labs |
| SuperRare | Ethereum | 3% | ERC-721 | <ul style="list-style-type: none"> • Artist-oriented • Emphasizes on the quality and uniqueness of NFTs |
| Rarible | Ethereum, Polygon | 2.5%-6% | ERC-721, ERC-1155 | <ul style="list-style-type: none"> • Community-based marketplace • Supports various types of NFTs • Offers more flexible ways in trading and creating NFTs |
| Foundation | Ethereum | 15% | ERC-721 | <ul style="list-style-type: none"> • Artist-oriented • Strictly limits the quantity and quality of NFTs |
| NBA Top Shot | Flow | 5% | ERC-721 | <ul style="list-style-type: none"> • Collaborated by the NBA and Dapper Labs • Sells limited edition of digital basketball cards |
| Binance NFT | Binance Smart Chain | 1%-5% | ERC-721 | <ul style="list-style-type: none"> • Built on Binance Smart Chain, supports various types of NFTs • Provides both decentralized and centralized trading options |
| Crypto.com NFT | Ethereum, Binance Smart Chain | 2.5%-5% | ERC-721 | <ul style="list-style-type: none"> • Collaborates with multiple NFT platforms, • supports fiat and cryptocurrency payments |

Source: Bing Ventures

Money Streaming

Money streaming projects are also mainly concentrated on a few leading Layer1 projects such as Ethereum and Solana.



Overview of Leading Projects in Money Streaming

| Project | Blockchain | Payment Mode | Token Compatibility | Target Market | Status | TVL/GMV | Stream/User |
|-------------------|---|--------------|-----------------------|---|--------|--------------------|-------------|
| Sablier | Ethereum, Optimism, Arbitrum, Polygon, Ronin, Avalanche, BSC | Streaming | ERC-20 and equivalent | Automate payment | Live | 5.08M (TVL) | / |
| Superfluid | Ethereum, Gnosis Chain, Polygon, Optimism, Arbitrum, Avalanche, BSC | Streaming | ERC-20 & ERC-777 | Payroll, Subscription, Investment, Treasury | Live | 1.48M (TVL) | / |
| Roketo | NEAR | Streaming | NEP-141 | Treasury, Payroll, Token vesting | Live | 40K (TVL) 2M (GMV) | 50K+ |
| Zebec | Solana | Streaming | SPL | Treasury, Payroll, Auto on-chain investment | Live | 130M (GML) | 100K+ |
| Streamflow | Solana | Streaming | SPL | Token vesting | Beta | - | - |
| MeanFi | Solana | Streaming | SPL | Treasury, Token vesting, Payroll | Live | - | - |
| Calamus | BSC, Polygon, Tron, Evmos | Streaming | Muti | Payroll, Token vesting, Multisig | Live | - | - |
| LlamaPay | All EVM chains | Streaming | ERC-20 and equivalent | Payroll, Token vesting, Auto payment | Live | 2.83M (TVL) | / |

Source: Bing Ventures

— Regulatory Compliance

United States

At the federal level, the U.S. Bank Secrecy Act requires all money services businesses to obtain a Money Services Business (MSB) license, and a Money Services Business is defined as a business or individuals that provide money transfer or exchange services, including money transfers, prepaid card issuance, money orders, etc. The business model of a crypto payment company fits into the category.

Applying for an MSB license requires compliance with U.S. federal anti-money laundering regulations, including KYC and AML requirements, to ensure that companies are not used for illegal activities. Applicants are required to fill out an application form and pay the relevant fees. MSB licenses apply to all states, and no deposit is required. After registering a local U.S. company and applying for a tax ID, an MSB license application can be submitted to the Financial Crimes Enforcement Network (FinCEN).

At the same time, crypto payment companies must also obtain "money transmitter" status through Money Transmitter Laws (MTL) filings in each state in which they operate. MTL requirements vary from state to state. Usually, a company needs to apply for an MSB filing first, and then apply for an MTL license in each state.

It takes approximately two years and millions of dollars in attorney consulting fees to obtain MSB and MTL licenses in the 47 states in the United States. Therefore, the licenses that have been obtained so far will be the core barriers for companies to operate their business in the U.S. in the short term.

Canada

Similar to the U.S., crypto payment companies will need to apply to the Financial Transactions and Reports Analysis Centre of Canada (FINTRAC) for a Canadian MSB license to conduct business in Canada. When applying, FINTRAC will review the applicant's identity, business models, anti-money laundering measures and KYC requirements.

United Kingdom and European Union

Crypto payment companies need to obtain an E-Money Institution (EMI) license from the UK Financial Conduct Authority (FCA) to conduct business in the UK. The full license for e-money is not restricted to either time or area of activities. Therefore, a holder of the e-money institution license in the United Kingdom is allowed to provide any form of service in the European Economic Area (EEA) without having to undergo a licensing procedure in any other member state. After the license in the United Kingdom is obtained, the e-money institution can provide services in other EEA member states by either establishing branches or by means of pass porting (license to provide services with further authorization by any other European state).

Hong Kong

Crypto payments companies need to apply for a Hong Kong Monetary Service Operator (MSO) license from the Hong Kong Customs and Excise Department to conduct business in Hong Kong. The Hong Kong Customs and Excise Department is the authority that regulates Monetary Service Operators in Hong Kong. Any company operating a crypto business must apply for a license from the Commissioner of Customs and Excise.

However, the current regulatory framework for crypto payments in Hong Kong is still vague. Cryptocurrencies are not considered legal tender in Hong Kong. And crypto assets such as NFTs are both not included in the scope of MSO and not directly regulated by the law.

Singapore

Crypto payments companies need to apply for a Digital Payment Token (DPT) license from the Monetary Authority of Singapore (MAS) to conduct business in Singapore. The DPT license applies to companies that engage in digital payment token services, including providing accounts and wallets, buying, selling and exchanging digital payment tokens, as well as trading digital payment tokens (such as cryptocurrencies) and cross-border remittances and transfers.

PROSPECTS

— On and Off-Ramp

How well on and off-ramps do depends on the demand and popularity of cryptocurrencies. If the demand and popularity grow, the business volume of crypto on and off-ramps will grow with it. However, regulatory developments will directly affect the legality, security, and reliability of cryptocurrency transactions, which will in turn affect the soundness of the on and off-ramp business.

As far as competition within the subsector is concerned, the ability to intercept traffic is the key to competing for business.

— Off-chain Crypto Payments in the Real Economy

Currently, the main problem facing off-chain crypto payments is the low acceptance of cryptocurrencies by consumers and merchants.

From the perspective of usability, residents in regions such as North America and Europe have been used to using the mature electronic payment tools there such as Paypal and Venmo, and have less willingness to switch to crypto payment methods. Meanwhile, governments and regulators in developed countries have relatively stricter regulatory policies for new payment methods, and crypto payments need to comply with more regulations and rules. By contrast, most of the mature electronic payment companies have already obtained the corresponding licenses and have more experience in compliance.

On the other hand, electronic payments are relatively new in developing countries with traditional payment methods still being dominant. The advantages of crypto payments, such as convenience, low cost, and universality, should be more significant there, which will be conducive for crypto payments to see accelerated adoption in these markets. At the same time, crypto payments can break through the limitations of traditional payment methods in cross-border payments and virtual goods payments, facilitating the development of cross-border trade and digital economy in developing countries. In addition, there are a large number of "digital natives" in developing countries, who are more comfortable with new digital payment methods and therefore more receptive to crypto payments.



Population, Economic Size, and Cryptocurrency Penetration Rate of Major Developing Markets

| | Total Population (mn) | % Crypto Owners | 2021GDP (USDbn) |
|-------------|-----------------------|-----------------|-----------------|
| Philippines | 110 | 6% | 392 |
| Indonesia | 271 | 5% | 1,186 |
| Vietnam | 98 | 19% | 350 |
| Russia | 146 | 10% | 1,779 |
| Thailand | 66 | 6% | 519 |
| Malaysia | 33 | 3% | 36 |
| Singapore | 5 | 11% | 397 |
| Mexico | 128 | 3% | 1,273 |
| Brazil | 215 | 8% | 1,609 |
| Argentina | 47 | 6% | 487 |

Source: Bing Ventures

— Emerging Blockchain-native Payments

NFT Checkout

The popularity of the NFT Checkout products depends on the speed that NFTs are penetrating the mainstream market. Most of the users using NFT Checkout are new entrants to the NFT market, with a majority of retail users. They are often not familiar with the underlying blockchain technology, and tend to use NFT Checkout as a one-stop solution to avoid the burden of handling relatively difficult-to-use wallets and on and off-ramps. In return, they are willing to pay higher fees.

Money Streaming

Streaming payments enable Real-time Financing, which can have a disruptive impact on traditional payments, e-commerce and even financial and business management operations. Currently, money streaming is mainly applied to some time-based service scenarios, such as online education, games, fitness, etc. It may be applied to more scenarios in the future, such as logistics, social networks, etc. Meanwhile, most current money-streaming services only support a few digital currencies. More digital currencies may be supported in the future to meet the needs of users.

However, as an emerging technology, the reliability of money streaming still needs to be improved. As a means of payment, it must first enable trust between the two parties of the transaction. Without this ground, other features such as usability will be meaningless.

Superfluid's experience was a good lesson. The project was hacked on February 8, 2022, where the attackers stole over \$13 million worth of tokens. The key reason the attackers were able to succeed was a serious logic flaw in a function in the project's contract. The project's less rigorous parameter checks allowed the attacker to replace the data in the contract construct with custom data, providing an opportunity for the attacker to attack. After the incident, the project TVL decreased by nearly 50% and has not yet returned to its previous highs.

OVERVIEW AND COMPARISON OF LEADING PROJECTS



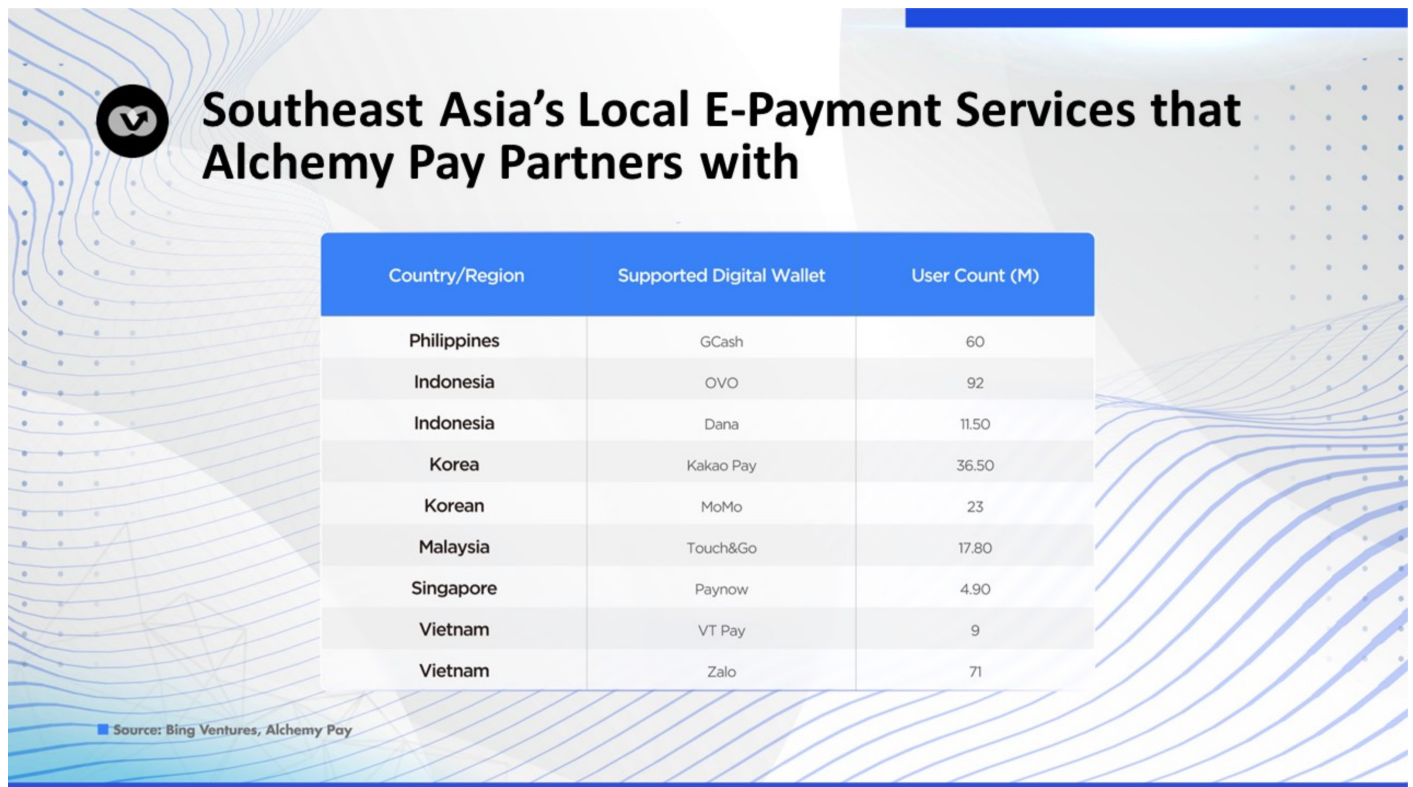
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ALCHEMY PAY

— History

Founded in 2017, Alchemy Pay operates in the business of fiat-crypto on and off-ramp and crypto payment solutions. It is headquartered in Singapore.

Alchemy Pay has a strong presence in regions with high potential for crypto payment demand, such as Southeast Asia and Latin America, and has a high penetration rate in emerging markets. Currently, Alchemy Pay has partnered with several local e-payment business service providers in emerging markets in Southeast Asia.



— Products

Alchemy Pay currently operates business in three main categories:

On and Off-Ramp

Alchemy Pay has supported over 300 international and local online payment channels to provide users with multiple channels to complete fiat-crypto on and off-ramp. The service currently covers 173 countries and supports over 50 fiat currencies and the majority of cryptocurrencies. As of February 2023, it has over 2 million registered user accounts.

International and Local Online Payment Channels Supported by Alchemy Pay

Source: Alchemy Pay

Its on and off-ramp products are simple to use, and the user experience is smooth and can be completed in just a few steps.

User Flow for Using Alchemy Pay's On-Ramp Product

Source: Alchemy Pay

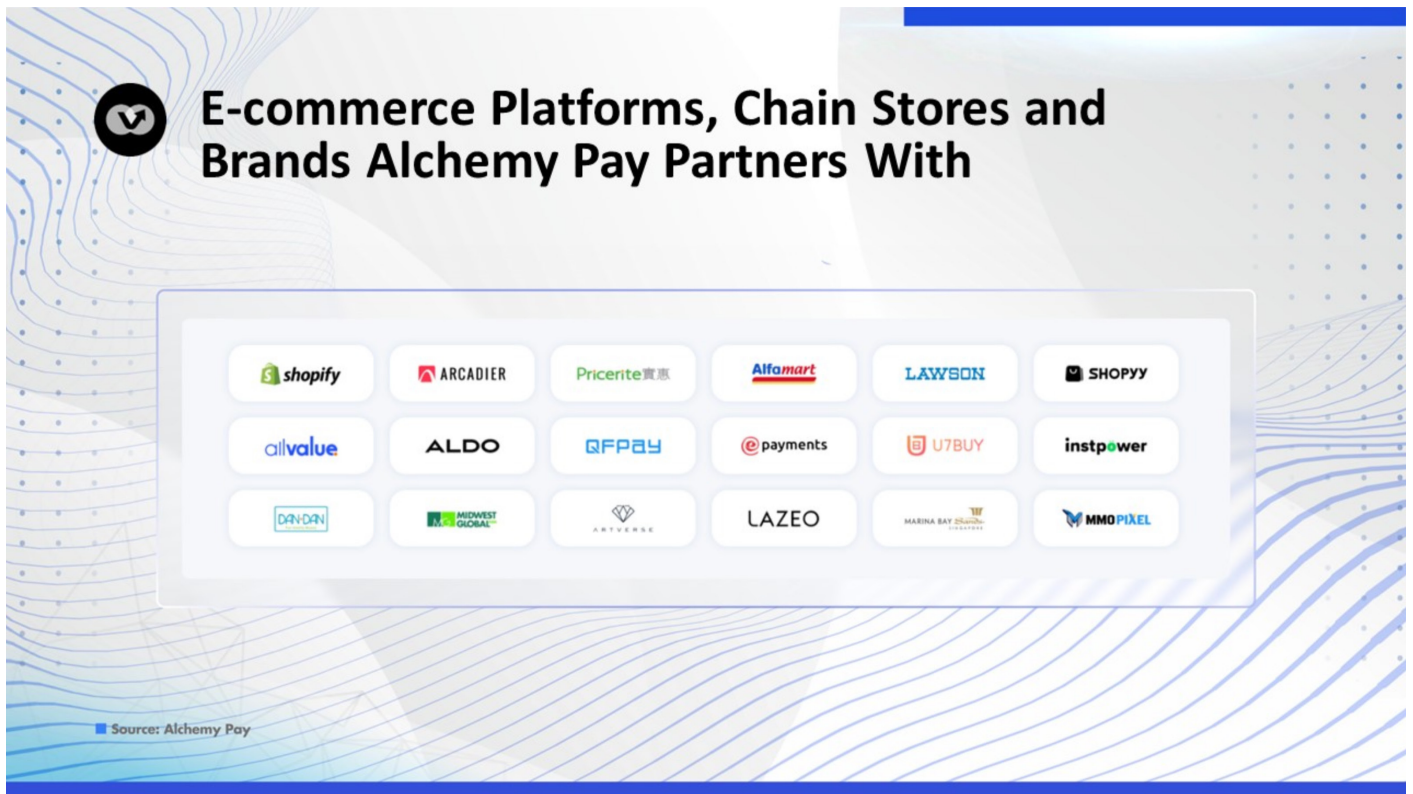
Crypto Payments

Alchemy Pay proposes a real-time hybrid crypto-fiat gateway solution that allows users to exchange and settle cryptocurrency and fiat currency in real time within the system. Users on the payment side can choose to use cryptocurrency or fiat currency as a means of payment, while those on the receiving side can choose to receive cryptocurrency or fiat currency for collection.

This crypto payment product provides merchants with a gateway that enables them to accept crypto payments via a payment code. At the same time, Alchemy Pay also offers a customized cryptocurrency collection service for large enterprises.



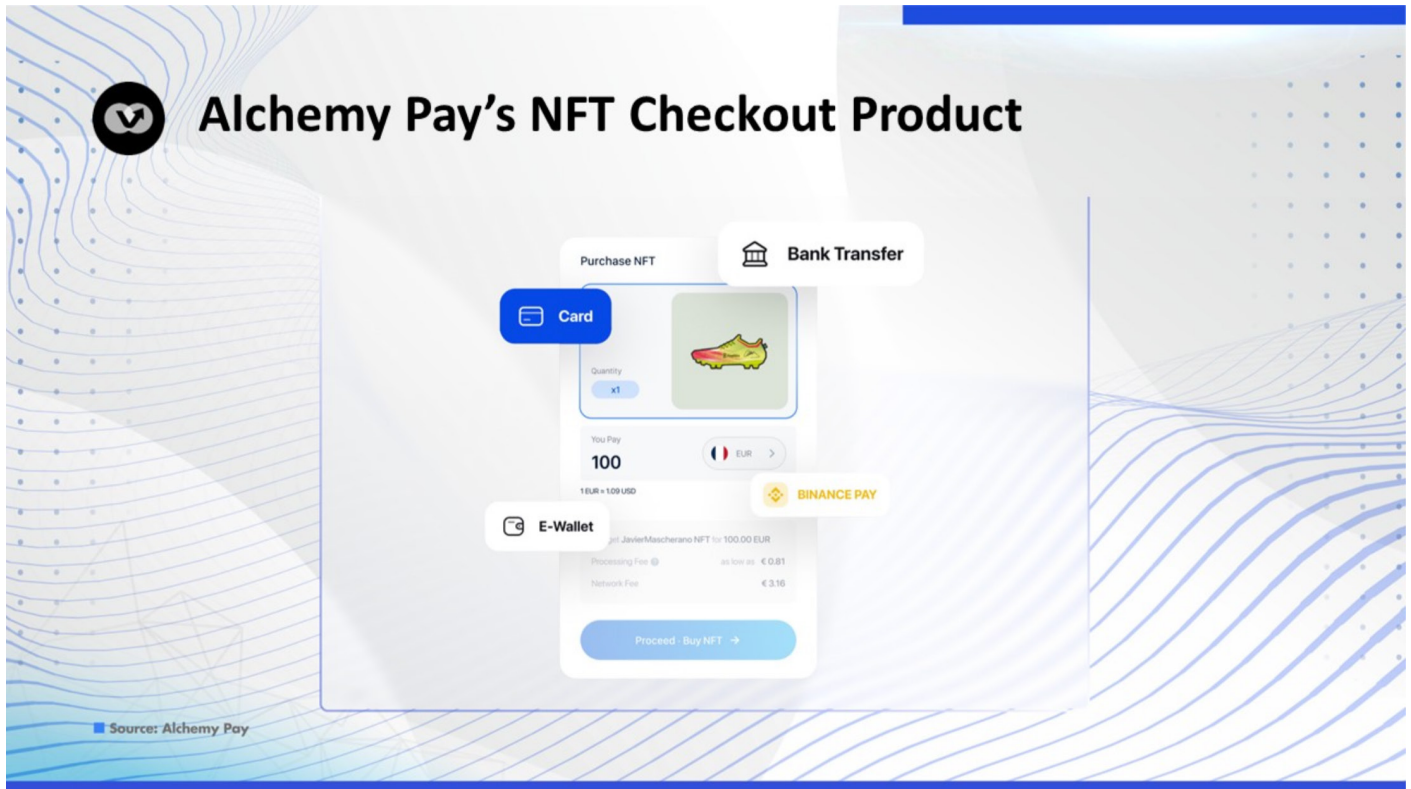
Currently, the company has partnered with the following e-commerce platforms, chain stores and brands.



In addition to being a payment gateway, Alchemy Pay also provides SDKs and API solutions for other business scenarios such as e-commerce websites, wallet vendors, game developers, etc., enabling customized transfer notifications, price inquiries, order status updates and other functions.

NFT Checkout

Alchemy Pay's NFT Checkout products enable users to buy and sell NFTs directly using mainstream payment methods such as Visa, MasterCard, Apple Pay and Google Pay, simplifying the process of purchasing NFTs. Currently, its NFT Checkout products charge around 3% of the purchase price.



— Regulatory compliance

The crypto-payment-related licenses that the company has currently obtained around the world include:

- United States: MSB license (Money Service Business)
- Canada: MSB license (Money Service Business)
- Indonesia: BI license (Bank Indonesia-Fund Transfer Operator)
- Lithuania: Virtual currency wallet, exchange license (Virtual Currency Service)
- Hong Kong: Financial Service Licenses Type 1, 4 and 9 (for securities trading, advisory and asset management) shared with ZD Group

The crypto payment licenses the company is currently applying include:

- US: MTL license (Money Transmitter License)
- UK: EMI license (Electronic Money Institution)
- Hong Kong: MSO license (Money Service Operator)
- Singapore: DPT license (Digital Payment Token Services)

— Team members

The company has a core team of around 80 members, with the management team having more than 10 years of business experience in their respective fields and the core technical team members having CTO experience in major payment companies.

It is worth mentioning that at the end of 2022, Alchemy Pay launched a committee-based advisory board management system, inviting experts from various fields around the world to take charge of different departments, such as compliance, product, security and so on. David Plouffe, the former White House Senior Advisor and Obama's campaign manager, has recently joined the Alchemy Pay team, serving as Global Strategic Advisor to support strategy, compliance and government relations. The Alchemy Pay Management Advisory Board also includes Ethan Wang, founding member of Facebook Libra, Andy Ng, former senior VP of Lazada, Qatar 2022 FIFA World Cup ambassador Javier Mascherano and others.

MOONPAY

— History

MoonPay was founded in 2018 and is based in Miami, Florida. It was founded to operate mainly in the fiat-crypto on and off-ramp business and began a large-scale NFT services business in 2021 when the NFT market took off, offering custody services, NFT Checkout, and NFT issuance services. As of February 2023, the company has raised \$648 million in funding and is valued at \$3.4 billion, with investors including Tiger Global, Coatue, Paradigm and a number of celebrities such as Justin Bieber.

MoonPay does not plan to issue tokens and is aiming for an IPO.

— Products

MoonPay currently operates business in three main categories:

On and Off-Ramp

MoonPay is currently a leading platform for crypto payments with over 5 million registered users. MoonPay services enable users to purchase cryptocurrencies directly using funds from their credit cards.

In terms of presence, MoonPay supports crypto payments in over 160 countries and regions and supports the exchange of over 80 cryptocurrencies and over 30 fiat currencies.

In terms of payment means, MoonPay currently supports payments via credit and debit cards (Visa and MasterCard), mobile payments (Apple Pay and Google Pay and Samsung Pay), account-to-account payments (ACH transfers, wire transfers, open banking, etc.) and other channels.

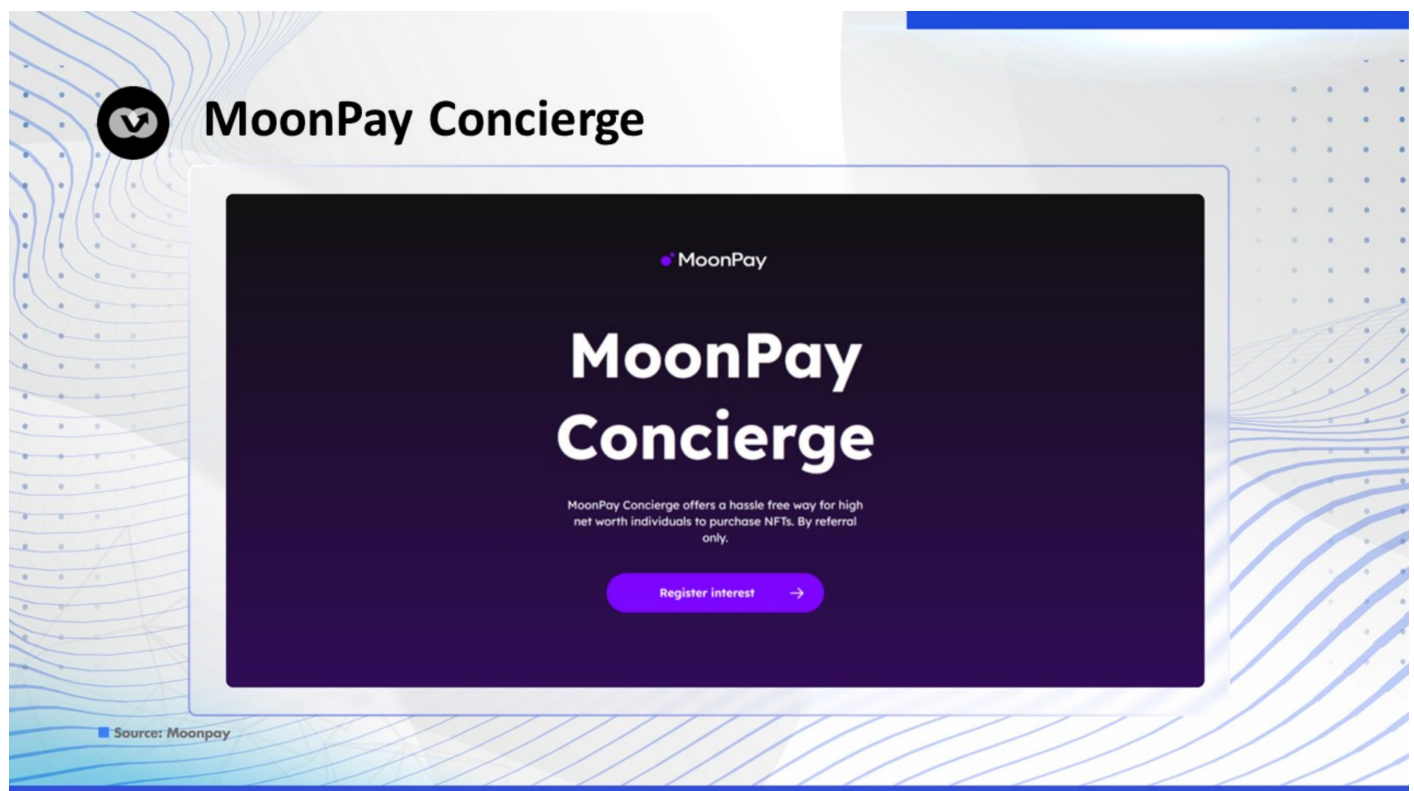
In terms of liquidity supplies, MoonPay receives liquidity support from large funding providers such as Coinbase, Binance, Bittrex, Bitstamp, OKX, Kucoin and Bequan.

In terms of handling fees, MoonPay currently charges a 4.5% fee rate for on-ramping via credit card payments and a 1% fee rate for deposits via direct bank transfers. For crypto off-ramping, MoonPay charges a 1% commission. However, MoonPay charges a minimum fee of \$3.99/£/€, so it is not friendly to users with small-amount and frequent fiat-crypto on and off-ramp needs.

MoonPay Concierge

MoonPay Concierge was launched in November 2021. It works like an NFT Market Maker, where MoonPay buys blue chip NFTs such as BAYC and CryptoPunk with its own MoonPay HQ wallet address and then sells them to celebrities such as Justin Bieber, Jimmy Fallon, Madonna, etc., for a fee. For these celebrities, MoonPay Concierge acts like a private bank that provides a "white glove" service for their NFT needs.

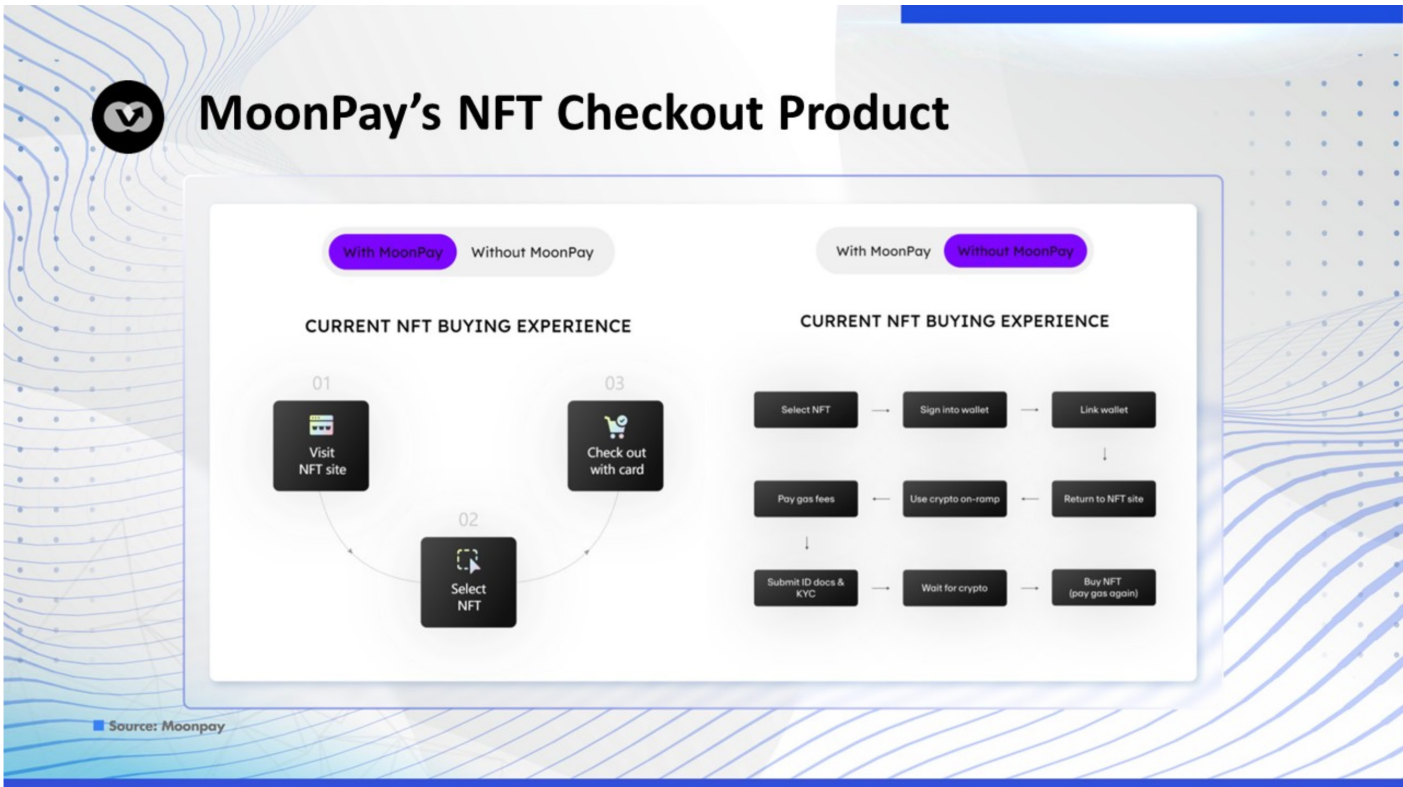
Currently, MoonPay Concierge is only available to a small number of high-net-worth clients and very little information is publicly available.



It is worth noting that there appears to be some sort of partnership between Yuga Labs and MoonPay, where MoonPay Concierge helps to promote BAYC to celebrities and MoonPay gains consumer awareness in return. It seems MoonPay has invested a portion of its fundraised or company revenue into the purchase of NFTs. Today MoonPay HQ accounts still hold many large-amount NFTs like BAYC, World of Women, Otherland, Moonbirds and others.

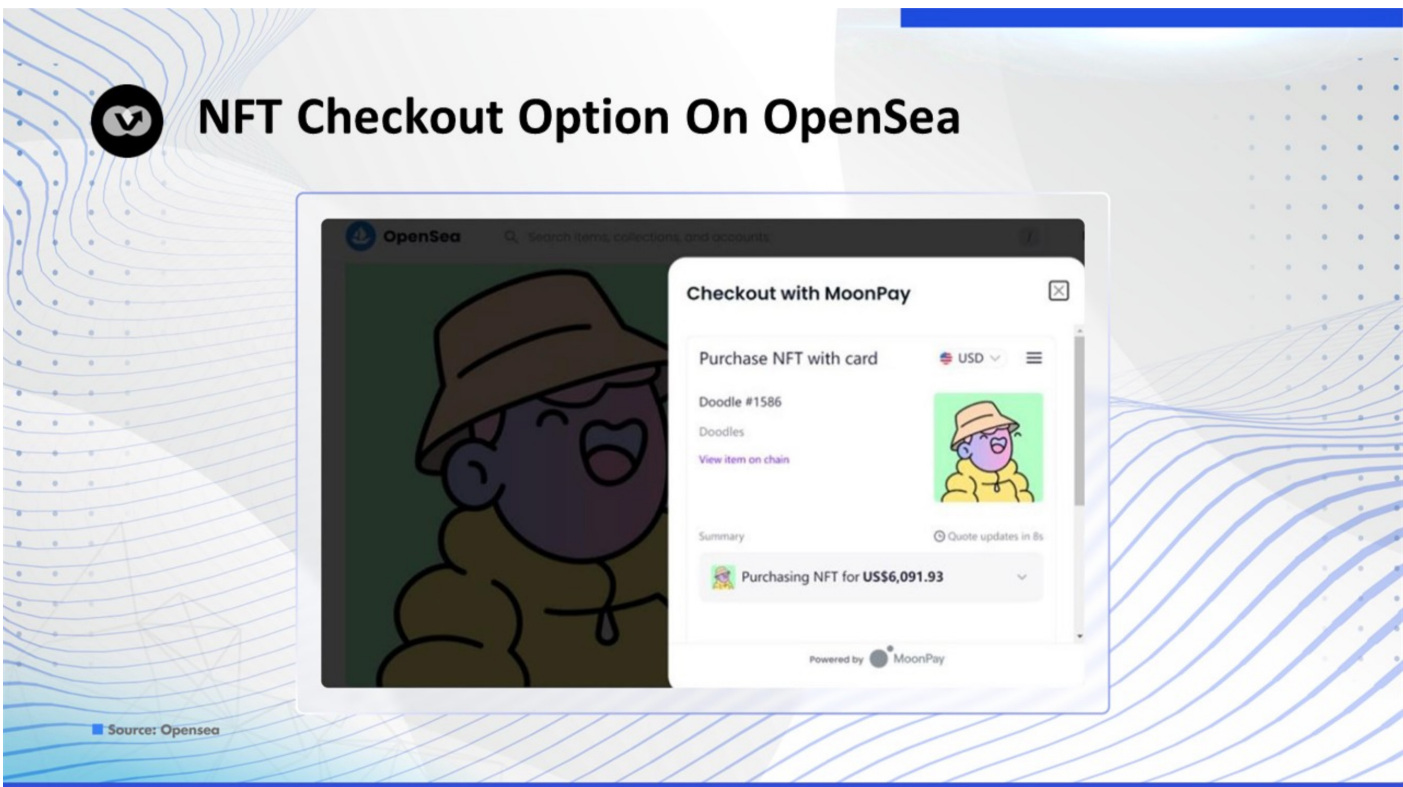
NFT Checkout

MoonPay's NFT Checkout was launched in January 2022 and allows users to purchase NFT directly with fiat currencies.



Currently, MoonPay Checkout charges a fee rate of 3.5% (minimum \$3.99).

MoonPay NFT Checkout works closely with NFT exchanges such as Opensea and Immutable X. On the Opensea platform, when a user clicks on the NFT price, the MoonPay Checkout interface pops up first, directing the user to use fiat funds to purchase NFT directly.



— Regulatory compliance

Currently, MoonPay has acquired the following licenses:

- US MSB license (Money Service Business)
- US MTL License (Money Transmitter License)
- UK EMI license (Electronic Money Institution)
- Provisional Registration License for Payment Services issued by the Monetary Authority of Singapore

— Team members

Currently, MoonPay employs around 300 people, with the majority of the core management team having spent some time at HODL.vc, a venture capital and incubation house in London.

— Core management members

Co-founder and CEO Ivan Soto-Wright: Serial entrepreneur in the FinTech space, founded Saveable before founding MoonPay, with a subsidiary mobile-based cryptocurrency exchange APOLLO and automated savings product OINKY, which was acquired by AI financial assistant Plum in 2018. He is also one of the most important key opinion leaders (KOL) within the BAYC and NFT spaces and regularly interacts with his followers on social platforms.

Co-founder and CTO Victor Faramond: previously worked at Apple and French SaaS startup Skello.

Zeeshan Feroz, Chief Growth Officer: former CEO of Coinbase UK, who headed up Coinbase's business across the UK and European markets.

James Freis, Regulatory and Anti-Money Laundering Advisor: Director of FinCEN, the US Financial Crimes Enforcement Network.

MOONPAY PAY VS. ALCHEMY PAY

Currently, MoonPay and Alchemy Pay are the leading players in the crypto payments space, both operating fiat-crypto on and off-ramp and NFT Checkout services, but with different focuses:

- In terms of on and off-ramp, MoonPay focuses more on establishing connections with large projects (e.g. centralized exchanges and wallets) to capture user traffic by setting up traffic portals on these platforms, while Alchemy Pay focuses more on expanding local payment channels and improving its own product experience.
- In terms of NFT services, MoonPay has deeper cooperation with old blue-chip PFP projects such as BAYC and Crypto Punk, while Alchemy Pay has a close relationship with later-emerging projects such as StepN.
- In terms of geographic strategy, MoonPay started in Europe where its founding team is most familiar, and then expanded into North America. MoonPay is now one of the few companies that is licensed and compliant in all US states through the MTL license. Alchemy Pay started in Singapore and has been focused on expanding its business in developing markets in Southeast Asia and South America. But globally, their regional presence and number of digital assets supported are not much different.
- Currently, MoonPay's focus is on NFT services. In addition to its current NFT Concierge and NFT Checkout businesses, the company has also launched NFT Hypermint, which provides a platform for NFT creators to simplify the NFT issuance process.
- Alchemy Pay focuses more on on and off-ramps, actively embracing compliance, expanding local payment channels, exploring business in developing countries and focusing on optimizing products for improved user experience.
- In terms of market reaction, MoonPay is currently valued at US\$3.4 billion and has 5 million users, while Alchemy Pay tokens are worth around US\$170 million and have 2 million users. But both the equity valuation and token market value may not reflect the intrinsic value of the two companies. Further measurement is needed to verify if they are over or under-valued.

CONCLUSION

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In conclusion, the crypto payments industry is still in the growth stage. Even though crypto payments are being integrated into the fiat financial system at an accelerated pace for their high payment efficiency and convenience, and are gradually penetrating payment scenarios like offline retail, service subscription and regular transaction, and there are already relatively large and well-known projects within the industry, the size of crypto payments is still very small compared to the global payments market as a whole, with a penetration rate of only 1~2%. This represents both a challenge and an opportunity for the crypto payments industry and the projects involved in it.

To win out and succeed, crypto payments projects need to not only innovate their technologies while ensuring the reliability of their platforms but also strategically expand their business to create network effects.

New payment scenarios enabled by technological innovations such as money streaming should create new growth engines for the industry. In addition, although there have emerged some modular products for merchants in areas like financial management, reconciliation and merchant entry, there are still many opportunities to be tapped up and downstream in the value chain of the crypto payments industry. Therefore, an important future direction will be for market players to link the up and downstream sectors to offer a more seamless user experience.

Compliance and merchant networks will be the key factors determining the competitive landscape as crypto payments become more and more popular. Such a dual-factor competitive pattern will mean no single market play could easily dominate the market. Geologically, developing countries and regions like Southeast Asia and South America will have more growth potential than developed markets, but relatively low levels of e-commerce development may become hurdles for business expansion.



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