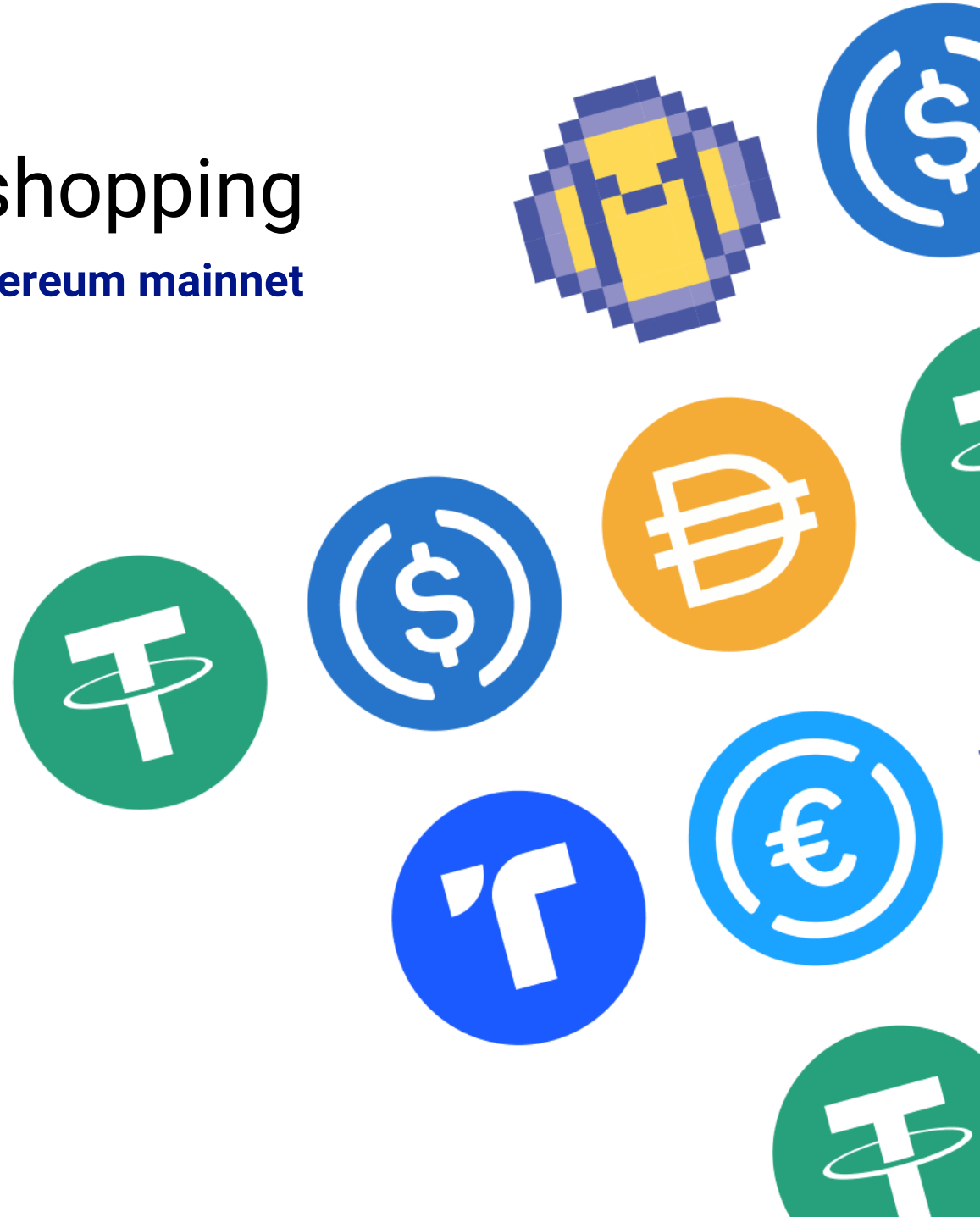
Report: Stablecoins in crypto-shopping

The importance of stablecoins and alternatives to Ethereum mainnet in driving consumer purchases with cryptocurrencies



April, 2024

M. Silenzi, Ph.D. and U.C. Çabuk, Ph.D

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Introduction

The conceptual foundation of cryptocurrencies was laid out in 2008 by an individual or group under the pseudonym “Satoshi Nakamoto”. In the groundbreaking whitepaper titled "Bitcoin: A Peer-to-Peer Electronic Cash System," Bitcoin was introduced as a decentralized digital currency designed to enable direct transactions between parties without needing a trusted third party, such as a bank or a financial institution. This innovative approach promised a revolution in the financial world by offering a new way of conducting transactions, emphasizing peer-to-peer transactions, anonymity, low transaction fees, and removing intermediaries[1].

However, the journey from theory to practice revealed several challenges and evolving perceptions of Bitcoin. Initially envisioned as a medium of exchange, Bitcoin's volatility, scalability issues, and the slow processing time of transactions have led to its increasing perception as a digital commodity or asset class akin to gold. This view of Bitcoin as a digital "gold" has been reinforced by its deflationary nature, capped supply, and independence from traditional financial systems, making it an attractive option for investors looking for an innovative hedge against inflation. This shift is largely attributed to its store of value characteristics, which overshadow its current practicality as a medium of exchange in everyday transactions[2].

Volatility, in particular, has been a critical barrier to the adoption of Bitcoin (or any cryptocurrency not pegged to a major fiat currency) as a unit of account and currency for daily transactions. The rapid and significant price fluctuations discourage both retailers and consumers from using Bitcoin and any volatile crypto as a payment method, fearing potential losses[3]. Interestingly, this resonates with a finding in the study we published in December, where we registered a slightly negative correlation between expertise in Bitcoin and the propensity to shop with cryptocurrency[4].

A key innovation in the cryptocurrency industry has been the introduction of stablecoins, a type of cryptocurrency designed to maintain a stable value as opposed to the significant price volatility seen in other cryptocurrencies like Bitcoin and Ethereum. This stability is typically achieved by pegging the stablecoin to a reserve asset, such as the US dollar. However, besides volatility, also scalability is a very important topic to be considered when analyzing the use of cryptocurrencies as a payment method for shopping. With respect to Bitcoin, the scalability issue, highlighted by the limited number of transactions that can be processed per second, has led to increased transaction fees and delays, further deterring its use for small or medium-sized transactions[5]. To a lesser extent, scalability, processing fees and time, have also been an issue for Eth and stablecoin transactions made directly over the Ethereum network. Our yearly market reports have shown that transaction fees and time are perceived as major issues by Crypto-shoppers. In 2023, fees and speed rank respectively first (35.5%) and sixth (16%) in terms of issues faced by consumers. There are different solutions to scale Bitcoin payments (via the Lightning Network) and stablecoin payments using Ethereum Layer 2 networks and sidechains (like Arbitrum or Optimism), as well as via alternative Layer 1 networks such as Solana, Tron or Avalanche, and as we will see in this study these solutions play a critical role in the adoption of stablecoin payments.

Maybe in the distant future, all goods, services, and assets will be priced in Bitcoin, making it also the unit of account and, via Lightning, the main medium of exchange, maybe even a global legal tender. However, besides not being authorized to give any financial advice, this type of prediction is way beyond our skills and competence. Instead, in this study, we focus on the present and near future; we analyze the practical needs of crypto adoption for buying goods and services. We feel confident to say that today there is a very strong demand by Crypto-shoppers for stablecoin payments, and in this special report, we analyze such demand in relation to the intention to purchase, shopping frequency, and in terms of currency and technology preferences.

Massimiliano Silenzi – CEO of Cryptorefills

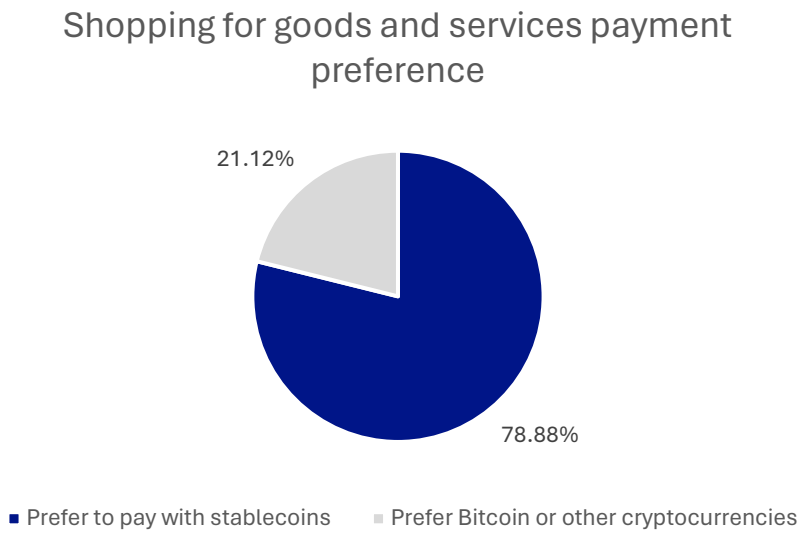
References
1. Nakamoto, S. (2008). Bitcoin: A Peer-to-Peer Electronic Cash System.
2. Glaser, F., Zimmermann, K., Haferkorn, M., Weber, M. C., & Siering, M. (2014). Bitcoin - Asset or Currency? Revealing Users' Hidden Intentions.
3. Yermack, D. (2015). Is Bitcoin a Real Currency? An Economic Appraisal.
4. Silenzi, M., Çabuk, U., C., (Dec 2023). Deciphering the Crypto-shopper: Knowledge and Preferences of Consumers Using Cryptocurrencies for Purchases. Cryptorefills Labs
5. Böhme, R., Christin, N., Edelman, B., & Moore, T. (2015). Bitcoin: Economics, Technology, and Governance.
6. Silenzi, M., Çabuk, U., C., (Nov 2023). Cryptocurrencies in Commerce: Consumer Adoption Report 2023. Cryptorefills Labs.

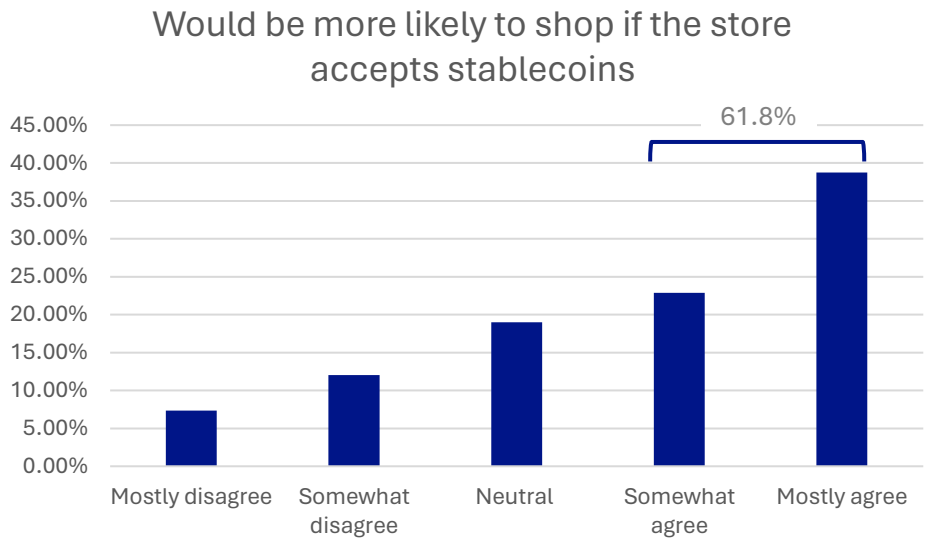
Summary of key findings

- Almost 80% of Crypto-shoppers prefer to pay for goods and services with stablecoins over Bitcoin, Eth and other cryptocurrencies
- 62% of consumers shopping with cryptocurrencies would be more likely to shop if the store accepts stablecoins
- Shoppers that prefer stablecoins shop slightly more often (small but statistically significant correlation)
- 38% of Crypto-shoppers believe that Bitcoin and other cryptos like ETH or LTC should not be spent as they will rise in value in the future
- Tether (USDT) and USD Coin (USDC) dominate in terms of preferred stablecoins with no other stablecoin coming close in terms of preference.
- 64% Crypto-shoppers have used an L2, sidechain or alternative L1 network at least once.
- 86% of stablecoin payments are made on Eth L2s, sidechains or alternative L1s. However, there is great fragmentation of shopping transactions across these different networks.

Crypto-shopper preference for stablecoin payments

Almost 80% of Crypto-shoppers prefer to pay for goods and services with stablecoins over Bitcoin, Eth and other cryptocurrencies





Almost four out of five consumers who have made at least one purchase using cryptocurrency express a preference for using stablecoins such as Tether (USDT) or USD Coin (USDC) instead of other coins such as Bitcoin or Eth when paying for goods or services. This data point from our Q3 2023 survey aligns with Cryptorefills transaction data for the same period. In Q4 2024, we have registered slightly higher "non-stablecoin" transactions (Mainly BTC, ETH)[1]. Our assessment is that market dynamics, such as a sudden increase in Bitcoin and other crypto prices, can create an opportunity to spend such cryptos. Likewise, during sudden drops, the same users may take refuge in using stablecoins. We see the base case of a large majority, 65% to 85%, depending on the market conditions of Crypto-shoppers preferring stablecoins for everyday payments, which is still the case today.

Furthermore, almost two out of three crypto-shoppers claim they would be more likely to make a purchase if a store accepts stablecoins. While there can be discussions around the long-term value of the fiat currencies to which stablecoins are pegged, from a crypto-accepting merchant perspective, stablecoins are a fundamental need of crypto-paying users.

Source
1. Cryptorefills internal transaction data.

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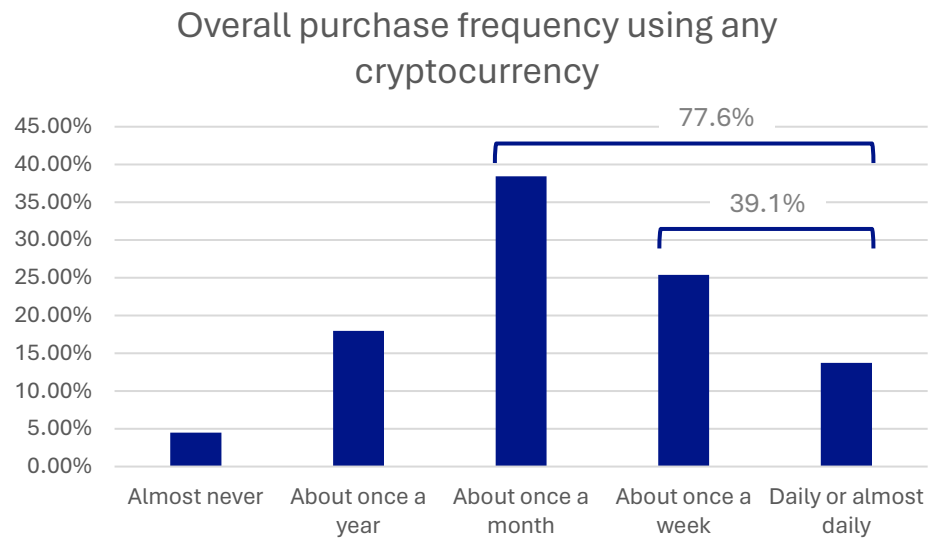
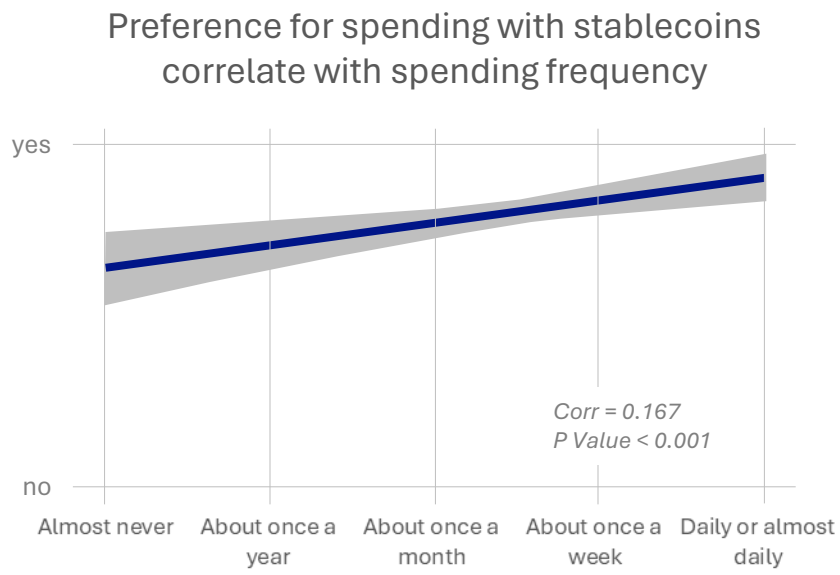
Purchase frequency vs stablecoin preference

Almost 40% of crypto-shopping is done at least weekly if not more often. Shoppers that prefer stablecoins shop slightly more often.





Data from our yearly report[1] reveals that almost four out of five Crypto-shoppers use crypto for their purchases at least once a month, two out of five use crypto about once a month and 14% use their crypto for shopping daily or almost daily. We investigated to see if we could find a correlation between a preference to shop using stablecoins and the frequency of paying goods and services with crypto. Our analysis yielded a low yet statistically significant (P value < 0.00001) positive correlation of 0.167.

While we have charted this data in a linear format, it is important to note the huge difference in number of transactions within these spending frequency categories. Just as an example, a consumer spending with crypto daily makes 7X more transactions than one spending once a week, 30X more transactions than one spending once a month. Therefore, even if the correlation is low, and correlation doesn't necessarily mean causation, we tend to agree that the acceptance of stablecoins can be extremely significant in terms of purchase frequency, repeat purchases and store loyalty.

Source:
1. Silenzi, M., Çabuk, U., C., (Nov 2023). Cryptocurrencies in Commerce: Consumer Adoption Report 2023. Cryptorefills Labs.

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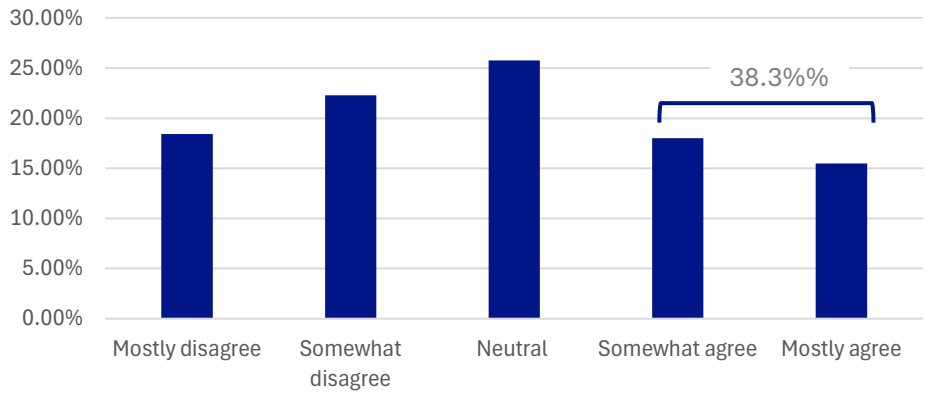
Is using Bitcoin for everyday payments a mistake?

38% of Crypto-shoppers believe that Bitcoin and other cryptos like ETH or LTC should not be spent as they will rise in value in the future

The main reason not to use bitcoin or other cryptocurrencies to buy products is that these are investments and could be much more valuable in the future



Bitcoin price over the last 12 months[2]

"On May 22, 2010, Laszlo Hanyecz paid Jeremy Sturdivant 10,000 bitcoins (BTC) for two Papa John's pizzas, which were delivered to Hanyecz's home. This exchange is widely celebrated because it is viewed as the first use of bitcoin in a commercial transaction with bitcoin as the medium of exchange."[1] Today, the 10.000 Bitcoin would be worth approximately 700 million USD. We don't need to go too far, to see the effect of market dynamics; Bitcoin price in relation to the US dollar has seen its price more than double in the past six months[2]. Obviously, from a shopping perspective, this means the price of a good or service paid in Bitcoin decreased by more than 50%. This means that Bitcoin and Ether, and likely much more so than other altcoins, cannot be considered reliable units of account.

Almost forty percent of the Crypto-shoppers take the view that Bitcoin and other "non-stable" cryptos shouldn't be used for making purchases because they are investments that could be much more valuable in the future. While we are unaware that they view them as short-term speculative assets or a store of value, they likely disagree with Bitcoin and other non-fiat pegged cryptos as a medium of exchange.

Source:
1. Coghlan, J. (2023). The pepperoni on the first pizza bought with Bitcoin is worth $6.5M today. Cointelegraph.
2. Coinmarketcap (Apr 2024). Bitcoin Price. Retrieved from Coinmarket.com on April 1, 2024.

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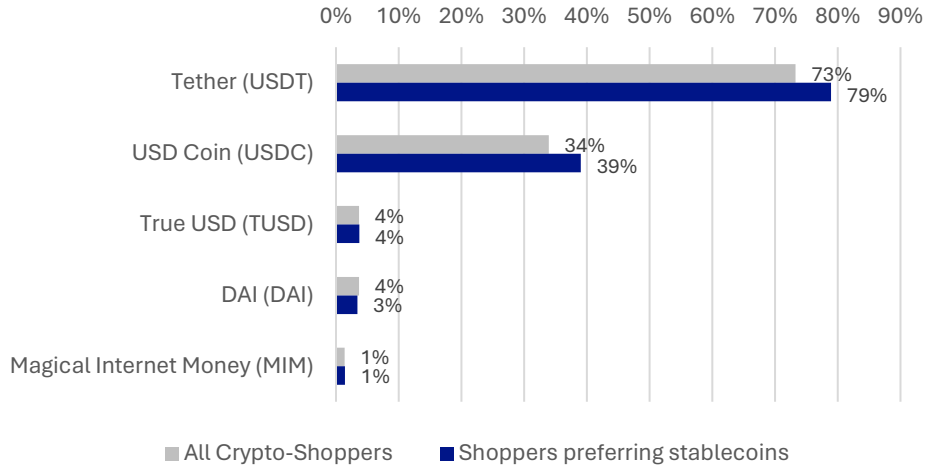
Which stablecoins do crypto-shoppers prefer?

Tether (USDT) and USD Coin (USDC) dominate with no other stablecoin coming close in terms of preference.

Shoppers preference for certain stablecoins



Last 12 Months USDT / USDC market capitalization ($)[1]

We asked in our survey for Crypto-shoppers to list their preferred stablecoins. Since in terms of market capitalization, and in terms of transactions occurring on our platform, Tether and USD Coin dominate the market share, we offered the possibility to select up to three stablecoins. The goal was to see if there were other stablecoins besides the market leaders in which the customers could be potentially interested.

The results speak, clear, Tether is the most preferred stablecoin followed by USD Coin with 73% of all Crypto-shoppers expressing an interest, and by 79% of those that prefer shopping with stablecoins. USD Coin ranks second highest, 34% by all Crypto-shoppers, 39% by stablecoin Crypto-shoppers. Furthermore, at least when it comes to using the stablecoins for purchasing, it is clear that Tether and USD Coin have no rivals, with the third and fourth ranking stablecoins (True USD and DAI) at 4%.

Our transaction data[3] is quite aligned to the survey results, with slightly higher USDC payments registered (likely due to certain layer 2s and alternatives to Ethereum mainnet we offer supporting only certain stablecoins on our platform)..

Source
1. Coinmarketcap (Apr 2024). Market Capitalization of USDT Compared to USDC. Retrieved from Coinmarket.com on April 1, 2024.
2. Cryptorefills internal transaction data

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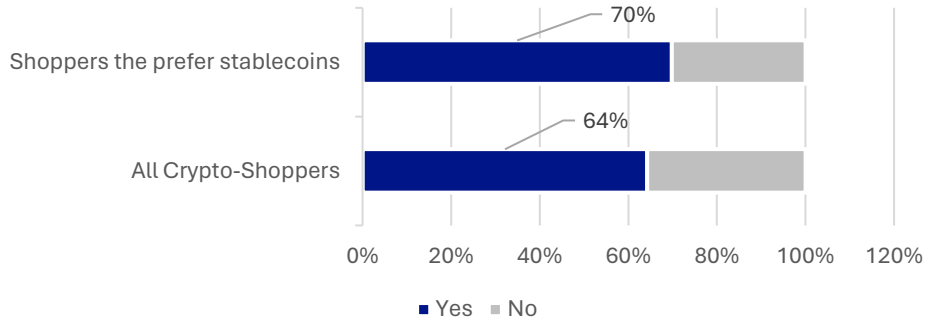
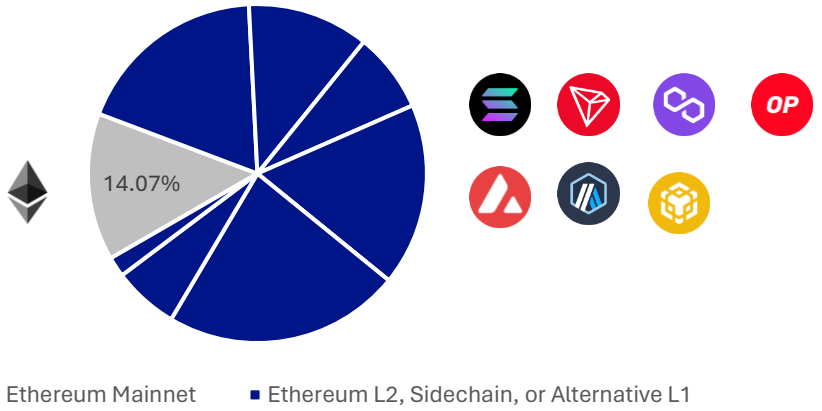
Do crypto-shoppers use layer 2 or alternative blockchains?

64% Crypto-shoppers have used an L2 or alternative network at least once, and this is where 86% of stablecoin payments are made.

Crypto-shoppers that have used a Layer 2 network (Polygon, Arbitrum, etc.) or alternative blockchains (Tron, Solana) at least once when making a purchase



Q1 2024 transaction split of stablecoin payments (mainnet vs other networks)[1]



64% of all Crypto-shoppers claim to have transacted at least once outside of the mainnet. It is important to note that all major stablecoins are native to the Ethereum mainnet but can also be transacted over so called Ethereum Layer 2s or over other blockchains. Ethereum has undergone several updates in the past years such as the merge to proof of stake, and the very recent Duncen update in an effort to increase its scalability, decreasing the fees and increasing the speed of transaction execution. An Ethereum Layer 2 such as Arbitrum and Optimism for example make use of different technologies (such as ZkRollups and Optimistic rollups) to transact on a more efficient network and then update the Ethereum network periodically with the new balances. Alternative blockchains, such as Solana, Tron, and Avalanche instead use different consensus mechanisms to obtain faster transaction speeds, lower costs, and higher volumes of transactions per second rates.

With 70% of Crypto-shoppers with a preference for stablecoin payments having transacted at least once on a L2 or alternative network, but 84% of all stablecoin transactions being made through these networks, suggests these networks also drive repeat and day-to-day purchases. Stablecoin payments, especially when making smaller ticket purchases, require L2s or other L1 networks to make sense. Currently we are unable to provide a distinct preference for specific networks as there is quite some fragmentation and the space is still evolving. However, networks with bigger communities and market values tend to be more popular and are critical enablers of a stablecoin payment channel.

Source
1. Cryptorefills internal transaction data

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About the authors

Massimiliano Silenzi, Ph.D. is the CEO and co-founder of Cryptorefills. He is an entrepreneur and executive with 20 years of international experience in web, mobile and financial technologies. He is passionate about new payment technologies and their impact on commerce and society. He built his career on this passion, starting in the telco sector in TIM and Ericsson, following different country and regional director positions in mobile commerce businesses in Europe and MENA. He served as CEO in Onebip (mobile payments) between 2011 and 2015 and, as of 2016, is an entrepreneur in the telco, payments, and blockchain space. Massimiliano earned his Ph.D. in business and finance from the University "La Sapienza" in Rome with a thesis on mobile payments. He also holds an M.A. in marketing management from the University "La Sapienza" and a B.A. in international business administration from the University of Nottingham Trent.

Umut Can Çabuk, Ph.D. is a post-doc researcher and lecturer at San Diego State University. He received his B.Sc. degree in electronics engineering from Bursa Uludag University (Turkey) in 2012, his M.Sc. degree in information technology engineering from Aarhus University (Denmark) in 2015, and his Ph.D. degree at the International Computer Institute of Ege University (Turkey), where he also worked as a research assistant. He is currently continuing his post-doc studies at San Diego State University (USA). His research interests include blockchain technology, drones, mobile and wireless networks, the Internet of Things, computer security, and graph theory. He has co-authored over 40 scholarly publications and has 4 patent applications.

Research methodology

This study utilizes as its primary data source the Cryptorefills annual survey used for different studies published by Cryptorefills labs including the Cryptorefills yearly Consumer Report. The Cryptorefills survey collects data from a comprehensive questionnaire designed by Cryptorefills Labs initially based on the Technology Acceptance Model (Venkatesh and Davis, 2000) and readapted based on industry and market knowledge of the researchers.

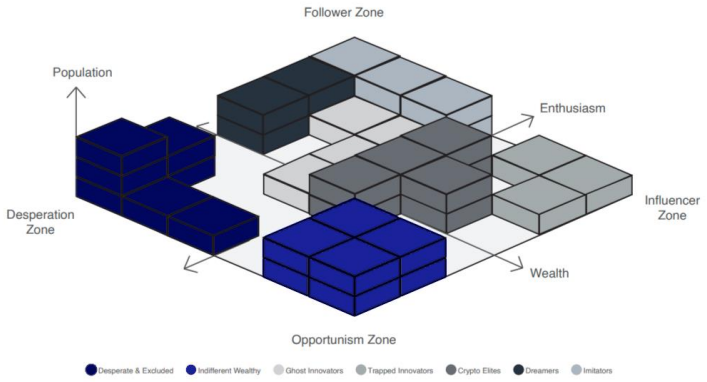
The data is collected via online internet forms with 141 distinct questions to be answered on a voluntary basis by Crypto-shoppers. Data validity is checked by ensuring that respondents must have completed at least one purchase on the Cryptorefills platform, thus qualifying them as real Crypto-shoppers and using account registration email to eliminate any duplicate response. Data reliability is checked through statistical methods such as Cronbach's alpha. The data was collected between June 1st 2023 and September 10th 2023. With 516 unique responses over a population of 7537, at a customary 95% Confidence Interval, the margin of error is ±4.2% for binary responses (for example preference to pay with stablecoins is yes or no question, thus binary), and a mean ±2.5% for other questions. Other datasets used for this survey is Cryptorefills transaction data from 2023 and 2024 and Coinmarketcap.com data for Bitcoin price analysis and stablecoin market capitalization analysis.

In terms of analysis methodologies, we mainly use descriptive statistics and charts. We utilize Spearman's rank correlation to infer the correlation between spending frequency and preference for stablecoins. We utilize Excel and Python to analyze the data and plot the charts.

About Cryptorefills

Cryptorefills enables people from over 180 countries to top up their mobile credit and buy gift cards from the world's top brands paying with Bitcoin and other crypto. As one of the earliest adopters of the Bitcoin Lightning Network, and as the first company in the world to launch Ethereum layer-2 payments and fast finality blockchains for E-commerce payments, Cryptorefills is leading the innovation in applied decentralized payments and developing new technologies for the gift card industry while driving crypto mass adoption.

About Cryptorefills Labs



Cryptorefills Labs is where the data and the ideas that support the Cryptorefills mission are collected, analyzed, researched and discussed before they become part of our product and offering. Our Labs are open to our customers, partners, stakeholders and crypto community with the goal of promoting the adoption of blockchain based currencies in everyday life.

Our research is concentrated on investigating the adoption of blockchain based digital currencies (e.g. bitcoin) as money and as a means of payments.

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Consumer report

Published on a yearly basis since 2021, this report is the first and largest research into consumer use of bitcoin and other cryptocurrency for shopping and payments. Quantitative and qualitative insights into who these consumers are and why they use bitcoin and other cryptocurrencies as a means to pay for goods and services.

The 2023 edition includes 106 pages and 83 charts concerning:

- User demographics
- Drivers and barriers to adoption
- Purchase behaviors
- Purchase experience (usefulness, ease of use, social norm, etc)
- Use of specific currencies
- Use of specific technologies (Lightning network)
- Purchase experiences and intent to repurchase
- Purchase statistics (product categories, prices)
- Media and Social Media preferences

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