# A Landscape of Cryptocurrencies

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***Abstract*—Although cryptocurrencies have attracted a large amount of users and investors and there has been various researches in the area of distributed ledger technology (DLT), there is little work on cryptocurrency studies. Given the rapidly increasing number and diversity of cryptocurrencies, we present a landscape with a selective set of representative cryptocurrencies to holistically portray their characteristics and provide practitioners an analysis from both business and technical perspectives. The focused observations elaborate how the typical cryptocurrency are designed and operated in industry. This study offers a breakthrough understanding of the cryptocurrencies through the generated landscape which report the state of cryptocurrencies, and can be used as a framework for cryptocurrency analysis.**

***Index Terms*—Cryptocurrency; Blockchain; Distributed Ledger Technology.**

## I. Introduction and Methodology

Distributed ledger technology (DLT) is an emerging technology which has attracted a broad range of interests from start-ups, enterprises and governments [1] to address lack-of-trust issues in a decentralized manner. Cryptocurrencies are the base currency of DLT and normally baked into the core DLT platforms. There are more than 2000 cryptocurrencies so far[1], most of which are managed through the basic platform capabilities of specific DLT. Although cryptocurrencies have attracted a large amount of users and investors and there have been various researches in the area of DLT, there is little work on cryptocurrency studies. Therefore, in this paper, we provide a landscape for both industry and academia to holistically understand cryptocurrencies from both business and technical perspectives.

In order to narrow down the scope, we select 20 representative cryptocurrencies which are listed as top 20 cryptocurrencies by market capitalization in CoinMarketCap[1] , which is one of the most popular website for tracking cryptocurrencies. Please note that we will study more representative cryptocurrencies and depicting the landscape with deeper analysis in our future work. The selected cryptocurrencies are shown in in Table I. The studied attributes include domain, price, circulation supply, consensus protocol, transaction fee, blockchain reward, height, block size, block interval, number of accounts, trading frequency, turnover rate, number of nodes, combined hash power, issuance policy, issuance method, number of Twitter followers, number of Reddit followers, number of GitHub contributors, number of GitHub commits. The major sources we use for our study (last update on 12 Dec 2018) include: the official websites, official white papers, official GitHub repositories, Twitter verified accounts[2], Reddit Discussion Forum[3], CoinMarketCap[1], and some websites recommended in the official websites.

TABLE I: Cryptocurrency Selection.

| Rank | Name | Symbol | Market cap. | Launch date |
|---|---|---|---|---|
| 1 | Bitcoin | BTC | $60,487,274,403 | 03/01/2009 |
| 2 | Ripple | XRP | $12,332,456,700 | 01/01/2013 |
| 3 | Ethereum | ETH | $9,412,363,620 | 30/06/2015 |
| 4 | Stellar | XLM | $2,242,342,123 | 31/07/2014 |
| 5 | Bitcoin Cash | BCH | $1,849,915,763 | 01/08/2017 |
| 6 | EOS | EOS | $1,721,739,810 | 31/01/2018 |
| 7 | Bitcoin SV | BSV | $1,630,340,022 | 15/11/2018 |
| 8 | Litecoin | LTC | $1,462,669,804 | 07/10/2011 |
| 9 | TRON | TRX | $876,293,455 | 25/06/2018 |
| 10 | Cardano | ADA | $774,454,858 | 02/10/2017 |
| 11 | Monero | XMR | $736,489,666 | 18/04/2014 |
| 12 | NEM | XEM | $644,111,777 | 31/03/2015 |
| 13 | MIOTA | MIOTA | $638,974,642 | 11/06/2016 |
| 14 | Dash | DASH | $583,803,256 | 18/01/2014 |
| 15 | Ethereum Classic | ETC | $414,897,833 | 30/07/2015 |
| 16 | NEO | NEO | $397,103,949 | 17/10/2016 |
| 17 | Zcash | ZEC | $304,593,595 | 28/10/2016 |
| 18 | Dogecoin | DOGE | $244,170,721 | 06/12/2013 |
| 19 | Tezos | XTZ | $216,903,705 | 02/09/2014 |
| 20 | VeChain | VET | $210,400,115 | 30/06/2018 |

## II. Results and Analysis

Due to space limit, we only report domains, consensus protocols, issuance strategies, and popularity relevant data. We will publish the rest of study results in the near future.

Fig. 1 shows the the application domains of the selected cryptocurrencies. The majority of the cryptocurrency projects mainly focus on the area of currency. A significant portion of studies work on development platforms for decentralized applications and payment which is a means of payment for a real business transaction while currency is only for cryptocurrency.

The choice of consensus protocol impacts security and scalability. Fig. 2 shows the consensus protocol used by the cryptocurrencies. The majority use Proof of Work (PoW), Proof of Stake (PoS), and Practical Byzantine Fault Tolerance (PBFT).

[1]https://coinmarketcap.com/

[2]https://twitter.com/

[3]https://www.reddit.com/

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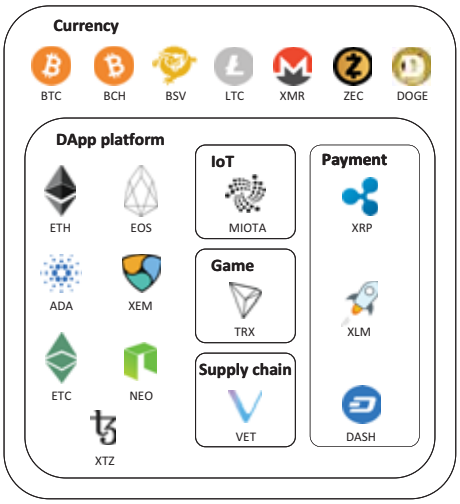



Fig. 1: Domain.

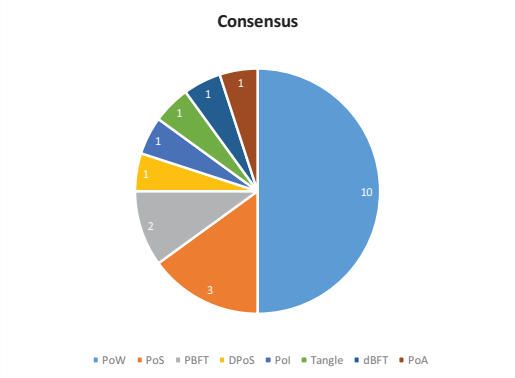


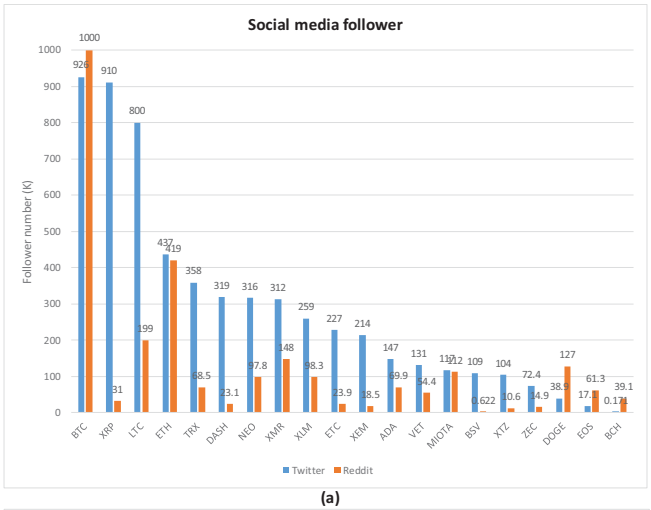

Fig. 2: Consensus protocol.

Table II provides a view of how the cryptocurrency founders plan to develop their project. Eight studied cryptocurrencies have a large proportion of coins for the sponsors and founder team for continuing research and development. The other kind of distribution strategy is decreasing the reward, which can avoid inflation of cryptocurrencies. Block reward mechanism is a common method to issue new currency into the market during mining. The premining cryptocurrencies are issued completely by code in genesis block and can only be exchanged with other currencies.

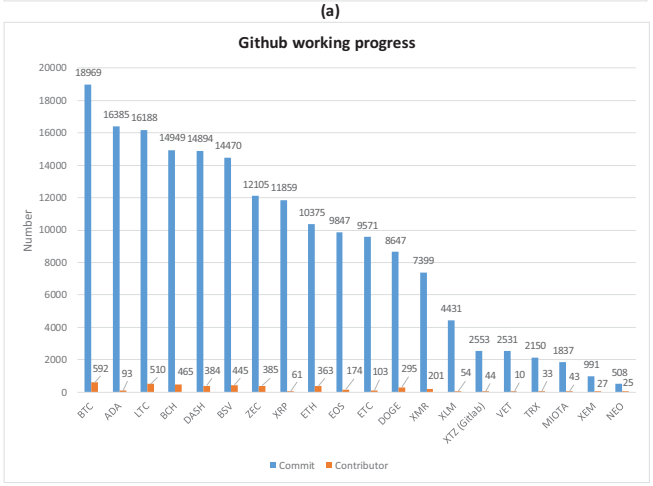
Fig. 3(a) and Fig. 3(b) show the popularity of each cryptocurrency, based on the number of followers in Twitter and Reddit, number of GitHub contributors and number of GitHub commits. The number of followers in Twitter and Reddit can reflect how many people support the cryptocurrency, while the number of GitHub contributors and number of commits on GitHub can be used to observe if people believe that the project will be successful, if the project is delivering more features, and the probability that the project is a scam.

## REFERENCES

[1] "Distributed ledger technology: beyond blockchain," Tech. Rep., 2016, uK Government Chief Scientific Adviser.




(a)




(b)

Fig. 3: Popularity attributes.

TABLE II: Issuance Attributes.

| Coin | Issuance policy | Issuance method |
|---|---|---|
| BTC | Reward halves every four years. | mining |
| XRP | Founders 20%. | premining |
| ETH | Contributors 60 million. | mining |
| XLM | Individuals-50%, partners-25%, BTC&XRP holders-20%, Stellar.org-5%. | premining |
| BCH | Reward halving every four years. | mining |
| EOS | "Founders' Tokens" 10%. | premining |
| BSV | Reward halving every four years. | mining |
| LTC | N/A | mining |
| TRX | N/A | premining |
| ADA | Cardano community 20%. | mining |
| XMR | Smoothness of the emission using a specific formula. | mining |
| XEM | N/A | mining |
| MIOTA | N/A | premining |
| DASH | 7% reduction of the supply per year. | mining |
| ETC | N/A | mining |
| NEO | 50 million for supporters and 50 million for NEO Council. Mining generates gas decreasing every year. | mining & premining |
| ZEC | Founders 10%. | mining |
| DOGE | Inflationary coin with no production limit. | mining |
| XTZ | N/A | mining & bond |
| VET | Public token sale-41%, private investors-9%, enterprise investors-23%, co-founders-5%, continuous operation-12%,business case development-10%. | mining & premining |