

# MARKETING STRATEGY AND DIGITAL COMMUNITIES PERFORMANCE RESEARCH

Marketing Advertising Suggestions

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|   |           |
|---|-----------|
| <b>1. Analysis on digital currency .....</b>                              | <b>2</b>  |
| <b>1.1 Top 10 currencies from www.coinmarketcap.com.....</b>              | <b>2</b>  |
| <b>1.2 Rank by Transaction volume .....</b>                               | <b>2</b>  |
| <b>1.3 Rank by Transaction number .....</b>                               | <b>2</b>  |
| <b>1.4 Marketing campaign suggestions .....</b>                           | <b>3</b>  |
| <b>2. Analysis on digital currency market share.....</b>                  | <b>3</b>  |
| <b>2.1 Trading Volume Share .....</b>                                     | <b>3</b>  |
| <b>2.2 Transaction Number Share .....</b>                                 | <b>4</b>  |
| <b>2.3 Unit transaction number (AT No.) Share.....</b>                    | <b>5</b>  |
| <b>2.4 Marketing campaign suggestions .....</b>                           | <b>6</b>  |
| <b>3. Generic digital currency market cap performance .....</b>           | <b>7</b>  |
| <b>3.1 Rank v.s. Unite Volume – Linear/Anova Regression.....</b>          | <b>7</b>  |
| <b>3.2 Volume, Exchange and Rank – Correlation Matrix.....</b>            | <b>7</b>  |
| <b>3.3 Turtle trading philosophy backtesting.....</b>                     | <b>7</b>  |
| <b>4. Digital community study .....</b>                                   | <b>10</b> |
| <b>Appendix A – Program structure &amp; Programming realization .....</b> | <b>14</b> |
| <b>Appendix B – Screenshot of the working platform .....</b>              | <b>17</b> |
| <b>Appendix C – Regression Output .....</b>                               | <b>18</b> |

## 1. Analysis on digital currency

### 1.1 Top 10 currencies from [www.coinmarketcap.com](http://www.coinmarketcap.com)

| Rank | Name         | Symbol | Volume-USD | Chat-community | Transaction Number |
|------|--------------|--------|------------|----------------|--------------------|
| 1    | Bitcoin      | BTC    | 5634430000 | Bitcoin        | 174                |
| 2    | Ethereum     | ETH    | 2244500000 | Gitter         | 141                |
| 3    | Ripple       | XRP    | 313400000  | Telegram       | 54                 |
| 4    | Bitcoin Cash | BCH    | 725562000  | Bitcoin        | 105                |
| 5    | EOS          | EOS    | 1528830000 | Telegram       | 76                 |
| 6    | Litecoin     | LTC    | 309464000  | Telegram       | 125                |
| 7    | Cardano      | ADA    | 79383100   | Telegram       | 12                 |
| 8    | Stellar      | XLM    | 26736200   | Slack          | 23                 |
| 9    | IOTA         | MIOTA  | 66072500   | Discord        | 8                  |
| 10   | TRON         | TRX    | 302833000  | Slack          | 46                 |

The top 10 rank is from the authoritative website Coinmarkcap. The most popular community platform is Telegram among the top 10 digital currency, and there are at least four digital currencies in top 10 using this platform. The second platform is Slack.

### 1.2 Rank by Transaction volume

| Rank | Name         | Symbol | Volume-USD | Volume Rank | Website   | Chat - Community  |
|------|--------------|--------|------------|-------------|---|-------------------|
| 1    | Bitcoin      | BTC    | 5634430000 | 1           | <a href="https://bitcoin.org/">https://bitcoin.org/</a>   | Bitcoin           |
| 15   | Tether       | USDT   | 2793680000 | 2           | <a href="https://tether.to">https://tether.to</a>   |                   |
| 2    | Ethereum     | ETH    | 2244500000 | 3           | <a href="https://www.ethereum.org/">https://www.ethereum.org/</a>   | Gitter.im         |
| 5    | EOS          | EOS    | 1528830000 | 4           | <a href="https://eos.io/">https://eos.io/</a>   | Telegram          |
| 4    | Bitcoin Cash | BCH    | 725562000  | 5           | <a href="https://www.bitcoincash.org/">https://www.bitcoincash.org/</a>   | Bitcoin           |
| 3    | Ripple       | XRP    | 313400000  | 6           | <a href="https://ripple.com/">https://ripple.com/</a>   | Telegram. Discord |
| 6    | Litecoin     | LTC    | 309464000  | 7           | <a href="https://litecoin.com">https://litecoin.com</a> ,<br><a href="https://litecoin.org">https://litecoin.org/</a> | Telegram          |
| 10   | TRON         | TRX    | 302833000  | 8           | <a href="https://tron.network/">https://tron.network/</a>   | Slack             |
| 115  | True Chain   | TRUE   | 221369000  | 9           | <a href="http://www.truechain.pro">http://www.truechain.pro</a>   |                   |
| 21   | Qtum         | QTUM   | 204420000  | 10          | <a href="https://qtum.org/">https://qtum.org/</a>   | Telegram          |

The transaction volume is defined as the total USD amount of actual deals in certain time period. In the top 10 digital currencies transaction volume, there are 4 digital currencies, which are Tether (USDT), TRON (TRON), True Chain (TRUE) and Qtum (QTUM), ranking out of the top 10 which means they have a higher level of trading volume. The True Chain needs an extra attention, since the volume-USD is too high to their ranking (only at 115).

### 1.3 Rank by Transaction number

| Rank | Name         | Symbol | Volume-USD | Chat-community | Transaction Number | TN Rank |
|------|--------------|--------|------------|----------------|--------------------|---------|
| 1    | Bitcoin      | BTC    | 5634430000 | Bitcoin        | 174                | 1       |
| 2    | Ethereum     | ETH    | 2244500000 | Gitter.im      | 141                | 2       |
| 6    | Litecoin     | LTC    | 309464000  | Telegram       | 125                | 3       |
| 4    | Bitcoin Cash | BCH    | 725562000  | Bitcoin        | 105                | 4       |

|           |                  |      |            |                   |    |           |
|-----------|------------------|------|------------|-------------------|----|-----------|
| <b>5</b>  | EOS              | EOS  | 1528830000 | Telegram          | 76 | <b>5</b>  |
| <b>12</b> | Dash             | DASH | 195716000  | Discord           | 61 | <b>6</b>  |
| <b>22</b> | OmiseGO          | OMG  | 33947100   | Telegram, Slack   | 55 | <b>7</b>  |
| <b>3</b>  | Ripple           | XRP  | 313400000  | Telegram, Discord | 54 | <b>8</b>  |
| <b>17</b> | Ethereum Classic | ETC  | 156771000  | Discord           | 53 | <b>9</b>  |
| <b>45</b> | Dogecoin         | DOGE | 14187900   | Discord           | 52 | <b>10</b> |

The transaction number is defined as the number of actual deals in certain period. In the top 10 transaction volume, Dash, OmiseGO, Ethereum Classic and Dogecoin are not listing on the rank top 10, however they have got a very good transaction number, which means they have higher trading activity than the average digital currency level.

#### 1.4 Marketing campaign suggestions

Generally, the overall rank on the list is determined by both the volume and the transactions. For most of digital currencies, a good ranking can be secured if performance on the volume and transactions are good enough, for example Bitcoin stays at the first place with both volume and transaction ranking at the top, and Ethereum obtains an overall second position with the third largest volume and second largest transactions.

For some cases, an overall lower rank is accompanied with a strong factor, like 115th True Chain has the ninth largest volume and 45th Dogecoin comes with its transaction among top 10 group. Such phenomenon can be found and proved on most of the situations happening on the list. It can be concluded that transaction number witness a higher weight than volume when scoring a digital currency.

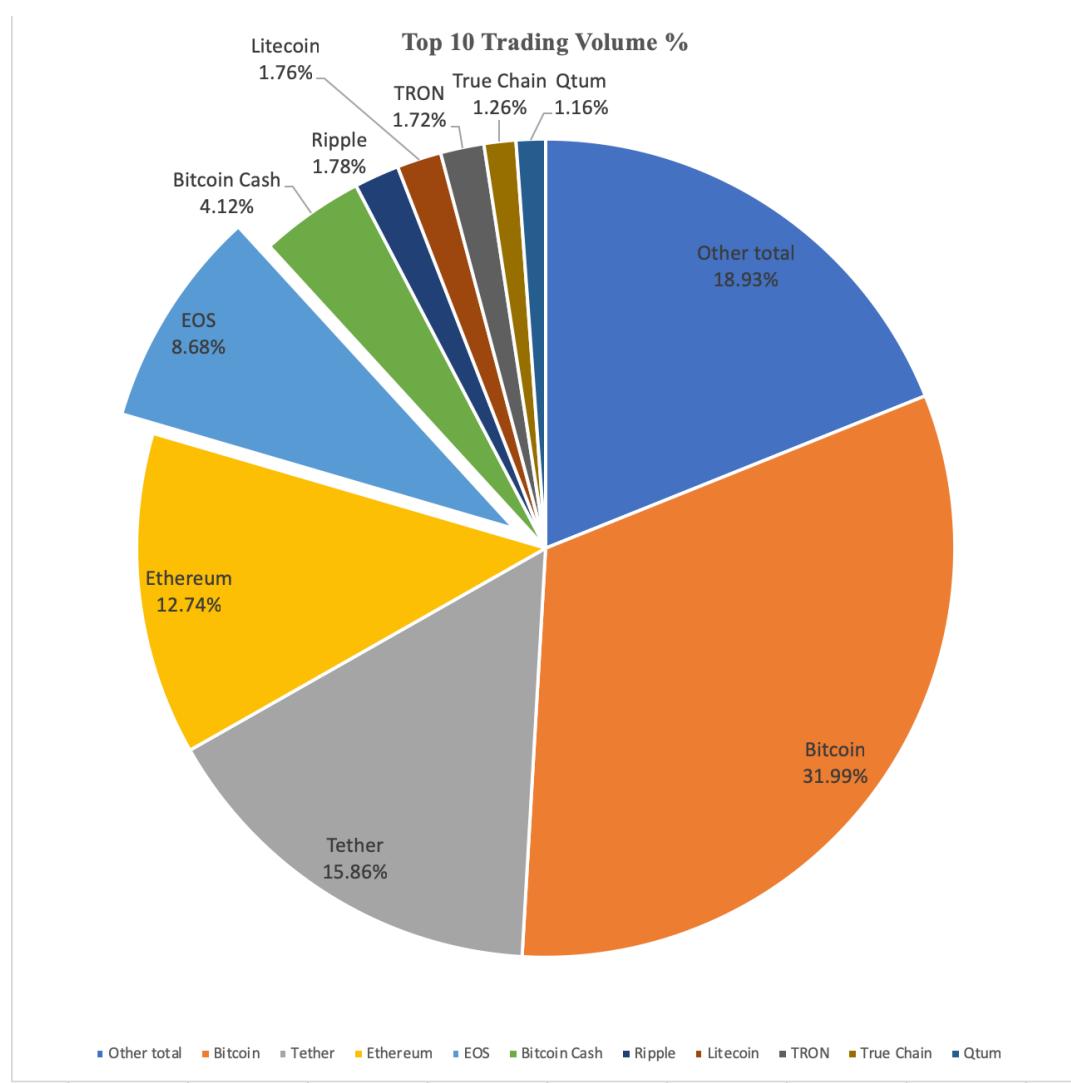
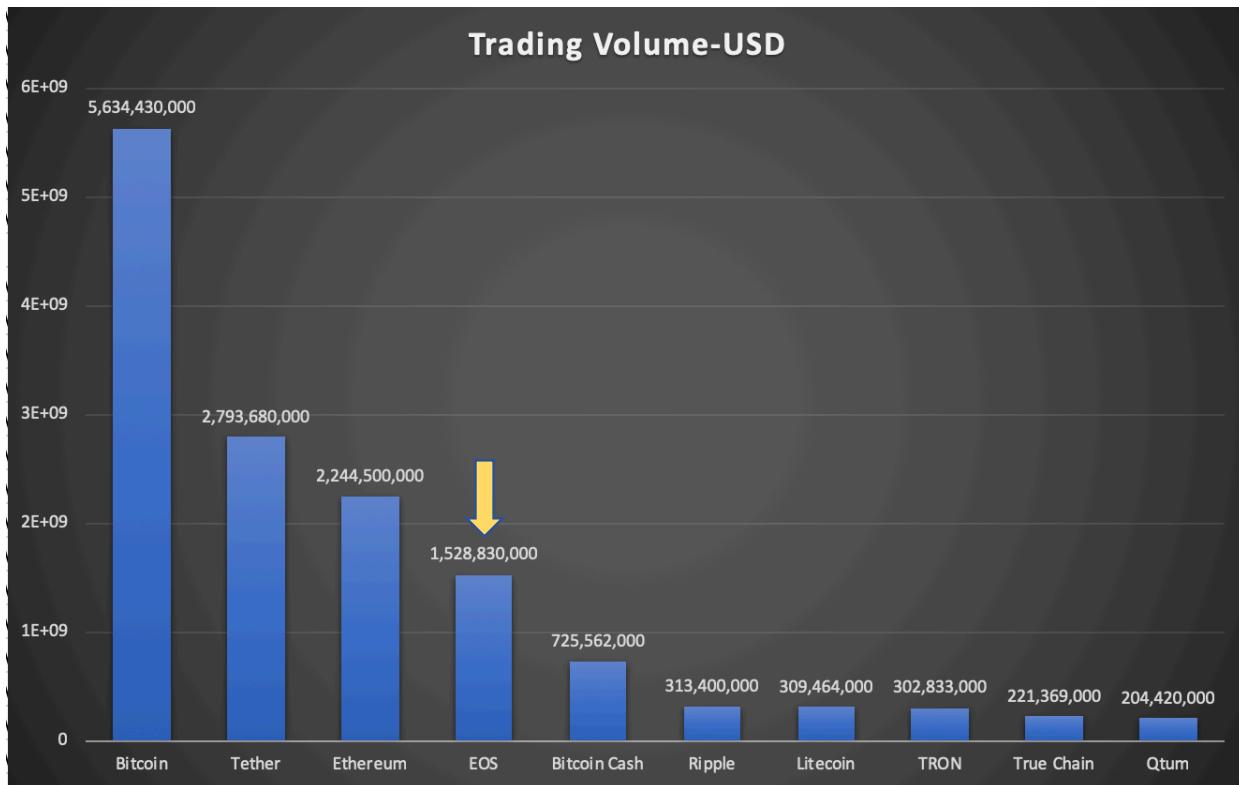
Based on what is found above, suggestions on potential marketing campaign can be generated. As evaluations (stats) on each digital currency is public on the platform and overall ranking information can be found without too much effort, it is obvious that potential marketing campaign should be focusing on higher ranked digital currency. Generically, higher ranked digital currencies always behave well on the both volume and transactions, in another word, such currencies are more active in the market and attractive to either potential investors or current clients. Marketing actions taken on such group of currencies will help the corporate in-house platform obtain a larger traffic of visitors and potentially make a higher client transition.

Also, another suggestion will indicate the determination on weak digital currencies with strong factor. If the currency is not ranked at a very high position but still has a good amount of transactions, it is still worth to be considered as a marketing target, as it is more probably to behave better than that has a large volume but small transaction number. Similarly, when making decision on two digital currencies with similar ranking but one has higher volume while the other one has higher transactions number, it makes more sense to add the one with higher transaction number to the marketing campaign plans.

### 2. Analysis on digital currency market share

#### 2.1 Trading Volume Share

| TV Rank      | Name         | Symbol | TV number          | TV %          | Chat platform     |
|--------------|--------------|--------|--------------------|---------------|-------------------|
| 1            | Bitcoin      | BTC    | 5634430000         | 31.99%        |                   |
| 2            | Tether       | USDT   | 2793680000         | 15.86%        |                   |
| 3            | Ethereum     | ETH    | 2244500000         | 12.74%        | Gitter.im         |
| 4            | EOS          | EOS    | 1528830000         | 8.68%         | Telegram          |
| 5            | Bitcoin Cash | BCH    | 725562000          | 4.12%         |                   |
| 6            | Ripple       | XRP    | 313400000          | 1.78%         | Telegram, Discord |
| 7            | Litecoin     | LTC    | 309464000          | 1.76%         | Telegram          |
| 8            | TRON         | TRX    | 302833000          | 1.72%         | Slack             |
| 9            | True Chain   | TRUE   | 221369000          | 1.26%         |                   |
| 10           | Qtum         | QTUM   | 204420000          | 1.16%         | Telegram          |
| <b>Total</b> |              |        | <b>14278488000</b> | <b>81.07%</b> |                   |



Top 10 trading volume have contributed 81.07% of the total trading volume, with trading volume in 14,278,488,000USD. In addition to the typical ‘Strong’ digital currency known as Bitcoin, Ethereum and Tether, there is a fresh token have shown a very good trading performance—EOS.

EOS have got 8.68% of the trading volume share, which had got the fourth trading share  
At least 4 of the top 10 token are using [Telegram](#) as their community chat platform.

## 2.2 Transaction Number Share

| TN Rank | Name    | Symbol | Transaction No. | TN %  | Chat Platform |
|---------|---------|--------|-----------------|-------|---------------|
| 1       | Bitcoin | BTC    | 174             | 4.07% |               |

|    |                 |      |      |        |                   |
|----|-----------------|------|------|--------|-------------------|
| 2  | Ethereum        | ETH  | 141  | 3.30%  | Gitter.im         |
| 3  | Litecoin        | LTC  | 125  | 2.93%  | Telegram          |
| 4  | Bitcoin Cash    | BCH  | 105  | 2.46%  |                   |
| 5  | EOS             | EOS  | 76   | 1.78%  | Telegram          |
| 6  | Dash            | DASH | 61   | 1.43%  | Discord           |
| 7  | OmiseGO         | OMG  | 55   | 1.29%  | Telegram, Slack   |
| 8  | Ripple          | XRP  | 54   | 1.26%  | Telegram, Discord |
| 9  | Ethereum        | ETC  | 53   | 1.24%  | Discord           |
| 10 | Classic         |      |      |        |                   |
|    | Dogecoin        | DOGE | 52   | 1.22%  | Discord           |
|    | The Other Total |      | 3376 | 79.03% |                   |



Top 10 ranked token have contributed only 20.97% of the total transaction numbers which shown a very big different than the transaction volume-USD.

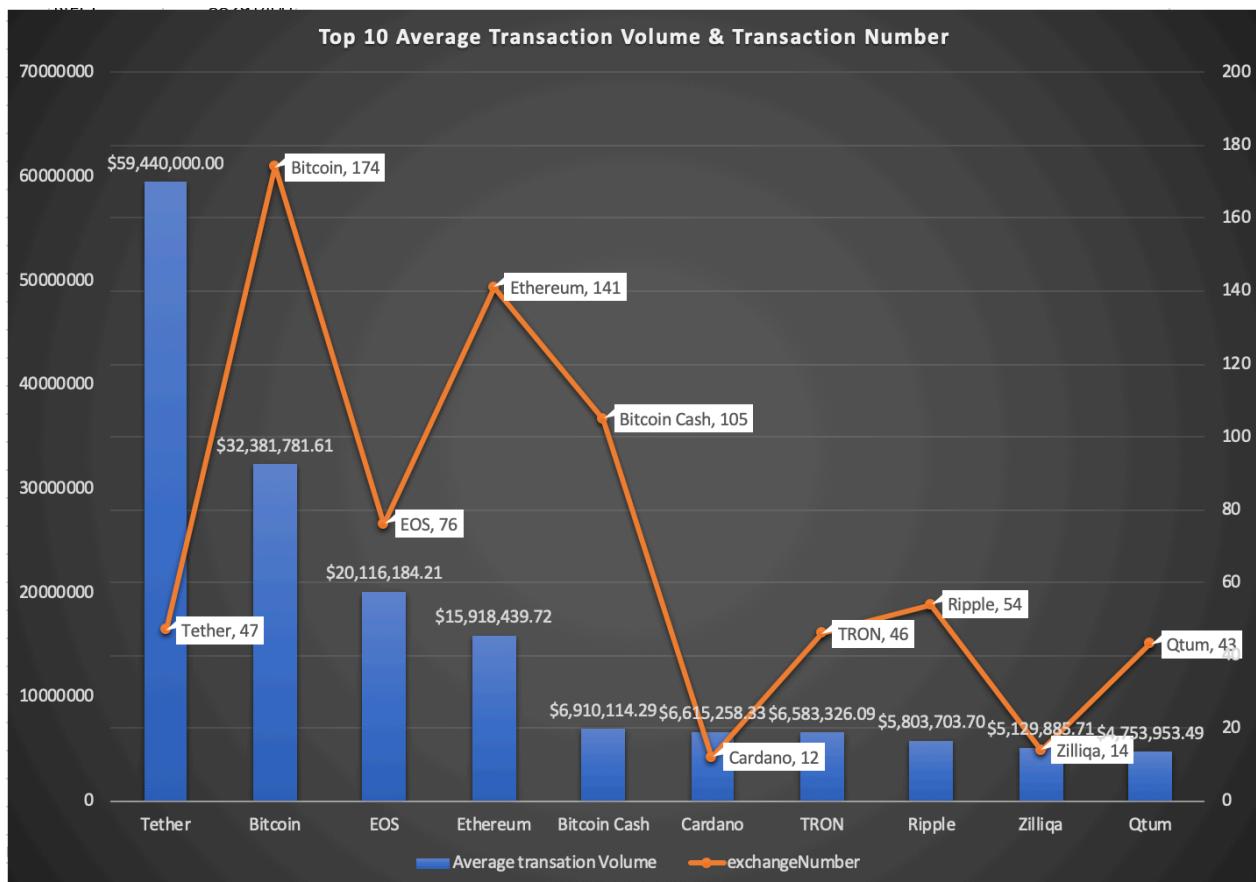
The Dash, OmiseGO, Ethereum Classic and Dogecoin are not belong to the ‘top 10 rank list’.

At least four of the top 10 token using **Telegram and Discord** as their community chat platform.

### 2.3 Unit transaction number (AT No.) Share

Definition: Average transaction number = total transaction volume-USD / total Transaction number (USD/Transaction)

| AT No. Rank | Rank list | Name         | Symbol | AT Number   | Transaction Number | Chat Platform     |
|-------------|-----------|--------------|--------|-------------|--------------------|-------------------|
| 1           | 15        | Tether       | USDT   | 59440000    | 47                 |                   |
| 2           | 1         | Bitcoin      | BTC    | 32381781.61 | 174                |                   |
| 3           | 5         | EOS          | EOS    | 20116184.21 | 76                 | Telegram          |
| 4           | 2         | Ethereum     | ETH    | 15918439.72 | 141                | Gitter.im         |
| 5           | 4         | Bitcoin Cash | BCH    | 6910114.286 | 105                |                   |
| 6           | 7         | Cardano      | ADA    | 6615258.333 | 12                 | Telegram          |
| 7           | 10        | TRON         | TRX    | 6583326.087 | 46                 | Slack             |
| 8           | 3         | Ripple       | XRP    | 5803703.704 | 54                 | Telegram, Discord |
| 9           | 25        | Zilliqa      | ZIL    | 5129885.714 | 14                 | Telegram          |
| 10          | 21        | Qtum         | QTUM   | 4753953.488 | 43                 |                   |



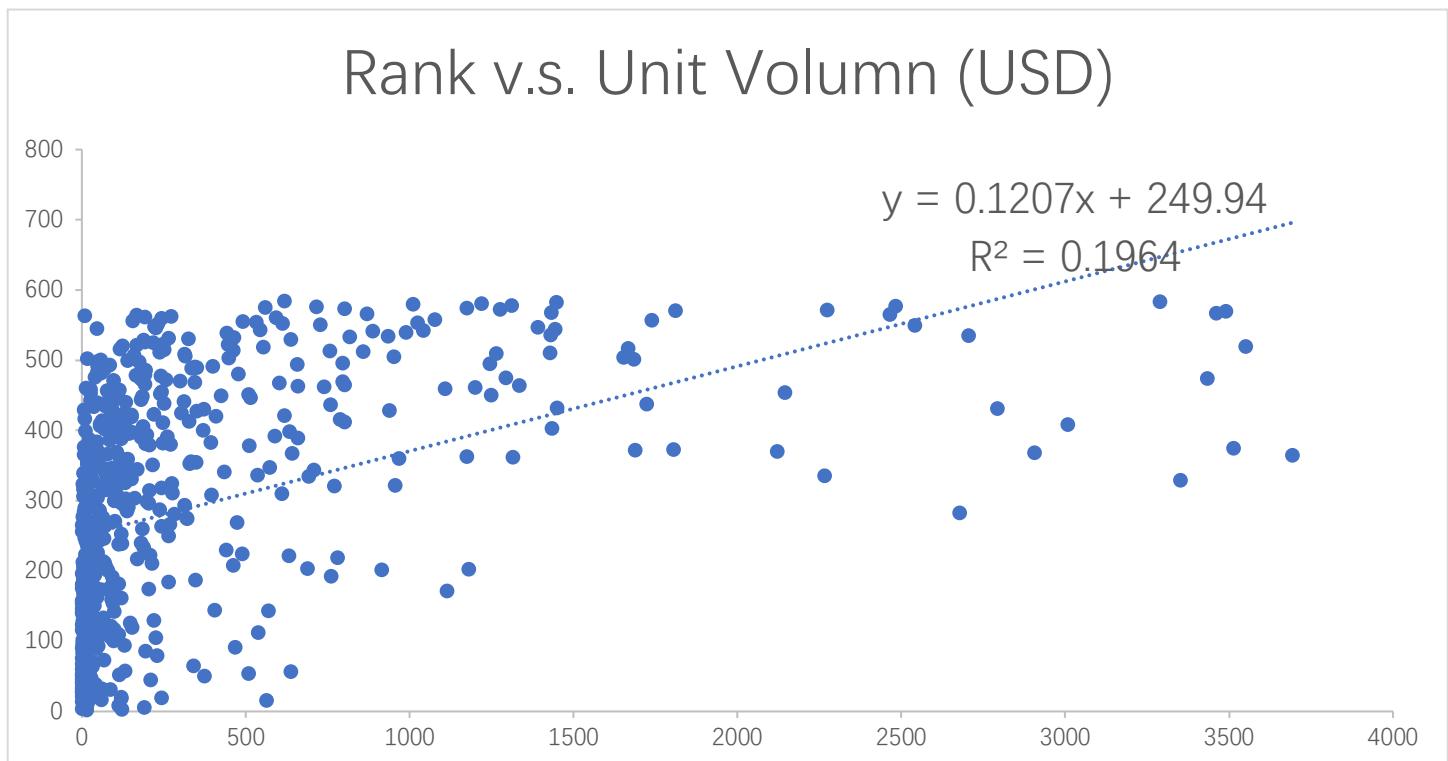
## 2.4 Marketing campaign suggestions

Unit transaction number (AT No.) Share defined in the sectors above can become an index to measure the market value of a digital currency and reflect performance in the market. The higher the Unit transaction number (AT No.) Share is, the more market value it may have. It is because that an investor would be preferring to invest more money on a specific digital currency in one transaction order, which will prove that such kind of currency is behaving well in the current market and economic environment, either it stands for aggressive attitude or conservative direction, but eventually it can help investor secure a specific amount of profitability.

Then it can say that marketing campaigns should be more focusing on such group of currencies as they have the capacity of attracting more investors and making profit for the corporate. In this case, the marketing campaign will be more concentrating on the collaboration with a strong and high unit transaction number (AT No.) share currency as it will help to increase the corporate exposure and visiting traffic, further transition to real transactions.

### 3. Generic digital currency market cap performance

#### 3.1 Rank v.s. Unite Volume – Linear/Anova Regression



Define an index, Unit Volume, from Volume (USD, K) divided by Exchange to represent the expectation from investors or clients. If Unit Volume is maintained at a higher level, it can tell that the investor or clients have a higher expectation and trust on the product's performance. From the scatter and line chart above, when Unit Volume becomes higher, the rank becomes higher simultaneously. Such proportional relationship between two factors can explain the reason why a product can be considered more proper to invest when it has a good reputation and people can expect more on it. Except the extreme-value examples, most of the products follows the rule with the coefficient of 0.1207 and an intercept of 249.94. Such numbers offer an explanation that even investor's expectation can leave an impact on product's rank, but the rank is still affected by other reasons, which should be deeper researched. The value of R square, 0.1964, is explaining the phenomenon similarly but in a different aspect.

#### 3.2 Volume, Exchange and Rank – Correlation Matrix

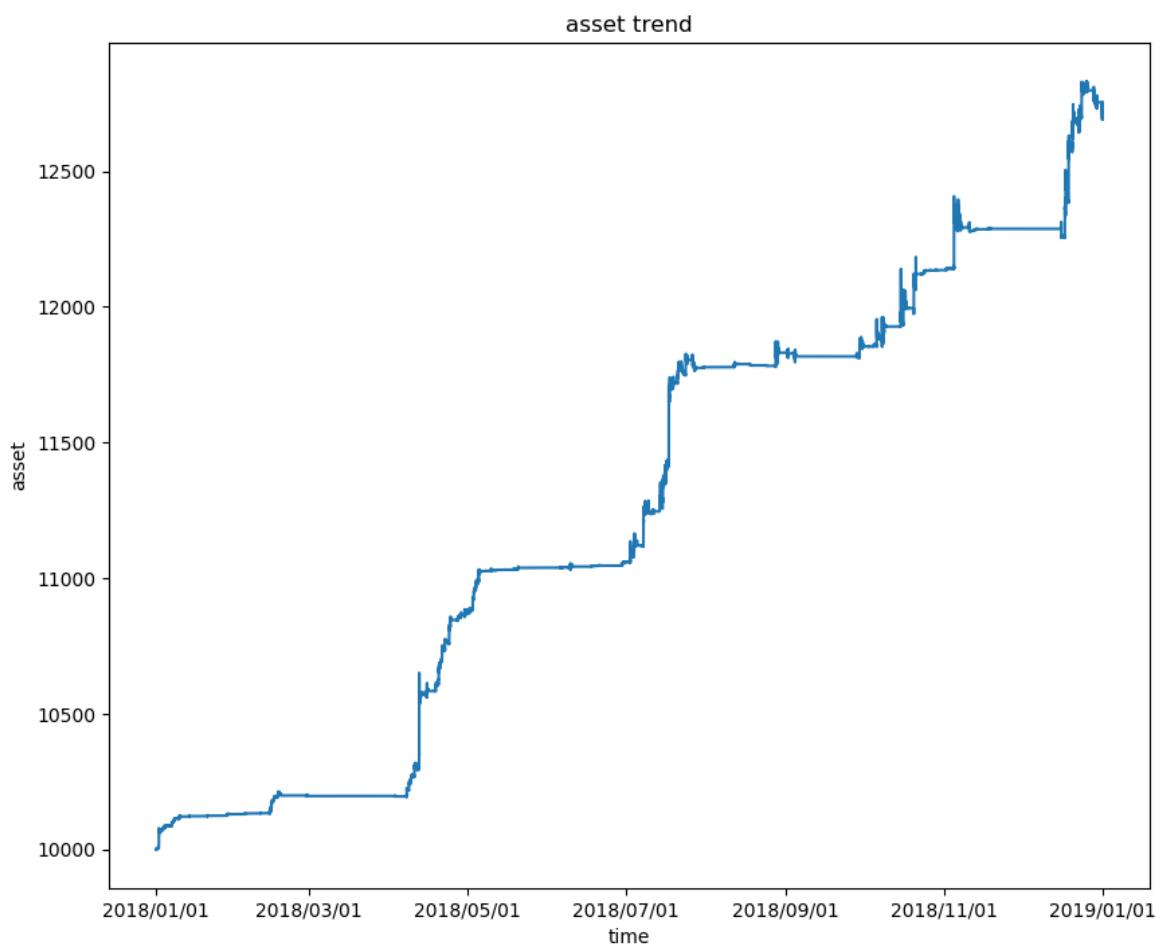
|          | Volume | Exchange | Rank |
|----------|--------|----------|------|
| Volume   | 1.00   | 0.66     | 0.39 |
| Exchange | 0.66   | 1.00     | 0.52 |
| Rank     | 0.39   | 0.52     | 1.00 |

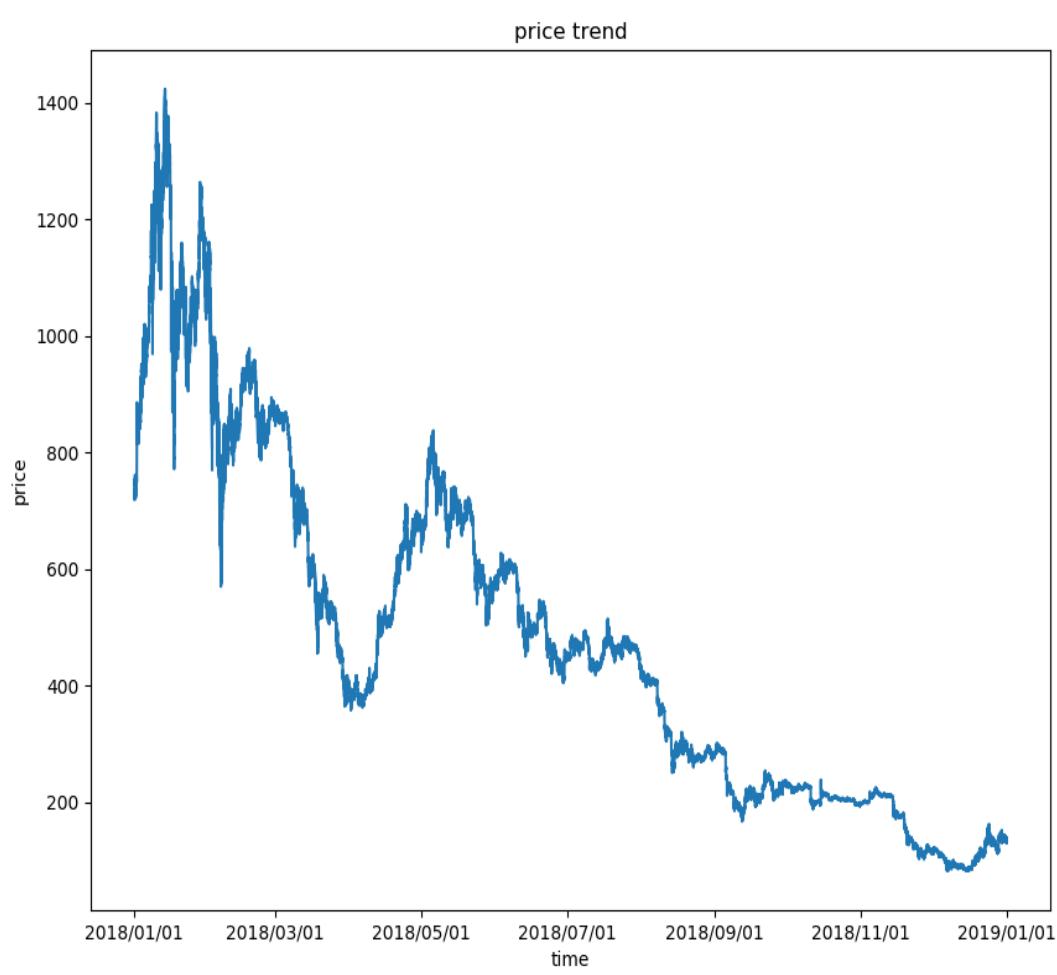
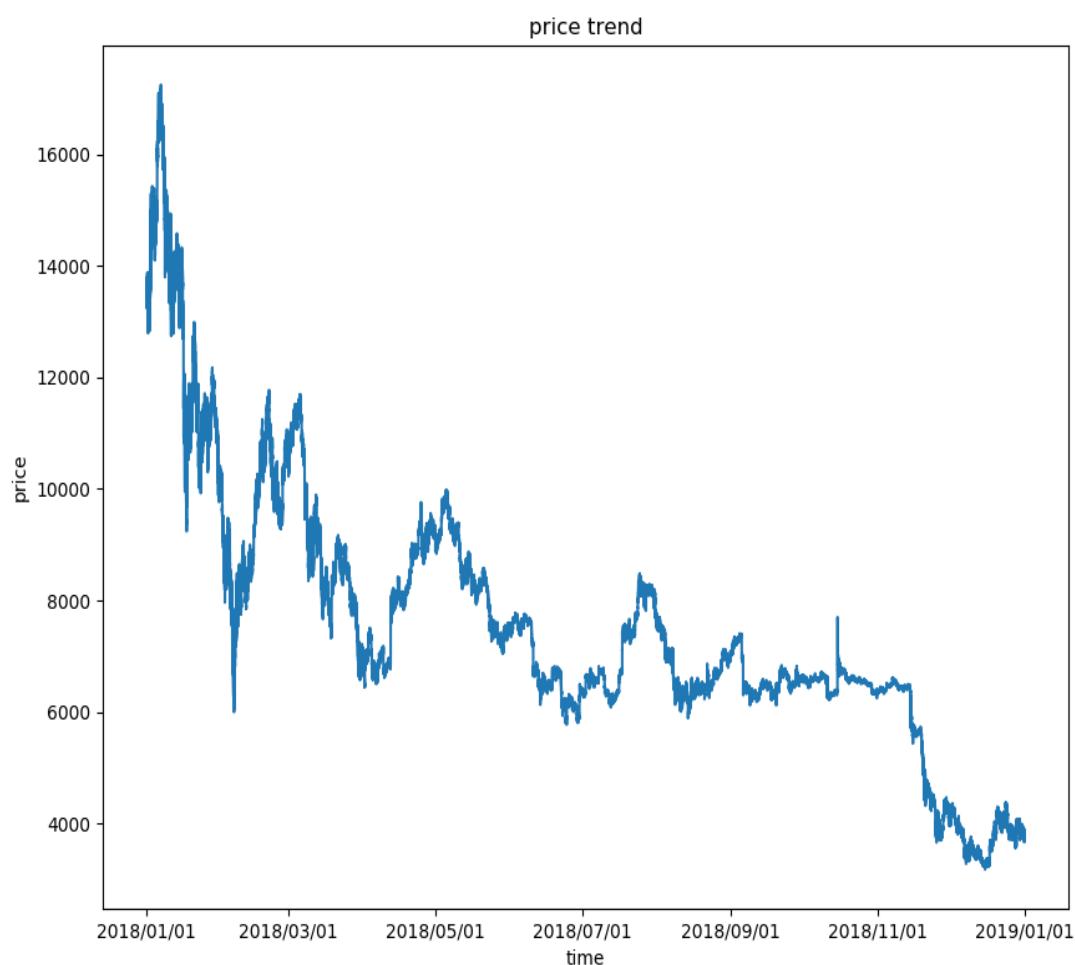
The table listed above shows the correlation matrix among volume (\$10K), exchange and rank. Correlation between volume and rank, P1, is 0.39, while correlation between exchange and rank, P2, is 0.66. As P2 is greater than P1, it can be concluded that exchange is more related and can leave more influence on rank. From listing side, number of exchanges needs more attention to bid a higher rank if a new product is coming out and to be listed on the platform. From corporate business side (platform), marketing strategy to provide a rank should be more focusing on highly-exchanged products, as they are more active in the markets and can bring more profit happening during the transactions.

#### 3.3 Turtle trading philosophy backtesting

The basic strategy is to buy futures on a 20-day high (breakout) and sell on a 20-day low, although the full set of rules is more intricate.

| time                                      | OrderSlippage                       | InitCash    | NowCash      | PortfolioValue | TotalReturn%   |
|---|-------------------------------------|-------------|--------------|----------------|--|
| 2018-01-01 00:00:00 — 2019-01-01 00:00:00 | {'ETH_USDT': 1.0), 'BTC_USDT': 1.0} | 10000       | 12691.2409   | 0              | 26.91240897  |
| CAGR%                                     | MAR                                 | Sharp       | TradesNumber | MaxDrawdown%   | MarketReturn%  |
| 26.16878827                               | 15.697212                           | 2.316959518 | 9702         | 1.714470585    | {'ETH_USDT': -81.53428377460964019008825526, 'BTC_USDT': -72.14789500472624154729877118} |

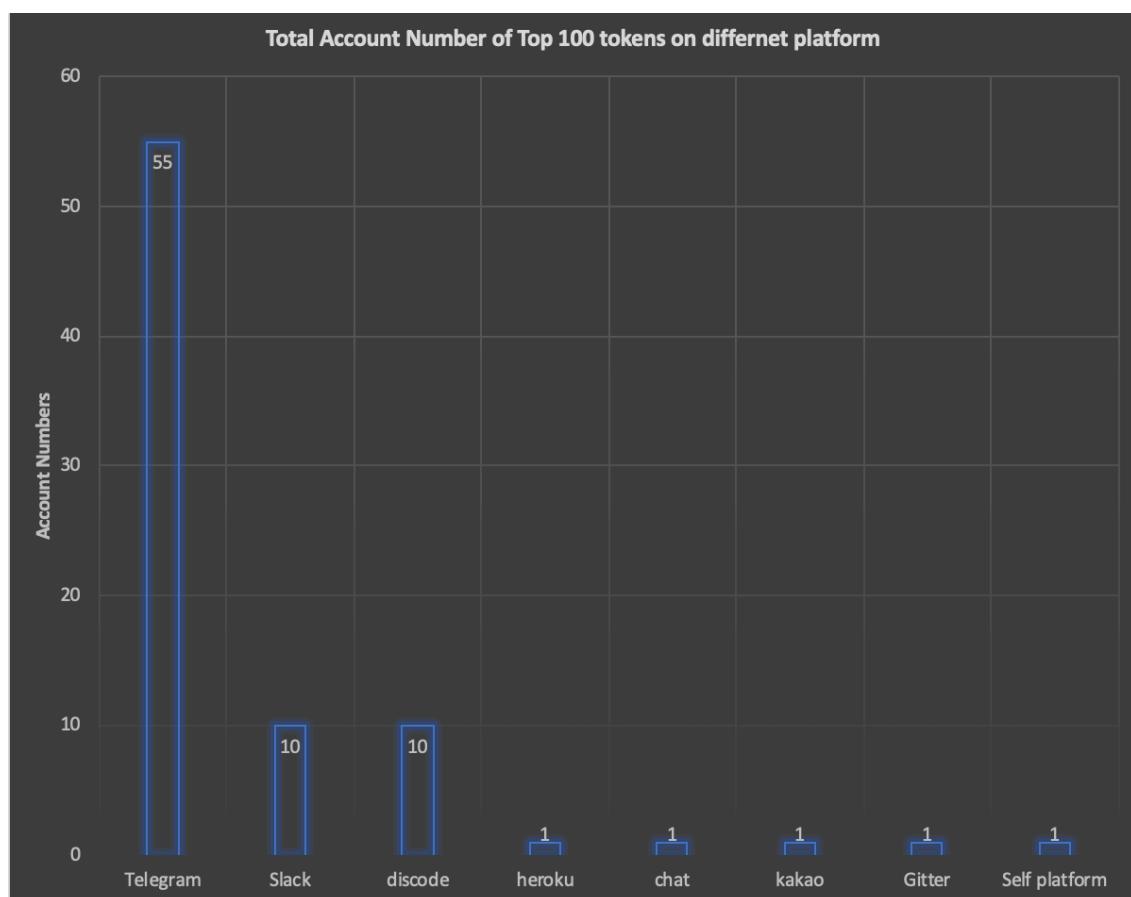




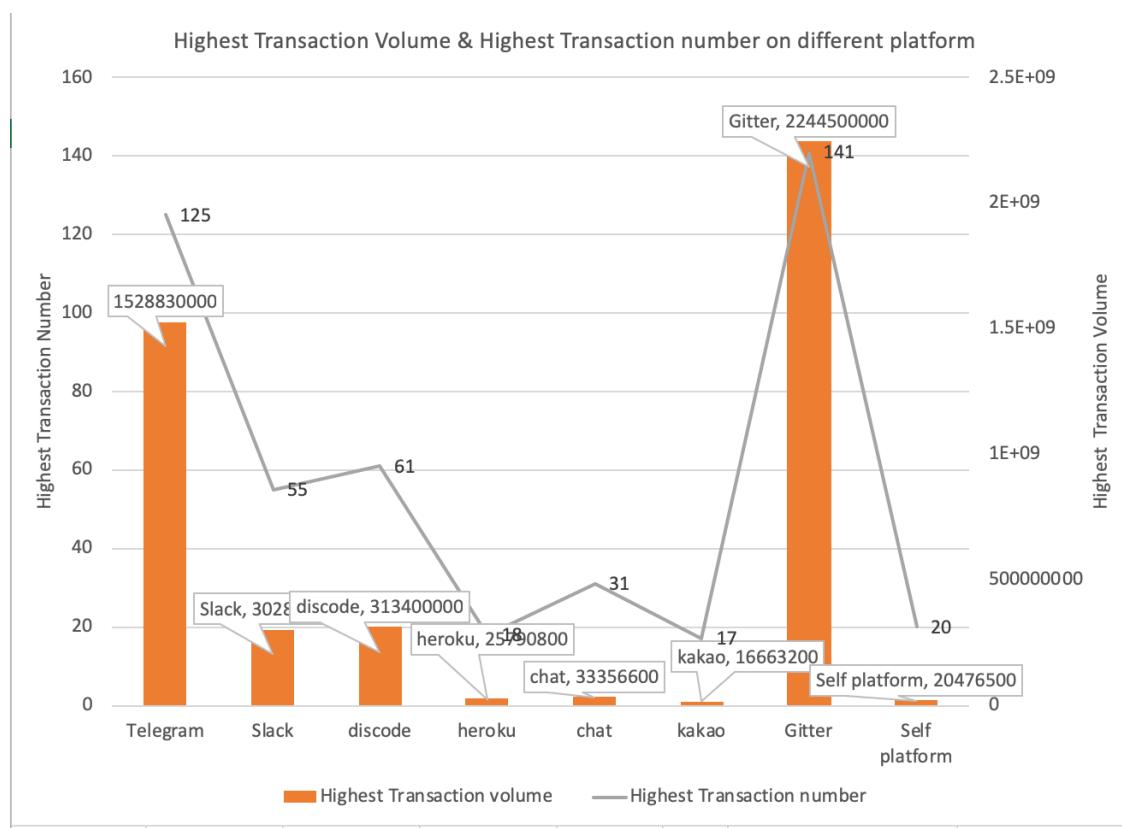
#### 4. Digital community study

Community chat platforms: Telegram, Slack, DisCode, Heroku, Chat, Kakao, Gitter, Self platforms

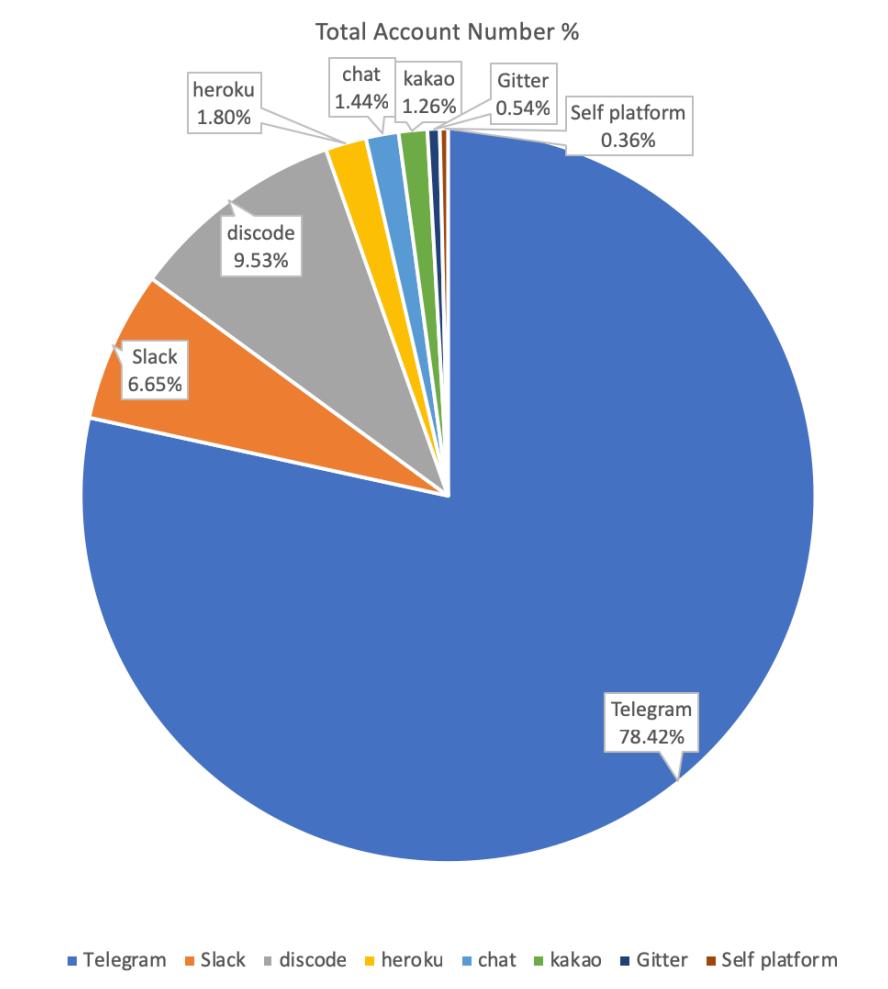
| Platforms      | Accounts<br>in top 100 | Highest<br>ranking list | Highest<br>transaction<br>volume | Name     | Rank | Highest<br>transaction<br>number |
|----------------|------------------------|-------------------------|----------------------------------|----------|------|----------------------------------|
| Telegram       | 55                     | 3                       | 1528830000                       | EOS      | 5    | 125                              |
| Slack          | 10                     | 8                       | 302833000                        | TRON     | 10   | 55                               |
| DISCODE        | 10                     | 3                       | 313400000                        | RIPPLE   | 3    | 61                               |
| HEROKU         | 1                      | 39                      | 25790800                         | WAVES    | 39   | 18                               |
| chat           | 1                      | 50                      | 33356600                         | Status   | 50   | 31                               |
| KAKAO          | 1                      | 98                      | 16663200                         | Gift0    | 98   | 17                               |
| GITTER.JM      | 1                      | 2                       | 2244500000                       | Ethereum | 2    | 141                              |
| Self platforms | 1                      | 56                      | 20476500                         | Loopring | 56   | 20                               |

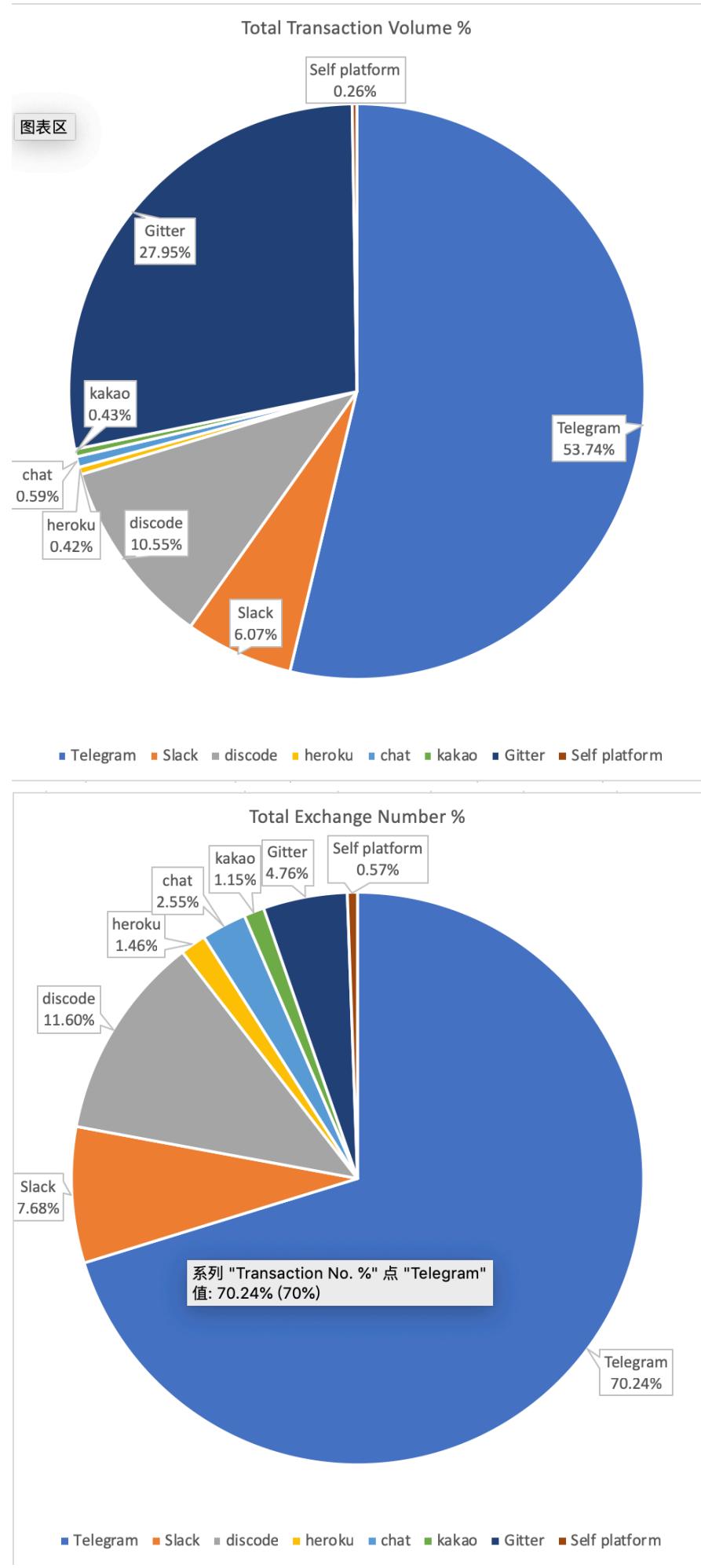


According to the total amount of account numbers, telegram has a huge advantage than other platforms, it contains 55 of top 100 token accounts. The second platforms are Slack and Discode, both have 10 of top 100 token accounts.



According to the highest transaction volume-USD, Gitter have a very high volume at 2,244,500,000 which is belong to ETH. The second one is Telegram, with the highest transaction volume-USD is 1,528,830,000 belonging to EOS. About the highest transaction number, Gitter is 141 contributed by ETH as well and Telegram is 125 data from Litecoim. Gitter and Telegram shown great advantage than the other platforms on these two indexes.





Telegram: total account number 78.42%, total transaction volume 53.74%, total transaction number 70.24%

Evaluation: have highest market share and market activities, should be the first choice of delivery promotion and advertising.

### Special Case: Gitter

Gitter has a very low (0.54%) account number share, however, it has total transaction market share up to 27.95% and the total exchange number share up to 4.76%. The reason is the second market share token Ethereum (ETH) has chosen Gitter as their only community platform. It will be a very good result for ETH, because their customers will show a very high loyalty on this platform, which means, this platform will have a very low acceptance of a new token.

Suggestion: Don't choose Gitter as our community platform and reduce the AD cost on this platform.

Advertising rank suggestion: Telegram (60%), Discord (25%), Slack (15%)

## **Appendix A – Program structure & Programming realization**



1 contributor

140 lines (128 sloc) | 3.88 KB

[Raw](#) [Blame](#) [History](#)

```
1 # coding: utf-8
2 from __future__ import print_function
3 import requests
4 from bs4 import BeautifulSoup
5 from bs4 import SoupStrainer
6 import csv
7 import os
8 import time
9 import lxml
10 import re
11
12 class Spider(object):
13     def __init__(self):
14         self.session = requests.session()
15         self.targetUrl = None
16         self.headers = {
17             'User-Agent': 'Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/'
18         }
19
20     def getResponse(self, url=None):
21         try:
22             self.session.headers = self.headers
23             self.targetUrl = url
24             resp = self.session.get(self.targetUrl, headers=self.headers)
25             return resp
26         except Exception as e:
27             print(e)
28
29     def getVolume(self):
30         url = 'https://api.coinmarketcap.com/v1/ticker/?limit=2000'
31         try:
32             resp = self.getResponse(url)
33         except Exception as e:
34             print(e)
35         return resp.json()
36
37     def getWebSite(self, id):
38         url = 'https://coinmarketcap.com/currencies/%s/' % id
39         try:
40             html = self.getResponse(url).content
41             only_a_title = SoupStrainer('ul', attrs={'class': 'list-unstyled'})
42             soup = BeautifulSoup(html, "lxml", parse_only=only_a_title)
43             links = soup.select('span[title="Website"] ~ a')
44             r = []
45             for x in links:
46                 r.append(x['href'])
47             return ' , '.join(r)
48         except Exception as e:
49             print(e)
50         return ''
51
52     #非小号网址
53     def getFeixiaohaoLink(self, id):
54         url = 'https://www.feixiaohao.com/currencies/%s/' % id
55         try:
56             return url
57         except Exception as e:
58             print(e)
59         return ''
```

```

61     #发行日期
62     def getDate(self, id):
63         url = 'https://www.feixiaohao.com/currencies/%s/' % id
64         try:
65             html = self.getResponse(url).content
66             only_a_title = SoupStrainer('div', attrs={'class': 'secondPark'})
67             soup = BeautifulSoup(html, "lxml", parse_only=only_a_title)
68             values = soup.select('span[class="value"]')
69             date = re.findall("\d+", values[3].string)
70             if date:
71                 return '-'.join(date)
72             else:
73                 return ''
74         except Exception as e:
75             print(e)
76             return ''
77
78     #上架交易所
79     def getNumber(self, id):
80         url = 'https://www.feixiaohao.com/currencies/%s/' % id
81         try:
82             html = self.getResponse(url).content
83             only_a_title = SoupStrainer('div', attrs={'class': 'secondPark'})
84             soup = BeautifulSoup(html, "lxml", parse_only=only_a_title)
85             value = soup.find('a')
86             number = re.findall("\d+", value.string)[0]
87             return number
88         except Exception as e:
89             print(e)
90             return ''
91
92     #telegram
93     def getChat(self, id):
94         url = 'https://coinmarketcap.com/currencies/%s/' % id
95         try:
96             html = self.getResponse(url).content
97             only_a_title = SoupStrainer('ul', attrs={'class': 'list-unstyled'})
98             soup = BeautifulSoup(html, "lxml", parse_only=only_a_title)
99             links = soup.select('span[title="Chat"] ~ a')
100            r = []
101            for x in links:
102                r.append(x['href'])
103            return ', '.join(r)
104        except Exception as e:
105            print(e)
106            return ''
107
108    def getLink(self, id):
109        url = 'https://coinmarketcap.com/currencies/%s/' % id
110        try:
111            return url
112        except Exception as e:
113            print(e)
114            return ''
115
116    def dumpCSV(self):
117        path = os.path.join(os.path.split(os.path.realpath(__file__))[0], 'coin.csv')
118        exchangeResult = self.getVolume()
119        with open(path, 'w') as f:
120            fieldnames = ['rank', 'name', 'link', 'symbol','feixiaohao', 'volume-usd', 'website', 'chat', 'date', '']
121            wr = csv.DictWriter(f, fieldnames=fieldnames)
122            wr.writeheader()
123            i = 1
124            for x in exchangeResult:
125                print(i, x['name'])
126                link = self.getLink(x['id'])
127                websites = self.getWebSite(x['id'])
128                chats = self.getChat(x['id'])
129                fei = self.getFeiXiaohaoLink(x['id'])
130                date = self.getDate(x['id'])
131                number = self.getNumber(x['id'])
132                wr.writerow({'rank': x['rank'], 'name': x['name'], 'symbol': x['symbol'], 'link': link, 'feixiaohao': fei, 'volume-usd': date, 'website': websites, 'chat': chats})
133                i += 1
134
135    if __name__ == '__main__':
136        spider = Spider()
137        start = time.time()
138        spider.dumpCSV()
139        print(time.time() - start)

```

## Appendix B – Screenshot of the working platform

This screenshot shows a GitHub repository page for a project named "blockchain-research". The repository has the following statistics:

- Code: 3 commits
- Issues: 0
- Pull requests: 0
- Projects: 0
- Wiki: 0
- Insights: 0
- Settings: 0

The repository is used for blockchain research archiving. It contains one branch (master) and one contributor (ZheDongeva). The latest commit is e0b2e0d, dated 9 days ago.

Branch: master ▾ New pull request Create new file Upload files Find File Clone or download

| File                      | Description               | Last Commit |
|---------------------------|---------------------------|-------------|
| ICObench_2018.csv         | icobench init upload      | 9 da        |
| README.md                 | Initial commit            | 9 da        |
| coinmarketcap_2018.csv    | coinmarketcap init upload | 9 da        |
| coinmarketcap_research.py | coinmarketcap init upload | 9 da        |
| icobench_research.py      | icobench init upload      | 9 da        |

README.md

# blockchain-research

ZheDongeva icobench init upload

Latest commit e0b2e0d 9 da

ICObench\_2018.csv icobench init upload 9 da

README.md Initial commit 9 da

coinmarketcap\_2018.csv coinmarketcap init upload 9 da

coinmarketcap\_research.py coinmarketcap init upload 9 da

icobench\_research.py icobench init upload 9 da

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## Appendix C – Regression Output

### SUMMARY OUTPUT

| Regression Statistics |            |
|-----------------------|------------|
| Multiple R            | 0.44315625 |
| R Square              | 0.19638746 |
| Adjusted R Square     | 0.19498254 |
| Standard Error        | 150.56239  |
| Observations          | 574        |

### ANOVA

|            | df  | SS         | MS         | F          | Significance F |
|------------|-----|------------|------------|------------|----------------|
| Regression | 1   | 3168809.06 | 3168809.06 | 139.785805 | 5.2097E-29     |
| Residual   | 572 | 12966687   | 22669.0332 |            |                |
| Total      | 573 | 16135496.1 |            |            |                |

|              | Coefficients | Standard   | t Stat     | P-value                       |
|--------------|--------------|------------|------------|-------------------------------|
|              |              | Error      |            |                               |
| Intercept    | 249.937724   | 7.15067524 | 34.9530241 | 4.446E-144                    |
| X Variable 1 | 0.12074718   | 0.01021282 | 11.8231047 | 5.2097E-29                    |
|              |              |            |            |                               |
|              |              | Lower 95%  | Upper 95%  | Lower 95.0%<br>Upper<br>95.0% |
| Intercept    | 235.89294    | 263.982508 | 235.89294  | 263.982508                    |
| X Variable 1 | 0.10068799   | 0.14080638 | 0.10068799 | 0.14080638                    |

### RESIDUAL OUTPUT

### PROBABILITY OUTPUT

| Observation | Predicted Y | Residuals  | Standard Residuals | Percentile | Y  |
|-------------|-------------|------------|--------------------|------------|----|
| 1           | 695.795357  | -331.79536 | -2.2056322         | 0.08710801 | 2  |
| 2           | 678.672735  | -159.67274 | -1.0614354         | 0.26132404 | 3  |
| 3           | 674.217667  | -300.21767 | -1.9957174         | 0.43554007 | 4  |
| 4           | 671.333319  | -102.33332 | -0.6802677         | 0.6097561  | 5  |
| 5           | 667.794329  | -100.79433 | -0.6700372         | 0.78397213 | 6  |
| 6           | 664.441674  | -190.44167 | -1.265974          | 0.95818815 | 7  |
| 7           | 654.593735  | -325.59373 | -2.1644065         | 1.13240418 | 8  |
| 8           | 646.980337  | -63.980337 | -0.4253137         | 1.30662021 | 9  |
| 9           | 613.090915  | -205.09092 | -1.3633558         | 1.48083624 | 10 |
| 10          | 600.938919  | -232.93892 | -1.5484773         | 1.65505226 | 11 |
| 11          | 587.191852  | -156.19185 | -1.038296          | 1.82926829 | 12 |
| 12          | 576.67826   | -41.67826  | -0.2770591         | 2.00348432 | 13 |
| 13          | 573.169884  | -291.16988 | -1.9355716         | 2.17770035 | 14 |
| 14          | 556.702934  | -7.7029339 | -0.0512058         | 2.35191638 | 15 |
| 15          | 549.646119  | 27.3538811 | 0.18183679         | 2.5261324  | 16 |
| 16          | 547.609718  | 17.3902823 | 0.11560309         | 2.70034843 | 17 |
| 17          | 524.561495  | 46.4385047 | 0.30870312         | 2.87456446 | 18 |
| 18          | 523.537157  | -188.53716 | -1.2533136         | 3.04878049 | 19 |
| 19          | 508.928357  | -54.928357 | -0.36514           | 3.22299652 | 20 |
| 20          | 506.151172  | -136.15117 | -0.9050742         | 3.39721254 | 21 |
| 21          | 468.539475  | 101.460525 | 0.67446576         | 3.57142857 | 22 |
| 22          | 467.98983   | -94.98983  | -0.6314514         | 3.7456446  | 23 |
| 23          | 459.894375  | 97.1056247 | 0.64551626         | 3.91986063 | 24 |
| 24          | 457.974771  | -20.974771 | -0.1394312         | 4.09407666 | 25 |
| 25          | 453.698596  | -81.698596 | -0.543097          | 4.26829268 | 26 |

| ... | ...        | ...        | ...        | ...        | ... |
|-----|------------|------------|------------|------------|-----|
| 557 | 250.113272 | -75.113272 | -0.4993206 | 96.9512195 | 566 |
| 558 | 250.102831 | -97.102831 | -0.6454977 | 97.1254355 | 567 |
| 559 | 250.101414 | -134.10141 | -0.8914483 | 97.2996516 | 568 |
| 560 | 250.098857 | -127.09886 | -0.8448983 | 97.4738676 | 569 |
| 561 | 250.098471 | -199.09847 | -1.3235207 | 97.6480836 | 570 |
| 562 | 250.098124 | -94.098124 | -0.6255237 | 97.8222997 | 571 |
| 563 | 250.084013 | -208.08401 | -1.3832527 | 97.9965157 | 572 |
| 564 | 250.040324 | -236.04032 | -1.5690941 | 98.1707317 | 573 |
| 565 | 250.036918 | -70.036918 | -0.4655752 | 98.3449477 | 574 |
| 566 | 250.004838 | -222.00484 | -1.4757923 | 98.5191638 | 575 |
| 567 | 250.000274 | -92.000274 | -0.6115781 | 98.6933798 | 576 |
| 568 | 249.998745 | -159.99875 | -1.0636026 | 98.8675958 | 577 |
| 569 | 249.991431 | -53.991431 | -0.3589117 | 99.0418118 | 578 |
| 570 | 249.980506 | -245.98051 | -1.6351722 | 99.2160279 | 579 |
| 571 | 249.97359  | -189.97359 | -1.2628624 | 99.3902439 | 580 |
| 572 | 249.971045 | -108.97104 | -0.7243924 | 99.5644599 | 582 |
| 573 | 249.962533 | -228.96253 | -1.522044  | 99.738676  | 583 |
| 574 | 249.961002 | 6.03899787 | 0.04014465 | 99.912892  | 584 |