Introduction

Cryptocurrencies, or digital currencies, are the first attempts at digitizing and decentralizing the modern currency system. Using special cryptographic signatures and a unique reward system, cryptocurrency is unlike any fiat (i.e. real money) currency in the world. It is bankless and requires no intermediaries. For every virtual "coin" in existence, a logbook of transactions is created. This logbook is known as the blockchain and records every transaction involving the coin, regardless of size or perceived value.

Every time a certain number of transactions is verified by users (known as "miners") who pool their computing power together, a block of coins is generated and distributed as payment to the miners. Reward amounts are usually based on how much hashing power (or work) a miner contributes.

The nature of cryptocurrency, in that most coins are generated and awarded in limited amounts, has shaped the way the digital currency economy functions. Bitcoin, the first and most famous among the coins, is the backbone of the economy and influences market values for every altcoin in existence.

The goal of this study was to determine who uses virtual currencies and their motivations for doing so. I also examined how altcoins like SolarCoin, designed to promote green energy, can dictate the future applications of cryptocurrency.

Methods and Observations

Over the course of the past few months I embedded with the cryptocurrency community by participating in Twitter discussions with cryptocurrency users, joining digital currency sub-Reddits and by mining coins for use. My first mined coin was Bitcoin before the computational difficulty made video card mining impossible. The more users mine a certain coin, the harder it is to earn rewards given the increases in required hashing power and decreasing reward amounts.

Bitcoin mining was accomplished with a Radeon 5770, an outdated 3D-image rendering hardware component by current mining standards. I then used the Bitcoin to purchase video card upgrade components (two Nvidia M51 660s) and began to mine the altcoin Dogecoin. The internet meme-turned-coin has recently been featured for its generous community that's financed Olympic bobsleds and a NASCAR driver, as well as donations for charitable causes like Doge4Water.

I noticed drastic differences in the two Reddit communities of Bitcoin and Dogecoin. Investigating further through several articles, Twitter accounts that follow cryptocurrencies and through my supervisor Jason, I discovered that Dogecoin represented a more common use currency whereas Bitcoin was the "gold standard" of the digital currency system.

Figure 2. The non-profit Doge 4 Water, which collected Dogecoins and cash for wells in Africa.

With this in mind, I frequently participated in online thread discussions regarding the status and future of Dogecoin values, tracking all altcoin values via the Coin Market Cap site. On a website I contributed to, I posted several Dogecoin and cryptocurrency-related blogs to gauge non-expert reaction to digital currency. The response was remarkably positive, inspiring some users to start mining and trading.

I also tracked cryptocurrency exchanges for changes in value and researched the other altcoins listed. I found unique standouts like SolarCoin, MazaCoin and PotCoin that each fit a niche group of users. Many of these altcoins seem to be designed with specific purposes beyond purchasing goods or investment.

SolarCoin is paid out for those who switch to solar panels while MazaCoin has become the official currency of the Lakota tribes. PotCoin is, as the name suggests, a cryptographically-secure currency for purchasing illicit and illegal items. Interacting with these communities, I learned about the mining incentives and spending habits of the average user for many of the coins.

Whether it's Bitcoin, SolarCoin or other currencies, I found the common thread among all altcoins to be three archetypal users: the speculator, the spending consumer and the idealist pioneer. The speculator seeks to acquire monetary gains by mining or investing in coins early and selling them when the value increases. The consuming spenders will treat cryptocurrencies like cash and use them at online vendors or trade them for goods. The idealist pioneers are those who believe in the belief that cryptocurrencies can be used beyond everyday contexts, like altruistic causes. Within and outside these archetypes exist many other sub-types of users. Some cryptocurrency users are even combs of the archetypes but when it comes to general user types, these are the guidelines one should use when analyzing coin usage.

Work Site and Goals

This study was an independent project under the supervision of Forbes tech contributor Jason Evangelho. He and I both tracked trends in cryptocurrency and mined several different digital coins. I based my study around examining the common types of users of cryptocurrencies and to establish the reasons of altcoins to the ambitions, beliefs and goals of cryptocurrency users. By examining who uses digital coins and why, I hope to bring cryptocurrencies to a broader audience and provide a better glimpse of the possible future of currency.

Acknowledgments

I’d like to acknowledge Jason Evangelho for providing his unique insight into cryptocurrencies and to Dr. Holtz and Dr. Merck for supporting my efforts. Without their assistance, I would not have been able to gain a strong foundation in cryptocurrency trends and core principles.

Analysis and Discussion

The three archetypes often help to determine what coins a user invests or mines. Most users of coins like Bitcoin are technological experts, mining using expensive and advanced hardware such as specialized ASICs. The expectation is that Bitcoin prices will rise to generate net profits. Speculators are less concerned with a legitimate using cryptocurrency as a flat alternative and more interested in investment opportunities.

Users of Dogecoin and smaller altcoins are less experienced and often new to cryptocurrencies. The Reddit community welcomes these fresh users and often provides tips on how to get started mining. It’s here where we see the majority of spending consumers. The lower altcoin values mean spenders are more prone to exchanging altcoins for goods from other users. I personally purchased and sold numerous digital and physical goods using Dogecoin because it was cheap, convenient and offered relatively stable buying power.

Figures 3 and 4. The DogeMarket and Dogecoin subreddits, where users can buy goods with Doge and catch up on Bitcoin developments.

Idealist pioneers are the most interesting of cryptocurrency users, favoring the principle of adoption for the sake of increasing coin popularity over profits or purchasing consumer goods. These users help to form the backbone of charitable groups like Doge4Water and Doge 4 Nascar. Donations are made purely to expand the reach and influence of Dogecoin, and also as genuine acts of good will. For altcoins like Dogecoin, positive public image will help to increase adoption.

Like Dogecoin, SolarCoin was designed to bring the cryptocurrency market to a new userbase by offering incentives for solar power generation. It promotes alternative energy usage while offering a legitimate spendable alternative to Bitcoin and other altcoins. This could most certainly appeal to young, environmental-conscious students as an introductory experiment in cryptocurrency. More importantly, it rewards divestment from fossil fuel. While the coin hasn’t been around for a long time, it’s lower mining power consumption and green-friendly message offer a truly worthwhile coin.

Will cryptocurrencies weather the current legislative hurdles and public skepticism? That remains to be seen, at least with the market instability and negative image of drug-friendly coins. Despite all this, the good-natured Dogecoin and environmentally-friendly SolarCoin is evidence that cryptocurrencies can be more than money. Coins can be tailored to support various causes and cater to the many unique interests worldwide while avoiding the elitist attitudes and demanding mining hardware required for coins like Bitcoin.

Impact and Future Work

This study is a unique attempt to break down the core user experience of cryptocurrencies. I believe it can serve as a template for how users choose which coins to mine. Whatever archetype fits you, there’s a coin designed with you in mind. My ultimate goal is to better understand how cryptocurrencies fit in a global economy. I want to understand the skepticism and convince non-users of the benefits of adopting cryptocurrencies like SolarCoin.