Disrupting Fintech: Key Factors for Adopting Bitcoin

Ahmed Zouhair, Student (Corresponding author)

University of the Incarnate Word, San Antonio, Texas, USA

Tel: 512-693-7682   E-mail: zouhair@student.uiwtx.edu

Dr. Noah Kasraie, Professor

University of the Incarnate Word, San Antonio, Texas, USA

Tel: 210-829-3133   E-mail: kasraie@uiwtx.edu

Abstract

Bitcoin is one of the original cryptocurrencies. It was introduced by an anonymous author who goes by the pseudonym of Satoshi Nakamoto (Nakamoto, n.d.). His genius proposal was based on the premise of user anonymity and decentralization (Barber, Boyen, Shi, Uzun, 2012). Bitcoin started out as a payment system among a small group of enthused users and was then mass-adopted. Most users employ it for legal activities such as investments and purchases, while some use it for illegal activities, products, and services like gambling, money laundering, tax evasion, kidnap ransoms, drugs, and prostitution (Kristoufek, 2015). In regard to reasons for using Bitcoin, studies have shown that the majority of Bitcoin owners view it as an investment rather than a currency for purchases or other financial transactions (Henry, Huynh, & Nicholls, 2018; Glaser, Zimmermann, Haferkorn, Weber & Siering, 2014). The purpose of this study was to determine what attracts and motivates consumers to own Bitcoin cryptocurrency and to fill a gap in the academic literature. The findings indicate that there is a strong relationship between owning Bitcoin and a desire for financial profit. This study concludes that the main motivation is of course profit which was driven by both finances and innovative technology led Bitcoin users to mining and installing Bitcoin clients, and then investing and trading afterwards.

Keywords: Bitcoin, Cryptocurrency, Digital currency, Blockchain, P2P, Fintech, Disruption

1. Introduction

Cryptocurrency is an unregulated, digital form of virtual payment that is stored on a computer. It works like any currency except it uses a computer program like Bitcoin Client Software to

manage transactions between buyers and sellers (Virtual Currency, 2018). It allows any consumer to make electronic online payments directly to other consumers and businesses using a peer-to-peer (P2P) computer network. All that is needed is an internet connection and mobile phone, not a bank account. Therefore, consumers are able to bypass traditional third-party banking institutions, and due to virtual online privacy and anonymity, they are able to conceal their identities (Abadie & Carrington 2017).

Cryptocurrency is based on an honor system which relies on the trustworthiness of the users (Antonopoulos, 2014; Nakamoto, 2008). Double-spending, or digital counterfeiting, which occurs when someone claims the currency paid for goods and services still belongs to him or her, is preventable with cryptocurrencies. This is done by automatically updating the group's blockchain ledger with electronic signatures (Antonopoulos, 2014; Nakamoto, 2008).

Bitcoin, the original cryptocurrency, was introduced by an anonymous author who goes by the pseudonym of Satoshi Nakamoto (Nakamoto, n.d.). His proposal was based on the premise of user anonymity and decentralization (Barber et al., 2012). Bitcoin started out as a payment system among a small group of enthused users and was then mass-adopted. Most users employ it for legal activities such as investments and purchases, while some use it for illegal activities, products, and services like gambling, money laundering, tax evasion, kidnap ransoms, drugs, and prostitution (Kristoufek, 2015).

Bitcoin has experienced enormous success since its inception despite its critics and disbelievers because it is easy to grasp and hard to destabilize (Barber et al., 2012). Its popularity is increasing and its use on the internet will continue to expand (Madey, 2017; Huang, 2015). It can be purchased online as well as at retailers to procure merchandise like olive oil in Spain and vodka in Moscow (Semova, Dimitrova, & Haralampiev, 2017). In 2017, there were at least 9,150 brick and mortar stores that accepted bitcoins as payment (Semova et al., 2017). Overstock, Zynga, Wordpress, Baidu, and TigerDirect are among retailers that accept bitcoins (Hernandez, Bashir, Jeon, Bohr, 2014). Microsoft has accepted redeeming bitcoins as store credits since 2014 and as payment for movies and Xbox games at online stores ("How to use Bitcoin," 2018).

Madey (2017) predicted that in 2017 the value of Bitcoin would exceed half of the value of all Canadian-listed companies, and over half the market value of all London stocks. This cryptocurrency growth threatens governments, financial systems and the public at large (Madey, 2017). This is because it directly competes with them for the same customers.

Additionally, cryptocurrency has created more than 2,000 full time jobs in various exchange sectors with particular focus on security, payments, and customer services with an estimated 5.8 million to 11.5 million active wallets (Hileman & Rauchs, 2017). A wallet is software that securely stores, sends, and receives Bitcoin using private and public cryptographic keys. The number of wallet providers is skyrocketing each year. It has risen from 8.2 million in 2013 to nearly 35 million in 2016 (Abadie & Carrington, 2017). Despite the growing use of cryptocurrency, because of the anonymity of the internet, little is known about who Bitcoin users are and why they choose to use cryptocurrency.

Bitcoin could have a major social impact because of its disruption of the traditional banking system with its low costs, fast transactions, financial advising services, and micropayments (Parino, Beir ó, & Gauvin, 2018). Consumers need to be aware of the resulting fast-paced changes occurring in the banking world and understand the implications for their daily lives (Glaser et al., 2014).

2. Background

Previous Bitcoin studies have looked into the population that is familiar with Bitcoin, reasons behind Bitcoin use, and some Bitcoin user characteristics. A study based on the Bank of Canada's 2017 Bitcoin Omnibus Survey, which tracked the acceptance and usage of Bitcoin in Canada, found that 64% of Canadians had heard of Bitcoin, while only 2.9% owned it (Henry et al., 2018). The study's findings were that awareness of Bitcoin was correlated mainly with unemployed males, some of whom had college degrees. However, the majority of Bitcoin owners were high school students (Henry et al., 2018).

In regard to reasons for using Bitcoin, studies have shown that the majority of Bitcoin owners view it as an investment instead of as currency for purchases or other financial transactions (Henry et al., 2018; Glaser et al., 2014). Another 2018 study established that there is a correlation between Bitcoin and investing (Baur, Hong, & Lee, 2018). A finding of another study was that Bitcoin attracted computer-programming enthusiasts along with criminals who use it for illegal activities (Yelowitz & Wilson, 2015). For still other Bitcoin users, the attraction is participating in a monetary revolution and experiencing a sense of empowerment (Khairuddin, Sas, Clinch & Davies 2016).

An analysis of the structure of the Bitcoin community indicated that wealth, optimism, and Bitcoin awareness have some positive correlation with youth, geographic location, early cryptocurrency adoption, Bitcoin mining, political affiliation, and online Bitcoin forum discussions (Bohr & Bashir, 2014). Another research team analyzed the concepts that Bitcoin users stress in their language by analyzing thousands of Twitter messages (Hernandez et al., 2014). They found that typical Twitter users are more likely to mention emotional words than Bitcoin users are, and that Bitcoin users have fewer connections to other Twitter users.

The current study fills a gap in the academic literature by investigating Bitcoin users' motivations that have not yet been analyzed. Motivation includes the degree of desire for social belonging and the level of aspiration for profit. The purpose is to determine what attracts and motivates consumers to use Bitcoin cryptocurrency and to fill a gap in the academic literature.

3. Research Questions and Hypotheses

Bitcoin is an innovative and disruptive application of digital technology in the financial world. Because of the privacy, complexity, and anonymity of Bitcoin users and their communities it is difficult to ascertain who they are. This study's main research question is: What are the motivations for owning Bitcoin? The following hypothesis emerges as a result of the research questions:

H0: There is no significant relationship between the desire for profit and owning Bitcoin.

H1: There is a significant relationship between the desire for profit and owning Bitcoin.

Assumptions:

Bitcoin as a Dependent Variable and is defined as the dichotomous non-numeric.

Installation is defined as a dichotomous non-numeric independent variable where users have installed an instance of Bitcoin client in their computers or smart phones.

Investing is defined as a numeric independent variable to determine how money was spend by Bitcoin users.

Miners is defined as the dichotomous non-numeric independent variable, Bitcoin users who are mining are responsible for gathering unofficial transactions into new blocks and adding them to the global ledger (the 'blockchain'). Miners gets compensated when they add each valid block to the ledger.

Profit is defined as a numeric independent variable where users of Bitcoin get a financial return after spending money on Bitcoin hardware and software equipment's.

Trading is defined as a numeric independent variable to determine much gain or lost money when trading with Bitcoin as a currency. Demographic independent variables have been excluded from this model because previous have already been conducted on demographic and Bitcoin users.

4. Theoretical Framework

There have been many motivation theories like in William Ouchi on the principles of McGregor's Theory Z which was simply an extension of Douglas McGregor's (1960) Theory X and Theory Y concepts (Lunenburg, 2011). Theory Z culture involves for example consensual decision making, trust, subtlety, intimacy, motivation through self-interest, skills training, individual responsibility, and an informal control system with explicit measures of performance.

The conceptual framework for this study is based on William Ouchi's Theory Z (1993; Lunenburg, 2011). Theory Z was tested in schools in the early 1980s. The features which applied to schools include trust, subtlety, and intimacy; shared control and decision making; training in planning, organizational processes, budgeting systems, and interpersonal skills; motivation through self-interest; rewards over the long run; and the importance of high-quality education (Lunenburg, 2011).

The theoretical framework indicates the related variables that motivate users to own Bitcoin. This research has shown that there is a significant relationship between owning Bitcoin and financial and technology variables like profit, investing, trading, mining and the installation of Bitcoin client software as shown in Figure 1.
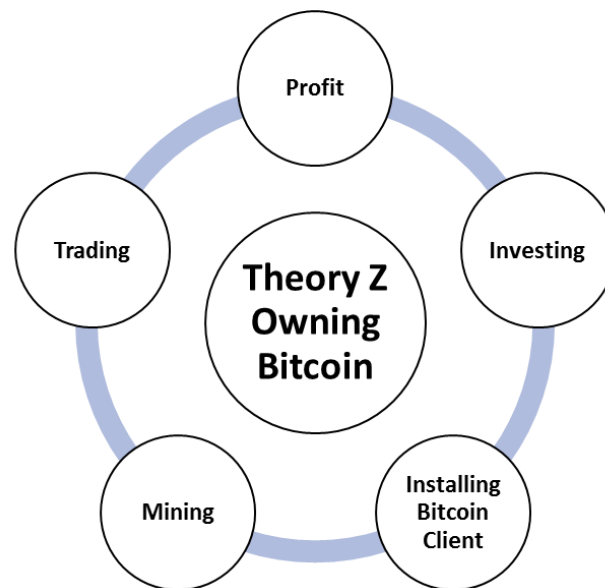
Figure 1. Motivations for Bitcoin ownership

5. Methodology and Results

This is a quantitative study of cryptocurrency users. Lui Smyth (2014) conducted a survey of Bitcoin users in 2013. Smyth collected survey responses for the duration of three months using social medias sites such as Bitcointalk.org, Reddit, Twitter, and Google+. His target population sample consisted of 1,000 Bitcoin users between the ages of 18 and 65. For the purposes of this study, his dataset was downloaded from a public website and was analyzed using the logistic regression method. The study was approved by the University of the Incarnate Word's Human Subjects Institutional Review Board (IRB). The IRB number is 19-02-005.

The logistic regression model makes no assumptions about variable distributions and has no biases (Hailpern & Visintainer, 2003). The dependent variable (DV) Bitcoin is used in the data analysis. The independent variables (IVs) are profit, investing, mining, installation, and trading, with particular focus on miners and installation. One of the omitted variables is gender because at least 95% of the sample were males (Bohr & Bashir, 2014). Freedom and anonymity have been omitted because of not enough data provided by participants in this model. Political and religious views variables were also omitted because they were irrelevant for this study. The model determines if there is a statistical significance between Bitcoin as a dependent variable and the independent variables profit, investing, trading, mining and installing Bitcoin software clients on users' personal machines (PCs). Most of the variables are skewed between the minimum and maximum values as shown in Table 1.

Table 1. Variables Description and Summary Statistics

Variable	Observed	M	SD	Min	Max
Bitcoin	1,000	0.947	0.22	0	1
Profit	993	3.70	1.25	1	5
Investing	977	4,102.00	19,552.00	0	400,000
Miner	1,000	0.520	0.50	0	1
Installation	1,000	0.920	0.27	0	1
Trading	1,000	3,530.00	17,181.00	-28,000	300,000

The log of the odds of owning Bitcoin is described by Equation 1. Using the adjusted odds ratios for each variable, the odds ratio of 1.30 for profit and installation gives a 830% increase in the odds of owning Bitcoin. Note that sample size is 970 which is acceptable and big enough as well as the Pseudo R2 shows a 25% variance of the dependent variable Bitcoin for this model. This logistic model is conversing at 154.75 because the difference between successive iterations gets smaller as shown in Table 2.

Table 2. Full Logit Model Results

Number of Obs	970.00						
LR chi2(5)	102.00						
Prob > chi2	0.00						
Pseudo R2	0.25						
Log likelihood (Iteration 7)	-154.75						
Logistic Regression							
Bitcoin	OR	Coef	SE	z	P > | z |	95% CI	
Profit	1.3	0.24	0.12	2.03	0.043	1.008	1.607
Investing	1.0	0.006	0.0002	2.38	0.017	1.0001	1.001
Miners	3.1	1.13	0.397	2.86	0.004	1.426	6.743
Installation	8.3	2.12	0.35	6.02	0.000	4.185	16.651
Trading	1.0	0.0001	0.00008	1.51	0.131	0.999	1.000
Constant	0.6	-0.56	0.508	-1.11	0.269	0.210	1.544

Note. Relationship between bitcoin and its independent variables. Adapted from STATA model of the research. OR = odds ratio; Coef = Coefficient; SE = standard error; z = z score; P = probability; CI = confidence interval.

The correlation model shows the regression model results between the dependent variable Bitcoin and each independent variable as shown in Table 3.

Table 3. Correlation Model Results

Bitcoin	Coef	P > | t |	95% CI	
Profit	.01201	0.036	0.0007	0.0233
Investing	5.38e-07	0.147	-1.89e-07	1.27e-06
Miners	0.0708	0.000	0.0433	0.0983
Installations	0.2901	0.000	0.2415	0.3388
Traders	6.27e-07	0.129	-1.82e-07	1.44e-06

Note. Relationship between the dependent variable Bitcoin and its independent variables profit, investing, miners, installations, and traders. Adapted from STATA model of the research. Coef = Coefficient; SE = standard error; P = probability; CI = confidence interval.

Equation 1 is a direct probability model because it is written in terms of Pr (Y =1 |Xi), where Y is the dependent variable Bitcoin and Xi is the independent variables. In testing the hypothesis, it appears that most of the independent variables become significant for the estimated full model of Equation 1:

$$\log(p/1-p) = \beta_0 + \beta_1 profit + \beta_2 miners + \beta_3 installation + \beta_4 trading + \beta_5 investing + \varepsilon ir \ (1)$$
where log (p-1/p) is the dependent variable Bitcoin which is the log of the odds in this logistic model.

The full model null hypothesis is as follows:

H0: $\beta_1=0$, $\beta_2=0$, $\beta_3=0$, $\beta_4=0$, and $\beta_5=0$

Ha: $\beta_1\neq0$, $\beta_2\neq0$, $\beta_3\neq0$, $\beta_4\neq0$, and $\beta_5\neq0$

This model rejects H0 for β_1 because p =0.043, which is less than 0.05. Therefore, the coefficient for profit is statistically significant (SS). The same is true for β_2, β_3, β_4. However, β_5 is not SS, which means that this model fails to reject the H0 for the test of the coefficient of β_5. The odds ratio (OR) is used to determine if there is a relationship between the log of odds of owning Bitcoin and the desire for profit.

For each unit increase in profit, there is a 30% increase in the odds of owning Bitcoin. Similarly, miners of Bitcoin have 3.1 times greater odds of owning Bitcoin than those who do not mine. The model indicates that installers of Bitcoin have 8.3 times greater odds of owning Bitcoin than those who do not install it. Finally, the model shows that trading is statistically non-significant, indicating that trading does increase the odds of owning Bitcoin by a very small fraction.

Profit was definitely a clear motivator of owning Bitcoin after controlling for other variables like investing, trading, mining and installing Bitcoin software clients on users' personal machines (PCs). Profit was still significantly associated with Bitcoin which explains as the importance of motivation for Profit increases, the adjusted odds of owning bitcoin increases significantly.

6. Limitations

Two limitations of the study must be noted. First, because of the privacy and anonymity of Bitcoin users, it is virtually impossible to directly access individuals who use this form of currency. Second, study participants are all males since they represent almost 95% of Bitcoin users.

7. Recommendations and Conclusion

This study shows profit is one of the most important motivations for owning Bitcoin. Mining and installing Bitcoin were among the main predictors and motivators for owning it. Investing in Bitcoin has statistical significance with owning Bitcoin, while trading does not. The results succinctly show that users invested simultaneously in both technology and Bitcoin, and as a result they unintentionally became Bitcoin owners.

This study researched the key factors and predictors of owning cryptocurrency. The motivating drivers were finances and innovative technology (Fintech), while the combination of investing, mining, installing and trading Bitcoin led to owning it. This study has concluded that profit is a unique indicator of and motivator for owning Bitcoin which is contributes to the academic body of knowledge concerning Bitcoin. More cryptocurrency research is needed. Other variables to investigate include, freedom, autonomy, regulation, bitcoin barriers, political views, religious views, country of origin, education, and security.

Bitcoin owners have increased in number, which has resulted in Bitcoin mining revenues skyrocketing to 2 billion dollars in 2016. There are at least 2,093 cryptocurrency exchanges ("Top 100 Cryptocurrencies," 2019), with a market cap of approximately $128 billion. Bitcoin is operating at a market cap of over $66 billion (Hileman and Rauchs (2017). These are good indicators that Bitcoin is not a passing fad, nor is it something to be ignored.

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Glossary

Bitcoin: Bitcoin is digital money within a decentralized peer-to-peer payment network. It is a hybrid between fiat currency and commodity currency without intrinsic value and independent of any government or monetary authority. (Baur et al., 2018). Bitcoin with a capital "B" refers to the Bitcoin protocol that sends and receives payment information; bitcoin with a lower case "b" refers to the corresponding unit of money (Dowd & Hutchinson, 2015).

Blockchain: Blockchain is a technology that works like an anonymous online ledger used for verifying and recording transactions made by Bitcoin users. These transactions are monitored and supported by a group of miners to prevent any illegal activities like double spending or

hacking Bitcoin. It is used by consumers for "stock" exchange in the global financial system (Kharif & Leising, 2018).

Cryptocurrency: Cryptocurrency is an unregulated, digital form of virtual payment that is stored on a computer. It works like any currency except it uses a computer program like Bitcoin Client Software to manage transactions between buyers and sellers (Virtual Currency, 2018). It allows any consumer to make electronic online payments directly to other consumers and businesses using a peer-to-peer (P2P) computer network.

Digital Wallet: A digital wallet is software that securely stores, sends, and receives Bitcoin using private and public cryptographic keys. (Abadie & Carrington, 2017).

Double Spending: Double spending occurs when a buyer makes a digital Bitcoin payment to a seller and spends it again for another transaction (Kharif & Leising, 2018).

Fiat: Fiat is legal tender. It is a fixed contract that is not supported by any collateral or physical commodities. It works for all types of payments during an exchange of commodities between the buyer and the seller. For example, a debtor must accept by law a payment as is from a creditor regardless of currency depreciation and, as a result, this payment will automatically remove debt (Kharif & Leising, 2018).

Fintech: Fintech is a combination of financial services and digital technology that is applied in the banking industry to, for example, minimize and eliminate costs for banks (Zavolokina, Dolata & Schwabe, 2016).

Hash Rate: The hash rate refers to Bitcoin network processing of transaction data using complex programming calculations. For example, a hash rate unit of 10 Th/s means that it processes 10 trillion calculations per second ("Some Bitcoin Words," n.d.).

Installation: Installation occurs when users install an instance of Bitcoin client on their computers or phones.

Miner: A miner is an individual who is responsible for monitoring and collecting unrecorded Bitcoin transactions into new blocks by adding and officially registering them to the global ledger called the blockchain. A miner gets rewarded for each Bitcoin transaction and for any official block that gets added to the blockchain ledger. A miner uses complex calculations and processing algorithms by computing multiple numbers of hashes to complete the block for the ledger (Hileman & Rauchs, 2017).

Mining Pool: A mining pool is a group of miners collaborating and working together using complex computer calculations and programming to find new blocks faster than their competitors, so they can make money. (Hileman & Rauchs, 2017).

P2P: P2P stands for "peer to peer." It is an electronic exchange of Bitcoin currency between buyers and sellers without the need for a third-party (Hileman & Rauchs, 2017).

Private Key: A private key is a secret piece of data just like a social security number that allows consumers to make Bitcoin transactions with their authentic cryptographic signature using their digital wallet ("Some Bitcoin Words," n.d.).

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