Exploring Motivations for the Use of Bitcoin Technology

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Exploring Motivations among Bitcoin Users

Irni Eliana Khairuddin
Universiti Teknologi MARA,
Malaysia
irnieliana@salam.uitm.edu.my

Corina Sas
Lancaster University
Lancaster, UK
corina@comp.lancs.ac.uk

Sarah Clinch
Lancaster University
Lancaster, UK
s.clinch@lancaster.ac.uk

Nigel Davies
Lancaster University
Lancaster, UK
n.a.davies@lancaster.ac.uk

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Abstract
This paper presents an exploratory study focusing on user experience with Bitcoin technology. We describe interviews with 9 Bitcoin users and report findings related to users' motivations for buying and using bitcoins. Our initial findings capture three main motivations such as Bitcoin's predicted role in a monetary revolution, users' increased empowerment, and their perception of a real value of Bitcoin currency. We conclude with reflections on the value of these findings for HCI researchers.

Author Keywords
Bitcoin technology; user motivation

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Introduction
Over the last decade, digital currencies such as Bitcoin have been adopted by the large public with increased interest. Experts have foreseen that Bitcoin users will reach almost 5 million by 2019 [20]. This growing community can buy bitcoins on online marketplaces, get them sent to their digital wallet in exchange for goods and services, or use them to buy goods or properties [11]. Within the global financial crisis, this

growth of global digital currency relying on open source decentralized platforms may become crucial. Yet, we know little about users' experience of engaging with Bitcoin technology, their motivation for buying and using bitcoins, as well as the benefits and challenges they face within this process.

This paper reports interviews with 9 Bitcoin users and their specific motivations for using this technology. Our findings indicate three main motivational factors: Bitcoin's predicted role in a monetary revolution, users' increased empowerment, and perceived real value of Bitcoin currency. We conclude with reflections on the value of these findings for HCI researchers.

Related Work

Money is the most prevalent medium of exchange, materialized as either national or complementary currency. Complementary currency is a local currency created to stimulate the local economy which can be also used to support the national currency [17].

Unlike such traditional currency, Bitcoin is a decentralized digital currency designed to operate in a distributed system without a central authority. It is based on cryptographic protocol that does not require a trusted third party [4]. According to Gracia and colleagues [13], Bitcoin's delocalized technology aligns with the online interaction of its users through social networks and forums, motivating its adoption by new users through word-of-mouth.

HCI community has recently started to engage with the topic of digital currency [19]. In the current global economic context, money-centred designs are however timely and much needed as argued by Carroll and Bellotti [4]. They have also discussed the value of cryptocurrency for users' privacy, while Sas and Khairuddin have proposed a framework for the exploration of trust in Bitcoin technology across its four stakeholders, i.e. users, miners, exchanges and merchants [23].

There has been however a paucity of field studies exploring people's experience of using alternative currency. For example, Ferreira et al. [7] have employed a survey to explore user experience with a complementary currency in the UK, i.e., Bristol Pound (£B). A particular focus of the paper was on users' motivations and challenges, with findings indicating that the technology is at times slow or unpredictable. This in turn, supports more mindful purchase practices, and stronger social trust and bonds within the local community.

In contrast with gold or physical money, digital currencies have a more recent history, but have witnessed a growing community of users. Besides Bitcoin, other digital currencies such as Ripple, Litecoin, Dash, or Dogecoin have attracted a wide range of users from specific communities, i.e. online games [10].

The functions and roles of money, largely explored in social and economic sciences, have been less explored with respect to cryptocurrencies. Such currency however may have both similar and distinct qualities from gold and national currencies.

Methods

The goal of this preliminary study is to explore users' experience with and motivation for using Bitcoin technology, with the aim of identifying promising research directions that HCI community may further engage with.

Participants
We interviewed 9 Bitcoin users recruited from the online forums of two Bitcoin communities in Malaysia, joined by the first author. The recruitment process involved online search on Facebook for Bitcoin users; followed by an invitation to join one of the forums. Interestingly, joining such online Bitcoin forums appears to be by invitation only. After having joined the forum, we posted a message in the general discussion section, inviting participation in the study. This was followed by sending personal invitations to the most active forum participants. We also employed a snowball sampling technique, when one participant invited us to join a second online forum.

All nine participants were male, having between 1 and 3 years of experience of using Bitcoin technology (mean age 34, range 23-37 years old). Six of them work in IT- related fields.

Procedure
We employed semi-structured interviews to explore people's experience of using Bitcoin technology. The choice of interview as a research method was grounded in our interest to explore motivations and challenges which are better investigated through open questions. Within this paper we report exclusively on the identified motivations for using Bitcoin.

We asked questions about participants experience and underlying reasons for using Bitcoin: *"Can you please explain why you are interested in Bitcoin?"* We also aimed to uncover the perceived benefits and values that people assigned to Bitcoin technology. Interviews took place mostly face to face, with a few via Skype. They lasted at least an hour, were audio recorded and fully transcribed.

We employed a thematic analysis which offers a flexible approach to data exploration. It allows the identification of major themes which are further described.

Findings
We identified three main motivation-related themes: Bitcoin predicted role in the oncoming monetary revolution, the empowerment associated with the use of a decentralized cryptocurrency such as Bitcoin, and the perceived (material) value of Bitcoin. These findings are further detailed and illustrated with quotes from participants' answers.

Bitcoin's Predicted Role in Monetary Revolution
An important motivation of buying and using bitcoins is their perceived social and future financial impact:

"Bitcoin will be bigger than the Internet revolution because Internet is only the revolution of communication. Bitcoin is about the money revolution" [P5].

Similar views were shared by other participants: "*Bitcoin will be the future money*" [P6] and *"I can see how Bitcoin will be the money for the future"* [P1].

This predicted monetary revolution is potentially grounded on the scale of Bitcoin usage and its steady worldwide growth [11]. For example, many college students and young professionals in India have started to buy bitcoins as an investment [21].

Additional factor supporting the view of Bitcoin as "the money of the future" is their acceptance by the largest online retailer:

"When Amazon started to announce that they started to accept bitcoins in their transaction, so it proofs that it has become a mode of a future finance" [P9].

Such initiatives appear to legitimate and encourage the acceptance of bitcoins as alternative currency.

Some participants further indicated optimism that the monetary revolution of cryptocurrency may be an answer to the current global financial instability: *"I think bitcoins have the potential to improve the global financial system"* [P4]. This is an important outcome that deserves unpacking. When probing further about the current and potential value of Bitcoin technology, a second theme has emerged.

User's Empowerment: Open Source, Decentralized and Unregulated Bitcoin Platform

The second strongly emerging theme is the one of empowerment, which is grounded in several aspects. First, some participants have noted the importance of freedom and control over one's finances: *"Bitcoin give us 100% freedom to control our money"* [P7]. This sense of control is due to the facility of managing one's bitcoins with no third party involvement [1], unlike in the case of traditional, national currencies.

A second benefit associated with the sense of control is the ability to circumvent traditional banks' financial overheads: *"Bitcoin is a very cheap money transfer"* [P1], and to eliminate their tedious administrative processes: *"It can avoid bank bureaucracy"* [P3]. Previous work has indicated that Bitcoin network allows users to transfer digital money quickly and pay one another from virtual accounts, easily across national borders without the assistance of banks or the influence of central banking systems [1][14].

In line with this, the flow of bitcoins from one user to another is faster and cheaper: "*It has a fast transaction and we can do it anywhere and anytime*" [P7].

The sense of control also means increased trust in a system which claims and displays transparency: "*Seeing the resemblance between the foreign exchange and cryptocurrency exchange makes me trust that it is something worth going for"* [P9].

Several participants noted Bitcoin's open source as an important motivation factor: *"It is like an open source project with a lot of people contributing and has a unique value across the internet"* [P2].

This is possible because Bitcoin's open source platform allows the source code to be made freely accessible, modified and redistributed [1].

Other participants mentioned the decentralized quality of the Bitcoin platform: *"I admire the blockchain platform. How it gets the data recorded, it cannot be deleted and it doesn't need to be centralized"* [P8]. Blockchain platform is used to solve the mathematics required to verify transactions [10]. It was described like a ledger maintained and used by the miners to investigate the history of the bitcoins involved in each transaction [11].

An underlying quality of this decentralized platform is also the anonymity of the nodes and of the people behind transactions:

"The uniqueness of Bitcoin network is that the nodes in the network don't know each other and they all have the same privilege, but yet, they can come to a consensus and agree to which record to be written in the database. That itself, I think it is a major technological breakthrough" [P8].

This quote suggests that Bitcoin users do value the control and freedom that comes with anonymity. This resonates with Carroll and Bellotti's [4] remark on

Bitcoin's potential for subverting centralized governmental and financial institutions.

Perceived Real Value of Bitcoin Currency
Another interesting finding is participants' perception of Bitcoin value as paralleling the one of gold:

"When Satoshi designed Bitcoin, the [Bitcoin] supply has curved exactly like gold supply has curved: at the beginning it is easy to mine but mining becomes tougher in time" [P4].

This relates to the concept of "mining", scarcity and cost of extraction, which apply to both gold and bitcoins [15]. Indeed, an important quality of Bitcoin is its cost, relative to national currency or gold: *"The gold philosophy was backed by physics while Bitcoin is backed by mathematics"* [P4].

As gold and bitcoins are both medium of exchange, their relationship is critical, with previous work showing that bitcoins react significantly to the federal funds. In addition, just like gold, Bitcoin could also suffer in the future from liquidity problems as the user base continues to expand [15]. However, unlike gold, bitcoins lack materiality: *"Bitcoin is not physical"* [P4]. Its materiality has been also challenged since Bitcoin lacks legal tender status in any country [8][16].

Implications for HCI Research

In this section we reflect on the value of these findings for HCI researchers. More specifically, we would like to inspire future research focusing on alternative cryptocurrency such as Bitcoin.

We argue that within today's socio-economic crisis, Bitcoin technology provides a useful lens to explore issues of trust in social institutions at large, and how grassroots innovation and technology democratization may shed light into it. Current economic climate has led to a chronic distrust in such institutions aimed to provide structure for the social order, in particular governmental and financial ones [3][6][9].

Today's practices of democratizing technology, which have been also explored within the HCI community, range from accessing social media, open source software and hardware communities, to digital fabrication and personalized production.

Such technologies have empowered people to gain access to information, express themselves, or coordinate and work together towards shared problems. Arguably, when the global financial institution itself may be circumvented, decentralized and fully democratized we may witness one of the strongest forms of empowerment, empowerment from monetary hegemony.

Yet we know little of how this process may occur and can be supported, and what research opportunities we as a community may find in this context. For example, an interesting finding is the tension between the perceived value of bitcoin and its lack of materiality. As highlighted in our findings, the materiality of money is particularly challenged by the decentralized cryptocurrencies such as Bitcoin.

Conclusions

This paper reports preliminary findings about people's motivations for engaging with Bitcoin technology. We interviewed 9 Bitcoin users and identified three motivational themes: Bitcoin's predicted role in a foreseeable monetary revolution, users' increased empowerment, and their perception of Bitcoin's real value.

Our findings point to the importance that users assign to Bitcoin technology and motivates its adoption. They also point to the potential of blockchain technology for democratizing access and for transforming the global financial institution. Finally, the specific materiality of Bitcoin points to some interesting differences and similarities with traditional currencies. All of these are valuable future research directions for HCI community. Given the scale and possible social and financial impact of this technology, we argued that our engagement with the Bitcoin technology is needed.

One potential future direction is exploring the materiality of bitcoins and the feasibility of technological interventions supporting it. For example, unlike national currencies, bitcoin currency may be too abstract to understand, because of its complex mining process and its strong privacy settings [2]. There are already efforts to develop physical counterparts for bitcoins such as the Casascius coins which embed the digital Bitcoin inside a metal token of brass, silver or gold [1].

HCI community has a rich interest in understanding and materializing abstract concepts. For example, in order to address the intangible quality of electricity, Pierce and Paulos [21] have explored innovative ways to materialize it through their energy mementos. Exploring alternatives ways for materializing the bitcoins themselves or the mining process may be an important future research direction.

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