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Motivations and Barriers for End-User Adoption of Bitcoin as Digital Currency

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Abstract

Bitcoin as concept was coined in 2009 and can be described as a partly open and shared transactional database. What makes bitcoin unique is that for the first time, we can prove and move ownership of anything digital without a central authority. The technology facilitates many benefits, one being a worldwide, digital currency and we observe that some stores allow payments in bitcoin. Drawing on concepts from the Diffusion of Innovation theory we investigated: What are the end-users' motivations and barriers for using bitcoin as digital currency? Through a small survey, we collected 135 answers during the summer of 2016. Our findings include that the bitcoin users embrace bitcoin due to technological curiosity, thus an individual reason. The largest group, the non-users, state that they are awaiting for others to start using bitcoin, as they question the value and security issues. We conclude that we may witness a deadlock where "everybody waits for everybody", and that more research is needed.

Keywords: Bitcoin; blockchain; digital currency; adoption; Diffusion of Innovations

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1. Introduction

Bitcoin is defined by Satoshi Nakamoto as: "A purely peer-to-peer version of electronic cash…[that *allows]…online payments to be sent directly from one party to another without going through a financial institution*" [1]. Nakamoto proposed a peer-to-peer network, with no central authority. On this network, it is possible to prove and change ownership of a digital unit that is called bitcoin. Shortly after, on 03.01.2009, Nakamoto created the first block on the chain, and bitcoin became a reality [2]. In this block, Nakamoto wrote a message that can indicate the motivation for creating bitcoin: "The Times 03/Jan/2009 Chancellor on brink of second bailout for banks". In the bitcoin community, one common interpretation of this cryptic message is that it can demonstrate criticism to the financial institutions.

In a large number of ways, bitcoin resembles the Internet. Bitcoin can be used for transactions of music files, purchasing, and digital currency, to mention but a few. Similarly, the Internet can be used for communication, e-mail, e-business, surveillance, and more. There are multiple reasons for why the Internet became so widely used (see for example [3]) but at one point in time, the Internet was *bootstrapped*, meaning that is sustained self-growth of attracting new users [4] For each new user, the value of using the Internet increased for the existing users, which again attracted new users. This makes us wonder if, or when, the same will happen with bitcoin. Bitcoin can be seen as a digital currency. We observe that it is possible to pay for goods using bitcoins, for example on the web shop by the music artist called 50 Cent, see figure 1 below. The bitcoin logo is found on the second from the left.
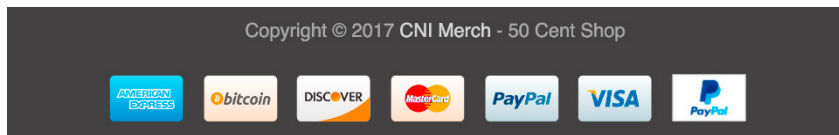

Fig. 1: Screen shot of payment methods on http://shop.50cent.com/ (accessed July 5th, 2017)

This observation aside, we know little about the individual end-users of bitcoin, and there is a call for research on users versus non-users [5]. The aim of this paper is to provide a small empirical survey from the end-user's perspective and our research question reads: *What are the end-users' motivations and barriers for using bitcoin as digital currency?* The rest of the paper has the following structure: First, we will provide a description of related research on bitcoin, user adoption and network theory. Then we present our method where we describe how we collected and analysed the data. We discuss our findings inspired by the Diffusion of Innovations theory, before we present our insights in the final section.

2. What is Bitcoin?

Bitcoin as concept was coined as 'a peer-to-peer electronic cash system' in 2009 with the whitepaper from unknown writer(s) under the pseudonym Satoshi Nakamoto. Bitcoin consists of three main parts: miner, blockchain and wallet. These three parts form the bitcoin network. The miner secures and process the transactions to prevent double spending. *"Mining is the act of creating valid bitcoin blocks, which requires demonstrating proof of work, and miners are devices that mine or people who own those devices"* (https://bitcoin.org/en/glossary/mining). The blockchain is like a bank ledger, and is distributed across the whole network to every wallet on the network, and updated roughly every 10 minutes. The wallet holds a copy of the whole blockchain.

From a technological viewpoint bitcoin is actually a new type of database, allowing "everybody" (meaning every person who partakes in the bitcoin network) to read. It differs from a traditional relational database in the sense that literary no one can update nor delete a transaction. Bitcoin is independent of the Internet, but it needs a communication channel, such as radio waves or blue tooth. Bitcoin is not a currency per se, but a unique unit on the blockchain. The owner of the bitcoin can transfer the ownership of it to another person. Nakamoto addresses the issue of privacy in figure 2. In the traditional transfer model, the bank typically provides the privacy. There is no equivalent for bitcoin, where the privacy is in the protocol.