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What drive the successes and adoption of cryptocurrencies?

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ABSTRACT

Since 2008 when Bitcoin was launched, cryptocurrencies (crypto) is increasingly being noticed. Seeing the growth of the crypto-world, different developers have launched their new crypto, possibly motivated by their potential of raising capital or other business opportunities. However, not all crypto can get proliferated. Some cryptos have become valueless gradually after being introduced. To realize the business opportunities brought by launching new cryptos, it is necessary for us to identify the factors that contribute to the success and proliferation of cryptos. In this research-in-progress paper, we presented an ongoing case study based on EOS, a proliferating crypto which has been adopted by different users. We discussed the role and impact of (1) Security, (2) High transaction speed, (3) Low cost and (4) Gamification on how a crypto may be adopted and invested by more users.

Keywords: Cryptocurrencies, EOS, Altcoins, Bitcoin, Initial Coin Offerings.

INTRODUCTION

Cryptocurrency is a digital or virtual currency enabled by cryptography (Li & Whinston, 2020). It has been an emerging concept since Satoshi Nakamoto introduce Bitcoin as a transaction currency (Nakamoto, 2008) and has disrupted the financial world. In 2019, the total market capitalization reached greater than \$130 billion (Roussou, 2019). In addition, the number of cryptocurrencies worldwide has reached over 10000 in February 2022 (Statistia, 2022).

In some countries, the government is considering or has launched its own cryptocurrency. For example, the Central Africa Republic and El Salvador have launched their official cryptocurrency (Chen, 2022), while some other countries have followed in the hope of accelerating transactions and serving the unbanked population (Dierksmeier & Seele, 2018). Moreover, issuing cryptocurrency is a great business opportunity for companies to raise capital. Some firms have launched initial coin offering (ICO) campaigns, which issue cryptocurrency tokens to investors (Preston, 2017).

However, not all of them are successful. For example, LUNA had collapsed in May 2022, which was due to the complication of managing the UST peg across centralized and decentralized trading values. In turn, investors suffered from financial losses of billions (Tan, 2022). Therefore, it will be desirable to explore what drives cryptocurrencies' success and failure. In turn, this would ensure the realization of business opportunities and the benefits of cryptocurrencies. Accordingly, the leading research question (RQ) of this work-in-progress paper is "What factor drives cryptocurrencies' success and proliferations?"

LITERATURE REVIEW

Cryptocurrencies are digital currencies underpinned by cryptographic systems. They enable secure online payments without third-party intermediaries and are generally not issued by any central authority, rendering them theoretically immune to government interference or manipulation. Cryptocurrencies are primarily enabled by blockchain, in which the data cannot be tampered with, destroyed or forged (Di Pierro, 2017).

Cryptocurrencies can be mined or purchased from cryptocurrency exchanges (Krause & Tolaymat, 2018), and has been used for potential financial instruments for trading and cross-border transfers (Mendoza-Tello et al., 2019). However, not all e-commerce sites accept cryptocurrencies for payment. In fact, even for popular cryptocurrencies like Bitcoin, they are hardly used for retail transactions (Carvalho et al., 2020). Table 1 shows a selected list of characteristics of cryptocurrencies, as discussed by previous literature.

Table 1: A Selected List of Characteristics of Cryptocurrencies

Characteristics	Style Rule
Lower transaction fee and convenience	Transactions can be made anytime without limitations with low transaction costs (Moin & Sirer, 2020). Establishing a wallet for cryptocurrencies is even easier than setting up a bank account, which requires documentation and other paperwork (Carvalho et al., 2020).
Fast Transaction	Cryptocurrencies-enabled transactions only take minutes to

Speed	complete, while it may require several days when using wire transfers to accomplish the transaction (Dierksmeier & Seele, 2018). In turn, DNS attacks targeting wire transfer systems may be avoided or handled faster and thus avoid financial losses (DeVries, 2016).
Decentralized	Most, if not all, cryptocurrencies are decentralized and are collectively controlled by their developers and users, who own a significant amount of the cryptocurrencies (Mendoza-Tello et al., 2019). The decentralization helps keep the currency monopoly-free, and no organization alone can determine the flow and value of the coin. In turn, cryptocurrencies will not be controlled by any institutions (e.g., banks) or the government alone (Glaser 2015).
Volatility	The prices of most cryptocurrencies are volatile by nature. On one hand, some users may be discouraged from adopting cryptocurrencies. In some extreme cases, the value may even crash to zero. On the other hand, some users may take such opportunities for speculation, thus earning a profit (Abramova & Böhme, 2016).
Self-Governed	Governance and maintenance of any currency is a major factor in its development. The cryptocurrency transactions are stored by miners on their hard drives (Mukhopadhyay, 2016), and they get the transaction fee as a reward. Since the miners are getting paid for it, they keep transaction records accurate and up to date, keeping the integrity of the cryptocurrency and the records decentralized (Li & Whinston, 2020).

As indicated in Table 1, cryptocurrencies are mostly self-governed, collectively by their developers and owners. While it can be convenient and fast when using cryptocurrencies for transactions, price volatility is expected for cryptocurrencies, given that most are not governed by any central authority and are not officially recognized. In the worst case, it is not only having no financial gain but also total loss is possible (Mita & Tanaka, 2019)

In response to the price volatility issue, some businesses have launched stablecoin, a type of cryptocurrency whose value is pegged to the price of another real-world asset (usually US dollars), with stabilization mechanisms behind to match the price. Stablecoin, in turn, may increase the adoption of cryptocurrencies for transactions, given volatility may otherwise prevent potential investors from acquiring cryptocurrencies (Mita & Tanaka, 2019). Conversely, stablecoin may bring more convenience and transparency compared with the more volatile non-stablecoin. Nevertheless, stablecoins may be considered less profitable due to the lack of speculation opportunities (Moin & Sire, 2020).

Moreover, seeing the opportunities for raising capital or achieving business successes, the introduction of new cryptocurrencies is more commonly seen, in forms of, for example, Initial Coin Offering (ICO). More specifically, ICOs are the activities of issuing digital tokens issued by a blockchain-based platform that allows an issuer to raise capital from multiple investors. The ease of execution, the lack of regulatory oversight and significantly low costs of issuance have attracted many financially constrained issuers to raise capital for their blockchain platform via the ICO market (Preston, 2017). Moreover, Narayanan et al. (2016) argued that three factors related to the proliferation of cryptocurrencies interplay with each other. These factors included blockchain security, ecosystem establishment, and perceived value of cryptocurrencies. For example, upon perceiving a higher security level, investors will trust the cryptocurrency more and are more willing to invest in it. Thus, the value of the cryptocurrency will increase.

However, we identified some limitations from previous literature. For example, for both stable and volatile cryptocurrencies, failure or valueless cases are not uncommon, but they were not adequately discussed. For example, Sharma and Zhu (2020) discussed platform-building in the context of ICO but did not heavily discuss the strategies behind a successful ICO and, thus the subject cryptocurrency of the offering. Narayanan et al. (2016) suggested some possible factors related to the value of cryptocurrencies, but they raised no empirical evidence. While their arguments are reasonable, it will be desirable to have empirical studies to identify the drivers of cryptocurrencies' successes and failures, so that we can realize the advantages and potential of cryptocurrencies.

RESEARCH METHOD

We adopted a case research method with netnography for the following reasons. First, case research methods are robust at exploring 'how' research questions (Benbasat et al., 1987) and processes that cannot be separated from their contexts (Rynes & Gephart Jr, 2004). Second, given the phenomena of cryptocurrencies is multi-dimensional with both external and technological aspects, it has become too complex to adopt an objective research approach (Gable, 1994). A case study approach has, therefore, become appropriate to examine such phenomena (Klein & Myers, 1999).

Netnography is a written account resulting from studying the cultures and communities that emerge from Internet-based communications, where both the fieldwork and the textual interpretation are methodologically informed by the traditions and techniques of cultural anthropology (Kozinets, 2010). It can help discover more profound insights from experiences that are less addressed in earlier research (Langer & Beckman, 2005). All these characteristics are relevant to the phenomena of cryptocurrencies, whose activities are mostly online.

We identified two ideal case selection criteria. First, the selected cryptocurrencies should be highly successful with a significant number of users so that we can build our theories on proven, if not best practices (Pan & Tan, 2011). Second, the developer of the selected cryptocurrencies should have adopted a variety of strategies so that we may identify more theoretical possibilities in response to the phenomenon of cryptocurrencies. Based on the above criteria, we chose EOS as our selected case because of its successes as reflected by its number of users, as well as a wide range of financial products and services developed based on EOS.

We plan to collect data using a mix of data sources such as the EOS official website to cover the voices of a comprehensive range of stakeholders for data triangulation and thus establish a deeper understanding of the phenomenon under study (Venkatesh et al., 2013), to offer richer details to interpret the findings (Gable, 1994) and to ensure the case representativeness (Pan & Tan, 2011). We plan to collect and analyze the data concurrently to take advantage of the flexibility of the case research method (Eisenhardt, 1989). Data from our case study was collected and then coded by using a mix of open, axial, and selective coding processes (Strauss & Corbin, 1998). More indicatively, open coding was used to identify new and validate existing theoretical dimensions. While at the same time, axial coding was used to point out the new, as well as validate existing, second-order themes that could fall under those dimensions (e.g., CSFs of cryptocurrencies successes). The selective coding was then used to distil our case evidence into several first-order categories, which were then assigned to the appropriate dimensions and themes (Pan and Tan 2011). We also plan to utilize visual maps and narratives to summarize our findings (Langley, 1999). The study is still currently ongoing, but this process of iterating between data, analysis, and theory development will continue until the state of theoretical saturation is reached (Eisenhardt, 1989).

CASE DESCRIPTION

EOS was launched in June 2018 by Block.one, with 4.1 billion USD raised. EOS has been a successful volatile cryptocurrency, which is enabled by its exclusive open-source ecosystem (EOS.IO) maintained by Block.one, with long-term profit potential and stable technology behind. The blockchain technology behind EOS.IO can empower many industries and businesses. For example, it can change computer resources and how various applications work. As a result, the value of EOS in the long term can increase (Peters, 2015). Moreover, there is a wide range of applications developed using EOS, with some of them involving the developer of EOS.

PRELIMINARY FINDINGS

Our preliminary findings suggested a few critical success factors that may contribute to the success of cryptocurrencies, including (1) Security, (2) High transaction speed, (3) Low cost and (4) Gamification. Table 2 shows more details about these factors.

Table 2: A Selected List of Characteristics of Cryptocurrencies

Critical Factor	Success	Description
Security		EOS heavily emphasize security protection in their ecosystem. For example, upholding the value of ethical hacking, Block.one has implemented a bug bounty program which rewarded users for reporting security vulnerability issues. These issues may otherwise render EOS-related products or services and lead to disrupted operation and compromised data.
High Transaction Speed		Similar to Ethereum (ETH, another type of cryptocurrency), EOS enables faster transactions and higher scalability. More specifically, the blockchain of EOS can process up to 10000 transactions per second (TPS), far exceeding many other cryptocurrencies, while the blockchain of ETH may only process 15 transactions per second. In addition, it takes only 0.5 seconds on average for a EOS transaction to be confirmed.
Low Cost		While some transaction-associated fees may be required for the operations or services of most cryptocurrencies, this does not apply to EOS.
Gamification		Gamification is deeply embedded in the ecosystem of EOS. For example, Block.one have launched a gamified tutorial called Elemental Battles which teaches developers blockchain essentials and helps them build the first game in the ecosystem. In turn, developers are more engaged and loyal to the ecosystem.

DISCUSSION AND CONCLUDING REMARKS

As follows in our first study, we focused on EOS for studying the critical success factors (CSFs) of cryptocurrencies. While this is an ongoing research project, our current preliminary work has identified some CSFs, including (1) Security, (2) High transaction speed, (3) Low cost and (4) Gamification. These findings echoed with some previous cryptocurrencies literature about their low costs and high transaction speeds (e.g., Li & Whinston, 2020) but we have also identified the role of gamification factors which was discussed in other IS contexts (Lui & Au, 2018), but less commonly discussed in the context of cryptocurrencies.

With future data collection and analysis, we will broaden and validate our findings. The boundary conditions of our implications will also be explained by deeper data analysis and a continuing solid assessment of the literature. We will further develop our theoretical model by gathering and incorporating additional data and then exposing it to in-depth analysis so that a more comprehensive knowledge of cryptocurrencies successes and implications may be developed, not only to give an answer for the research question, but also to create a starting point for the further research of other cryptocurrencies.

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