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THE ROLE OF USER-GENERATED CONTENT IN BLOCKCHAIN-BASED DECENTRALIZED FINANCE

Research in Progress

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Abstract

The formation of IT companies and even of entire new technological ecosystems depends heavily on external financing. Consequently, the IS community has intensely studied various financing sources such as venture capital, initial public offerings or debt. Blockchain technology has led to the emergence of a system of decentralized finance (DeFi) which includes decentralized versions of equity and debt financing. In particular, equity-like fundraisings referred to as initial coin offerings (ICO) have received serious traction. In this paper, we investigate the role of user-generated content (UGC) for ICO success. Specifically, we leverage signaling theory to analyze how the activity on blogs and discussion forums is related to the amount of capital raised and the valuation in ICOs. We analyze data of 216 ICOs and provide first results indicating the importance of discussion forum activity for ICO success. Furthermore, we find that blogs seem less relevant than in traditional finance.

Keywords: User-Generated Content (UGC), Blockchain, Decentralized Finance (DeFi), Blockchain-Based Fundraising, Initial Public Offering (IPO), Initial Coin Offering (ICO).

1 Introduction

Virtually every successful IT company was dependent on external financing over the whole course of its existence, with a particular vulnerability in its first years (Kim et al. 2017; Dos Santos et al. 2011). External capital plays a key role in the formation and development of IT ventures, as these companies often have to finance costly growth strategies while no significant revenue sources are present (Aggarwal et al. 2012). As such, even the formation of entire new technological ecosystems depend on external financing (Breznitz et al. 2018). Consequently, external financing has been studied intensely by the Information Systems (IS) community. For example, scholars have examined the influence of blogs on different aspects of venture capital (Aggarwal et al. 2012; Aggarwal and Singh 2013), the role of venture capital for the formation of new technological ecosystems (Breznitz et al. 2018), or the influence of media coverage on the geographic focus of venture capitalists (Greenwood and Gopal 2016). Besides venture capital, IS researchers have also studied other funding mechanisms such as Initial Public Offerings (IPOs) (e.g., Ceccagnoli et al. 2012; Lundmark et al. 2017), crowdfunding (e.g., Burtch and Chan 2019; Hong et al. 2018), or debt (e.g., Kim et al. 2017; Kim and Mithas 2011). Recently, blockchain technology has attracted a lot of attention from IS researchers (Beck et al. 2018; Chanson et al. 2019; Mai et al. 2018). However, the emergence of a blockchain-based system of decentralized finance (DeFi) has almost gone unnoticed by the IS community. DeFi introduces a number of decentralized versions of equity and debt financing. In particular, a new method of equity-like capital raise, referred to as initial coin offering (ICO), has attracted tremendous interest from practice. An ICO is a novel financing mechanism in which coins are released on a blockchain in exchange for funding, transferred in the form of cryptocurrencies (Chanson, Gjoen, et al. 2018). ICOs offer a completely novel way of raising capital, with the potential to disrupt established funding processes in a wide range

of industries (Fridgen et al. 2018). Both the coins as well as the core processes of an ICO are entirely based on computer protocols on a blockchain, called smart contracts, which automate the key constituents of the funding procedure (Chanson, Gjoen, et al. 2018). Consequently, ICOs are highly relevant for IS researchers both because of their fundraising capability as well as their technological foundations. While a fruitful research stream on ICOs is emerging in the IS community, it is still in its infancy (Fridgen et al. 2018; Guske and Bendig 2018; Park and Yang 2018).

Considerable IS research concerning external financing has been directed towards the informational power of different mediums such as news articles, blogs, microblogs, etc. (e.g., Aggarwal et al. 2012; Aggarwal and Singh 2013; Greenwood and Gopal 2016). These efforts are rooted in decades of research considering the impact of the availability and quality of information on markets, which have even led to a Nobel Prize (Akerlof 1970). With the emergence of social media and the web 2.0, researchers have started to investigate the effect of online information that is generated by individual users, for example in comments, blogs, videos and reviews (Aggarwal and Singh 2013; Mai et al. 2018). Consequently this data is termed online user-generated content (UGC) (Aggarwal and Singh 2013; Lukyanenko et al. 2017). Individual users are all members of the general public that produce information in a non-professional way, in contrast to paid professionals that are part of organizations, such as the government, corporations or newspapers (Daugherty et al. 2008; Lukyanenko et al. 2017). We focus on UGC, in contrast to professionally or marketer generated content (MGC), because previous research indicates that MGC is less relevant in driving company performance and are only effective when directly targeting individual users (Chanson, Gjoen, et al. 2018; Goh et al. 2013). In particular, UGC can originate from social media and “take diverse forms such as comments, blogs, tags, product reviews, videos, maps, or contest solutions” (Lukyanenko et al. 2017, p. 298). We differentiate between UGC from interactive (e.g., discussion forums), and non-interactive contexts (e.g., blogs) (Hansen et al. 2014; Lukyanenko et al. 2017). UGC research has often focused on the implications for financial markets (Aggarwal and Singh 2013; Lukyanenko et al. 2017). However, in traditional financial markets, the relevance of UGC is rather limited in light of established information sources such as audited financial reports, statements of company representatives or specialized news portals (e.g., Bloomberg or Reuters). In contrast, in the context of blockchain-based fundraising, UGC is in fact an essential source of information (Chanson, Gjoen, et al. 2018; Mai et al. 2018). Recently, IS researchers have reflected the distinct role of UGC in the realm of blockchain: For example, Mai et al. (2018) use tweets and forum posts to predict price movements of Bitcoin. Furthermore, considering ICOs, Guske and Bendig (2018) find a relation between the number of twitter messages and the amount of funding raised.

However, the extant knowledge from traditional finance and initial blockchain-related studies leaves open a multi-fold literature gap. First, the relevance of various forms of non-interactive UGC (e.g., blogs, reviews and microblogs) for financial markets has been addressed in numerous studies, however, the impact of *interactive UGC* (e.g., discussion forums) for venture financing has not been studied in depth before. Second, extant research predominantly focuses on addressing traditional financial markets or cryptocurrency prices, while research on *blockchain-based fundraising* is virtually inexistent. Specifically, to the best of our knowledge, there is no study relating key figures of ICO success (i.e., amount raised or valuation) with UGC other than microblogs. However, in particular discussion forums are revealing in the realm of cryptocurrencies, as they are marked by insightful debates and an exchange of specific information (Chanson, Gjoen, et al. 2018; Mai et al. 2018). In contrast to discussion forums, *blogs* feature extensive, holistic and well-reflected content. They are influential in traditional finance but have not been reflected in ICOs so far (Aggarwal et al. 2012). We aim to relate these two media, blogs and discussion forums, to the two most important dimensions for corporate fundraising, namely the amount of capital raised and the valuation (Aggarwal et al. 2012). Consequently, we formulate the following underlying research question:

How does UGC in blogs and discussion forums relate to the valuation and funding amount in ICOs?

To address this, we draw on signaling theory and apply it to the context of UGC in ICOs. We gather data of 216 ICOs and evaluate the impact of blogs and discussion forums on the amount raised and the

implicit valuation in ICOs. We find that discussion forum activity is directly related to the amount raised in ICOs.

This paper makes several key contributions. First, we introduce different forms of UGC as important signals in the context of DeFi and blockchain-based fundraising, building on signaling theory and venture financing literature. We empirically validate this claim and show the relevance of discussion forum activity for ICO success. Second, our results indicate that blogs exhibit a less important role in ICOs than in traditional finance. Third, our findings raise doubts whether the valuation is in fact a key consideration of investors in ICOs. As such, we contribute both to the literature of signaling as well as to the broad research stream on venture financing and, in particular, DeFi and blockchain-based fundraising.

2 Conceptual and Theoretical Background

2.1 Decentralized Finance and Blockchain-Based Fundraising

Recently, blockchain technology has led to the emergence of DeFi which introduces a number of decentralized versions of equity and debt financing. In particular, different blockchain protocols offer the issuance of collateralized (MakerDAO 2020) or uncollateralized loans (Aave 2020), the trading of these loans (Uniswap 2019) and also fundraising methods resembling an equity-based capital raise, referred to as ICO. This funding mechanism bears similarities to Initial Public Offerings (IPOs) (e.g., capital raise through security release), venture capital (VC) (e.g., early stage of investment) and crowdfunding (e.g., open to retail investors) (Chanson, Gjoen, et al. 2018). The term ICO originates in its similarities to IPOs. ICOs can be conceptualized as a fundraising mechanism, in which new project-specific coins are sold to raise capital for a project (Fridgen et al. 2018). Ventures launching an ICO mainly aim to secure funding whereas the investors' objective is the possession of the project-specific coins and corresponding financial exposure to the success of the project. The exchange of capital from investors for the project-specific coins is completely automated through different smart contracts. Details regarding how an ICO is engineered and run present Chanson, Risius, et al. (2018).

Only last year, ICOs have started to attract attention from research. The AIS electronic library currently references 16 documents mentioning ICOs, of which 7 in fact focus on that topic. An important part of the extant work on ICOs is geared towards conceptualizing the phenomenon: For example, Fridgen et al. (2018) introduce a taxonomy of ICOs, which is further enhanced by Bachmann et al. (2019). In turn, Oliveira et al. (2018) show a taxonomy of tokens (i.e., the coins that are exchanged in ICOs). Other emerging research focuses on the analysis of financial key figures related to ICOs. Park and Yang (2018) present a tentative research model, suggesting how the amount of funds raised in an ICO is influenced by technical parameters such as the price of a coin, the duration of an ICO or the platform used. In a similar approach, Guske and Bendig (2018) find a relation between the number of twitter messages and the amount of funding in ICOs. However, research on the impact of UGC on key figures of ICO success (i.e., amount raised or valuation) is still in its infancy. Notably, existing studies do not investigate the role of interactive UGC, such as discussion forums. However, in particular discussion forums are revealing, because they are marked by insightful debates and an exchange of specific information (Chanson, Gjoen, et al. 2018; Mai et al. 2018). Furthermore, blogs are influential in traditional finance but have not been studied in the context of ICOs (Aggarwal et al. 2012).

2.2 Signaling Theory

In virtually all markets sellers of goods or services have more information about these than respective buyers, which decisively marks the behavior of participants, reduces the efficacy of markets and can result in adverse selection (Akerlof 1970). In the presence of such information asymmetry, signaling theory is useful to describe the behavior of interacting parties (Spence 1973). Signaling theory argues that information asymmetry and its negative effects can be reduced by effective signals, which can be

defined as observable attributes of a company that can change the perception of stakeholders (Sanders and Boivie 2004). Besides the firm itself, any external monitor can emanate signals for ventures, for example in blogs or online discussion forums (Aggarwal et al. 2012). Notably, signals arising from third parties seem to be especially effective (Dean and Biswas 2001). In general, signals should fulfill two important characteristics (Spence 1973): First, cost should arise from producing the signal, such that it is only emitted with diligence and becomes valuable. Second, the signal should be observable, such that third parties may react on it.

IS scholars apply signaling theory in a wide area of research. For example, Lansing et al. (2018) investigate the signaling quality of third-party IS certifications and show the different role of various certification features for a decision maker's aggregate evaluation. Nishant et al. (2017) examine the signaling of green IT announcements of corporations, which result in positive abnormal returns and increased share trading volume. In particular, IS researchers also leverage signaling theory in the context of UGC and fundraising. Ghose (2009) analyzes how signals emanated by UGC influence trading patterns and adverse selection in Internet-based used-good markets. In turn, considering the context of fundraising of non-profit organizations, Ozdemir et al. (2010) characterize the signaling effects of certifications that indicate organizational effectiveness in delivering socially valuable services.

2.3 Signals from UGC in Blockchain-based Fundraising

Any content on the internet that is produced by individual users in a non-professional way is considered UGC, in contrast to information from paid professionals that are part of organizations, such as the government, corporations or newspapers (Daugherty et al. 2008; Lukyanenko et al. 2017). Such content from paid professionals is sometimes called MGC (Goh et al. 2013). UGC can originate from social media and “*take diverse forms such as comments, blogs, tags, product reviews, videos, maps, or contest solutions*” (Lukyanenko et al. 2017, p. 298). In particular, the term UGC is useful to distinguish different types of content on the same social media platforms, namely professionally edited information and content that originates from individual users (Goh et al. 2013). IS researchers have identified different forms of UGC to act as an important signal for various measures in traditional financial markets, including funding success. In their seminal article, Antweiler and Frank (2004) exhibit the first evidence of the impact of UGC on stock market prices. Considering the equity-based fundraising of startups, Aggarwal et al. (2012) demonstrate that blog coverage has an impact on the financing amounts raised. Furthermore, Aggarwal and Singh (2013) find that the influence of blog coverage varies in different stages of the funding process from screening, to choice and contract stage. Regarding the funding of mature companies, Lundmark et al. (2017) show that microblog volume can influence the success of IPOs. These results from traditional financial markets might surprise, given the importance and role of established information sources such as audited financial reports, statements of company representatives or specialized news portals (e.g., Bloomberg or Reuters). In contrast, in the context of blockchain-based fundraising, UGC is in fact a dominant source of information as there are no established curated news services covering projects fundamentals in depth (Chanson, Gjoen, et al. 2018; Mai et al. 2018). Recently, IS researcher have taken advantage of this special setting for UGC studies in the area of cryptocurrencies and ICOs: Guske and Bendig (2018) show that non-interactive UGC (microblogs) forms excellent signals for ICO fundraising success. Furthermore, Mai et al. (2018) investigate the impact of both interactive and non-interactive UGC on the Bitcoin price and note that non-interactive UGC (discussion forums) is more relevant. To a similar finding come Chanson et al. (2018) who study cryptocurrency price movements after ICOs. In conclusion, both interactive UGC (e.g., discussion forums) and non-interactive UGC (e.g., microblogs or blogs) have been identified as important signals in financial markets. However, studies focusing on ICOs so far have only considered non-interactive UGC, specifically microblogs, even though extant research indicates interactive UGC to be more relevant in a cryptocurrency context. Therefore, we integrate interactive UGC, specifically discussion forums, in our investigations. Regarding non-interactive UGC we focus on blogs, as the type of information (i.e., extensive, holistic and well-reflected content) is complementary to discussion forums and blogs have not been reflected in ICOs.

From a perspective of signaling theory, blogs and discussion forums have the potential to emit significant signals. Writing blog or discussion forum entries costs authors time and effort, hence text is only written if authors estimate a venture to be worthy enough to express their views about it (Nardi et al. 2004). More people writing a blog or participating in online discussions about a certain venture implies that more resources are spent (Aggarwal et al. 2012). Notably, because of the high length of blogs and, particularly, the repeated interactions between participants of discussions on forums the effort needed to create these signals is comparably higher than for a microblog entry (i.e., a tweet). Besides, the reputation of authors online is closely observed through likes, which can be lost, incurring additional costs. Thus, the criterion of cost for an effective signal is satisfied. Additionally, more online blog and discussion forum entries are more likely to be spotted by an observer, and the criterion of observability for an efficacious signal is also met.

Based on these theoretical insights and results from extant research, we conclude that high online blog and discussion forum coverage could act as strong signals to potential investors about the worthiness of a venture. As such, UGC might substitute for unavailable or inaccessible financial and accounting data and thereby support the market in the assessment of the quality of different ventures (Sanders and Boivie 2004). A perception of quality and market awareness of a venture can be generated by such a signal (Aldrich and Fiol 1994). UGC might direct the investor's attention to ventures covered in online outlets, resulting in an increased exposure of these ventures. Ventures that are better-known might be taken for granted (Aldrich and Fiol 1994), leading to increasing acceptance and decreasing risk assessment. Thus, an increased volume of UGC might raise awareness and familiarity about a venture's ICO. Through increased awareness these ICOs might be considered more legitimate and more likely to qualify for investments. Consequently, such ventures may be more likely to raise high amounts of capital, leading to our first hypothesis:

Hypothesis 1A: *Volume of coverage by bloggers is positively related to the amount of capital raised by a venture in an ICO.*

Hypothesis 1B: *Volume of coverage in online discussion forums is positively related to the amount of capital raised by a venture in an ICO.*

Notably, besides the *funding amount* the *valuation* forms the second of the two most important dimensions of financing for emerging companies (Aggarwal et al. 2012; Cumming and MacIntosh 2003). In particular, increased attention from investors can also raise the valuation of startups (Aggarwal and Singh 2013). Specifically, we calculate the valuation of a venture as the total amount raised divided by the share of coins offered in the ICO. This leads to our second hypothesis:

Hypothesis 2A: *Volume of coverage by bloggers is positively related to the valuation in an ICO.*

Hypothesis 2B: *Volume of coverage in online discussion forums is positively related to the venture in an ICO.*

3 Empirical Study

3.1 Sample and Data Analysis

To investigate our hypotheses on the signaling effects of UGC in ICOs, we collect an extensive sample of ICOs, related UGC and data for controls. We gathered the list of ICOs on October 31, 2018 from the ICO database ICODrops. Of the 481 completed ICOs itemized, we randomly choose a subset of 326. Of these, 22 ICOs have no data on the final amount raised. Besides, the name and ticker of 11 ICOs leads to faulty values in the search process for certain model variables, another 11 ICOs conducted only private sales and two ICOs were cancelled. To ensure a minimal quality of the unregulated ICOs we remove all that raised less than \$1M (i.e., two) and all that achieved less than 50% of their funding target (i.e., 62). This results in a final sample of 216 ICOs. For all 216 ICOs we gather a comprehensive data set from the internet. The online blog coverage data is collected via Google syntax

search. We gather data on online discussion forum coverage from selected subreddits on Reddit and Bitcointalk. In total, we combine 219 blogs and 4,936 threads on discussion forums with relevant mentions. ICO-related data and control variables are gathered from ICODrops, ICOBench, Crunchbase, venture webpages, whitepapers and LinkedIn.

To test our hypotheses, we perform a number of OLS regressions. We assess the variance inflation factors and find no indication of multicollinearity among the independent and control variables. We examine the influence of outliers through Cook's distance. EOS' ICO, raising almost \$200M, is the observation with highest influence. Such outliers are relevant and the sample is not altered. Furthermore, we assess normality and linearity through visual inspection of a normality and residual Q-Q plot. Although the Breusch-Pagan test and the White test show no significance for heteroscedasticity, we still report Heteroscedasticity-consistent standard errors (HC1) as a conservative measure.

3.2 Measures

Our dependent variables are **Funding amount** and **Valuation**, the two most important dimensions of financing for emerging companies (Aggarwal et al. 2012; Cumming and MacIntosh 2003). The funding amount is the capital raised in the ICO in USD. In reference to customs in equity-based ventures, the valuation is calculated as the total amount raised divided by the share of coins issued in the ICO.

The independent variable **Blogs** corresponds to the total number of online blogs mentioning a venture's name or ticker prior to the ICO end date. To identify blogs we use the classification provided by Google syntax search. In turn, **Threads** is the number of threads mentioning the venture's name or ticker before the ICO has ended. A thread is an isolated discussion in a forum which starts with one post (e.g., a question) and includes the subsequent replies. The largest discussion forums concerning blockchain and ICO topics are Bitcointalk and certain subreddits on Reddit (Chanson, Gjoen, et al. 2018). Reddit is a collection of individual discussion forums, so-called subreddits. For our study, we include results from Bitcointalk and all subreddits that cover issues concerning ICOs and have at least 100,000 subscribers (i.e., 10 subreddits).

To control for confounding effects, we include nine control variables which we identify based on extant research on venture financing, cryptocurrencies and ICOs. **Crypto news** represents the total number of news articles a venture is mentioned in on cryptocurrency news webpages before the ICO end date. Media-provided content has been identified as an effective signal for investment decisions in various settings (Greenwood and Gopal 2016; Pollock and Rindova 2003). We consider all cryptocurrency news pages with more than 500,000 average visits per month from June to November 2019, resulting in nine websites. We discard traditional media as they provide almost no information prior to ICOs. **ICO duration** is the total number of days the token sale lasted. It is considered an important signal, as it contains an estimation of the market interest in an ICO and impacts the accessibility of the investment (Bachmann et al. 2019; Fridgen et al. 2018; Guske and Bendig 2018). **Venture age** is the company's age in months at the end date of the ICO. The older a venture, the further developed its product can be and the more information might be available, both potentially resulting in a higher amount raised and a higher valuation (Aggarwal et al. 2012; Aggarwal and Singh 2013). **Oversubscribed** is a dummy variable set to one if the funding target of the ICO could be reached. If such a limit is in place and reached, the remaining demand from investors does not increase the funding amount any higher, biasing the estimates. Additionally, an oversubscription constitutes a strong positive signal to investors (Chanson, Gjoen, et al. 2018). **Market sentiment** is represented by the price of Ether in USD at the end date of the ICO. The Ether price serves as a satisfactory proxy for the market, because it is arguably the reference currency for ICO investments and cryptocurrency prices were correlated extremely in the past (Guske and Bendig 2018). **Min cap** is the minimal investment measured in USD required for investors to participate in the ICO. In case of a substantial minimum investment certain investors are excluded from participation in the ICO, which could negatively affect the amount raised. On the other hand, it might send a positive signal that the venture attracts enough professional investors to fill its offering (Bachmann et al. 2019; Fridgen et al. 2018). **Max cap** is a dummy variable set to

one if an upper limit for individual investors exists. This might lead to a lower amount raised as not all investors can participate with their full capacity in an ICO. It could also influence the valuation by sending a positive signal to investors (Chanson, Gjoen, et al. 2018). *ICO pre-sale* is a dummy set to one if ventures executed an ICO pre-sale before the actual ICO. The details of a pre-sale (e.g., which investors participated, offering size or prize) can exhibit important signaling effects for ICO investors (Brennitz et al. 2018; Dos Santos et al. 2011). *Pre-ICO funding* is the size of traditional pre-ICO funding in USD obtained from Crunchbase. The size of traditional financing can influence both the amount raised in the ICO and the blog and discussion forum coverage (Aggarwal et al. 2012). Investments of large venture capitalists sends positive signals to potential ICO investors.

3.3 Preliminary Results

To test our hypotheses, we calculate four OLS regression models which are shown in Table 1. For each dependent variable we present the base model, consisting only of control variables, and the UGC model which incorporates blogs and threads. Model 1 tests our hypotheses that blog (H1A) and discussion forum (H1B) volume are related to the funding amount in ICOs. It shows support for H1B, however, does not confirm H1A. Notably, model 1 features considerable explanatory power, which is significantly increased by the introduction of the two independent variables blogs and threads. Concerning the control variables, in particular the crypto news coverage and pre-ICO funding size show significance in both the base and UGC model. Model 2 addresses our hypotheses that blog (H2A) and discussion forum (H2B) volume is related to the valuation of ventures in ICOs. It does not support these hypotheses. Furthermore, the overall accuracy of the model is very small and does not increase by adding the two independent variables.

Dependent Variable	Funding Amount		Valuation	
	Base Model 1	UGC Model 1	Base Model 2	UGC Model 2
<i>Blogs</i>	-	3.5844 (2.2492)	-	42.431 (24.9431)
<i>Threads</i>	-	0.3875 (0.1477) **	-	1.751 (1.3695)
<i>Crypto news</i>	0.0493 (0.0026) ***	0.0299 (0.0083) **	0.0425 (0.0088) ***	-0.054 (0.0764)
<i>Oversubscribed</i>	3.0699 (5.5520)	-1.0504 (4.7778)	-19.3519 (64.2275)	-43.218 (57.7720)
<i>Market sentiment</i>	-0.0058 (0.0087)	0.0018 (0.0073)	-0.0146 (0.0502)	0.016 (0.0335)
<i>ICO duration</i>	0.2004 (0.1373)	0.1797 (0.1015)	0.9997 (0.7408)	0.464 (0.4707)
<i>Venture age</i>	0.0334 (0.1787)	0.1158 (0.1589)	0.4309 (1.7331)	1.035 (1.7622)
<i>Min cap</i>	0.0042 (0.0072)	0.0007 (0.0064)	0.0109 (0.0293)	-0.007 (0.0303)
<i>Max cap</i>	-8.1544 (3.4726)	-8.1238 (3.6982) *	-37.3547 (35.7075)	-39.318 (38.0373)
<i>Pre-ICO funding</i>	1.2012 (0.1295) ***	0.9917 (0.1976) ***	2.1379 (0.9249) **	-0.314 (1.9856)
<i>ICO Pre-sale?</i>	-9.0543 (4.1762)	-5.6675 (3.5249)	-59.2515 (31.4294)	-40.145 (27.8893)
<i>Intercept</i>	31.3915 (7.2615) ***	16.3825 (8.4022)	123.3051 (70.2263)	16.3825 (8.4022)
<i>N</i>	216	216	216	216
<i>F</i>	5.24	8.76	1.55	0.417
<i>Adjusted R2</i>	0.1509	0.2842	0.027	0

Unstandardized coefficients are reported. Robust standard errors (HC1) parenthesis
*p < .05; **p < .01; ***p < .001

Table 1: OLS robust regressions

4 Discussion and Conclusion

Our preliminary results reveal three key findings regarding the influence of UGC on blockchain-based fundraising. First, our hypothesis H1B that discussion forum activity correlates with the amount of capital raised in ICOs is supported. These results are in line with insights from cryptocurrency studies

that forum contributions are influential signals, in fact more influential than microblogs, for price developments of cryptocurrencies (Chanson, Gjoen, et al. 2018; Mai et al. 2018). As such, we generalize these findings to the domain of blockchain-based fundraising, specifically considering the amount of capital raised in ICOs. Second, our hypothesis H1A that blogs influence the amount raised is not confirmed. This is in contrast to numerous findings that blogs play a relevant role in traditional early stage fundraising (Aggarwal et al. 2012; Aggarwal and Singh 2013). Blogs mostly develop influence as an initial filter for investors to decide which ventures pass their first screening stage (Aggarwal and Singh 2013). In the context of ICOs, this role is potentially transferred to the activity on discussion forums as there is substantially more activity on forums than blogs and thus, possibly, more information (e.g., compare our sample of 4,936 online discussions to 219 blogs). Furthermore, this breadth of content is easily comparable as the forums quantify the importance of individual threads, posts and members through different quality scores (e.g., up-votes or likes). Third, our second hypothesis that UGC is related to the valuation in ICOs is not confirmed and the corresponding model has very low accuracy. Although surprising, it is possible that the valuation is in fact not a key consideration among ICO investors. The amount raised is often dominating the public discussion, in contrast to the valuation. Thus, from a signaling theory perspective, the signal valuation is less observable and develops less impact. Reasons could be the lack of a unique definition of the valuation (e.g., average or last coin price paid in ICO, circulating supply or total supply, etc.). Or, as many coins offer the access to a product or service (i.e., utility tokens), investors might simply reflect what this access is worth to them as users instead of considering the overall valuation. However, more investigations are needed to confirm this.

We set out to investigate how signals from UGC relate to the fundamental parameters of blockchain-based fundraising, namely the amount raised and the valuation. This is inspired by a multi-fold literature gap: First, the relevance of various forms of non-interactive UGC (e.g., blogs, reviews and microblogs) for financial markets has been addressed in numerous studies, however, the impact of *interactive UGC* (e.g., discussion forums) has not been studied in depth before for venture financing. Second, extant research focuses on addressing traditional financial markets or cryptocurrency prices, while *DeFi and blockchain-based fundraising* has only just started to be considered by research. However, the special context of ICOs (e.g., technology for decentralized execution, wide accessibility, legal framework) calls for new research. Consequently, our study aims to advance the knowledge on the role of UGC for blockchain-based fundraising. Our preliminary results indicate that discussion forums occupy an important role as signals in the context of ICOs. Furthermore, the influence of blogs seems to be less developed than in traditional venture fundraising. Besides, our findings raise questions regarding the role of the valuation in ICOs.

This is ongoing research and we are aware of a number of limitations. Specifically, our study only considers the bare number of blogs and threads and does not consider the breadth of information that is actually present in these sources. Consequently, we currently detail the differentiated signaling impact of discussion forums by introducing a number of additional independent variables. We are especially interested in i) how the source of the information impacts its effect. For example, for the future models we aim to reflect the author's reputation. Besides, we consider ii) how the degree of interaction influences the effect of information. Thus, we distinguish between forum posts that created a substantial follow-up discussion (i.e., thread), and those that remain rather uncommented. Furthermore, iii) we consider the nature of the content (i.e., sentiment) and its reach (e.g., number of likes). While these plans are rather well developed and in close relation to our hypotheses presented here, we are also working on investigating interaction effects between blogs and discussion forums. We anticipate these to be pronounced because of the fundamentally different type of content of these two media. Furthermore, we focused on UGC in this study. Considering MGC in addition might reveal interesting interdependent effects between these different types of contents. Finally, while we established our set of control variables with utmost care, building on theoretical and empirical insights from previous research, more controls could be added with potentially significant explanatory power. Notably, extant research from traditional financing has also found the location and industry of ventures to affect the success in capital raises. Thus, we plan to introduce these controls in the update of our models.

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