

## The role of blockchain technology-based social crowdfunding in advancing social value creation

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### ABSTRACT

This study investigates the practical applications of blockchain technology in socially oriented crowdfunding platforms (SCPs). In recent years, SCPs have grown due to their perceived benefits compared to traditional funding channels. However, skepticism remains regarding the potential for the further development of crowdfunding platforms, especially SCPs, due to restrictions on attracting investment as well as concerns related to transparency, reliability, and trustworthiness. The recent applications of blockchain technology in crowdfunding promise a possible solution to current obstacles, and may facilitate SCPs. Employing a qualitative research approach based on three case studies, this study addresses how blockchain technology can be used to facilitate the social value creation of crowdfunding when adopted as an alternative infrastructure. Accordingly, this study identifies both the facilitators of the social value creation process through blockchain technology (e.g., reducing operational costs, increasing trust and transparency, and cultivating a broader crowdfunding community) and the barriers of this application in terms of development costs and legal requirements. In addition to answering calls to investigate the role of blockchains in facilitating social activities, this study expands the emerging literature by demonstrating the practical applications of blockchain use in crowdfunding.

### 1. Introduction

A fund-raising system for new businesses and creative campaigns, crowdfunding has proven an effective approach for obtaining funds from a wide range of individuals (Mollick, 2014). Significantly, crowdfunding allows non-professional individual investors to invest in potential projects from an early stage of development. The platform thus serves as a means of democratizing investment, removing the barriers to the capital owned by individual investors and improving the investment industry (Lehner, 2013). In addition to traditional crowdfunding platforms, investment or funding from crowds can be used to finance projects or social enterprises providing solutions to social problems using innovative technologies and creative approaches. Crowdfunding thus aligns with the overarching aim of social value creation, with such funding platforms also known as social crowdfunding platforms (SCPs) (Cecere et al., 2017; Meyskens and Bird, 2015). SCPs provide funding

for individuals, social enterprises, and social ventures advancing solutions for social problems but unable to access traditional funding channels like banks or investment funds. Consequently, there has been a significant increase in social enterprises and ventures seeking finance via SCPs.

SCPs secure access to funds for socially driven fundraisers and enterprises that traditional funding channels, such as banks, are unwilling to support due to the high risks involved. However, these platforms face multiple obstacles that impede development and limit their capacity for social value creation. For instance, asymmetric information between users can undermine transparency, reputation, and trustworthiness (Lehner, 2013; Mollick, 2014). Related financial regulations and requirements—such as the standards of qualified users, fundraisers, and anti-financial frauds regulations—in each country or region also need to be addressed (Zheng and Boh, 2021). Moreover, during the funding process, intermediation expenses (e.g., fees for online payment agen-

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cies, currency exchange costs, and commission fees) can occur on both sides, that is, both funding seekers and donors, resulting in additional costs and reducing the funds available to support social projects (Kumar et al., 2020; Meyskens and Bird, 2015). Meanwhile, potential risks related to fake investment projects, fraud, and investment agreement violations can harm a funding platform as well as its users. As a result, extensive investment and thorough work are necessary, creating high expenses for the owners of these platforms.

Underscoring the significance of these issues, recent exploratory studies have highlighted how the aforementioned uncertainties and challenges might be addressed via the application of blockchain technologies to advance social value creation for SCPs (Cai, 2018; Lu, 2018; Zhu and Zhou, 2016). The potential value of blockchain technology are rooted in its ability to advance decentralization, democratization, financial inclusion transparency, trustworthiness, and reliability—factors thought to facilitate the social value creation process (Hartmann et al., 2019; Lu, 2018; Muneeza et al., 2018). The unique features of blockchain technologies can help crowdfunding platforms deal with widespread issues; for instance, smart contracts can be used to allocate funds according to the progress of individual projects (Zhu and Zhou, 2016). Another application of blockchain technology, cryptocurrency transactions (e.g., Bitcoin and Ethereum) can help crowdfunding platforms reduce risks and intermediation costs as they allow for the transfer of funds on a peer-to-peer basis rather than via financial intermediaries (Muneeza et al., 2018). However, while there is an abundance of literature on the potential applications of blockchain technology for crowdfunding, including some research on the application of blockchain technologies in the financial industry, there is very little scientific understanding of the implications of blockchain technology for SCPs. Accordingly, this study investigates how blockchain technology-based SCPs can be used to support social initiatives and evaluates whether blockchain technologies can be used as alternative systems for such SCPs.

This study draws on rich data from three blockchain technology-based SCPs. An exploratory qualitative research approach based on three case studies is employed to explore the status quo of blockchain technology in SCPs. In total, 29 semi-structured interviews were conducted with the top and senior managers involved in the selected blockchain technology-based SCPs. By identifying factors affecting the social value contributions of these blockchain technology-based SCPs, this study contributes to the emergent theory of how blockchain technologies can be successfully implemented in crowdfunding platforms to advance social value.

The rest of this study is organized as follows. Section 2 discusses the theoretical background of social crowdfunding and blockchain technology, Section 3 presents the research method employed in this study, Section 4 describes the three case studies, and Section 5 examines the results. Finally, Section 6 highlights this study's theoretical and practical contributions, notes this study's limitations, and recommends future avenues of research.

## 2. Theoretical background

Several critical factors—namely, social purpose, transparency, reliability, and trustworthiness—are significant for crowdfunding platforms (Kumar et al., 2020). Despite an emerging focus on the potential contribution of blockchain technology for advancing crowdfunding platforms given its unique features and applications (Cai, 2018; Chang et al., 2020), few have explored the link between the features of blockchain technology and the critical factors of crowdfunding platforms. As such, understanding the critical factors of SCPs featuring blockchain technology may provide new insights into the emerging applications of this technology in SCPs.

### 2.1. Social crowdfunding

The crowdfunding platform as a means of attracting funding has been widely recognized by entrepreneurs (Belleflamme et al., 2015; Kumar et al., 2020). Crowdfunding is generally defined as a public investment proposal for a campaign or project seeking support or funding from communities of individual investors via the internet (Kang et al., 2016). According to Rossi and Vismara, (2018), one of the significant features responsible for the popularity of crowdfunding is the simplicity for both sides—that is, fundraisers and investors or donors—in operating through the internet. Crowdfunding platforms enable the funding of an ecosystem, particularly insofar as these platforms help finance projects for a variety of purposes. Accordingly, a crowdfunding platform can be considered a community comprising investors, donors, and entrepreneurs working toward a specific purpose (Cecere et al., 2017; Nucciarelli et al., 2017).

Socially-focused campaigns and social enterprises offering creative solutions for social problems face numerous challenges securing financial support from traditional funding sources (Cecere et al., 2017; Zahra et al., 2009). Such financial constraints primarily arise from information asymmetries, which create difficulties for the risk assessment of these social projects (Cecere et al., 2017). These issues have been compounded by the increasing number of social campaigns, with fundraisers and entrepreneurs in the social sector finding it more difficult to secure financial support (Nucciarelli et al., 2017). In recent years, a growing number of studies have documented an emerging trend in crowdfunding platforms supporting social projects and enterprises, considering this an form of social innovation (Murray et al., 2010; Nucciarelli et al., 2017). In the same vein, Zahra et al., (2009) note that, unlike most non-profit social enterprises, these SCPs are classified as profitable organizations, which seek profits while generating social values through their support of social campaigns. Social values are associated with providing for the needs of society and generating valuable impacts in addressing social problems and contributing to sustainable development.

According to the literature, the roles of third parties in crowdfunding—including financial intermediaries and related commissions such as bank charges and transaction costs—negatively impact the operation of crowdfunding (Moritz and Block, 2016). Indeed, such fees reduce the amount of funding available to finance the campaigns as well as the operational costs and investments that can be used to upgrade or expand the capabilities of crowdfunding platforms. The involvement of these third parties can also hinder the reliability of crowdfunding platforms. For instance, due to the close connection, the confidential information of crowdfunding users can be unintentionally shared with third parties (Cai, 2018; Cai and Zhu, 2016). Several studies contend that there has been an increase in the dependence of crowdfunding on giant financial intermediaries (Mollick, 2014). Connection with and dependence on third parties may increase the complexity of crowdfunding operations, potentially reducing operational efficiency or resulting in a deviation from the original directive, such as social value creation (Nucciarelli et al., 2017).

As noted, social purpose, reliability, transparency, and trustworthiness are critical factors for crowdfunding platforms. Community establishment and networking development are important values that SCPs can offer their users. SCPs can both facilitate the connection between donors and the fundraisers of social campaigns and construct communities with the common purpose of contributing social value, thereby reducing information asymmetry and achieving social value (Meyskens and Bird, 2015). However, like reliability, transparency is critical to the success of crowdfunding systems. Transparency ensure that information is shared fairly among fundraisers and supporters, thereby eliminating information asymmetry, ensuring trustworthiness, and enabling social democracy in funding (Medina-Molina et al., 2019). Trustworthiness and corporate reputation are integral to a crowdfunding plat-

form's ability to maintain user support (Liang et al., 2019; Zheng et al., 2016). However, the reputation of crowdfunding platforms is frequently harmed by user fraud (Zhao et al., 2017). As most crowdfunding platforms operate via the internet, investment project proposals and related documents can be counterfeited more easily, thus creating more challenges in terms of verification. Such challenges often generate additional costs to prevent fraud and can, in a worse scenario, result in the loss of funding from investors and damage to the reputation of the funding platform (Liang et al., 2019).

Essentially, although crowdfunding platforms and SCPs have grown due to their perceived benefits compared to more traditional funding channels (Medina-Molina et al., 2019), many remain skeptical regarding their potential for further development—especially that of SCPs—due to issues ranging from their ability to maintain social purpose, reliability, and credibility.

## 2.2. Blockchain technology

Recent developments in the field of blockchain technology have led to a renewed interest in crowdfunding, with advancements presenting a potential solution to the current obstacles facing such platforms and facilitating social value creation. Widespread international interest in blockchain technology has grown over the last few years, with several practitioners and scholars presenting the prospect of delivering thorough and substantial changes in the sphere of business processes (Marsal-Llacuna, 2018). A blockchain can be understood as a decentralized transaction and information management technology that allows the dissemination of data in a platform comprising numerous users (Centobelli et al., 2021; Pazaitis et al., 2017). The term “blockchain” derives from how this technology is designed: lists of different user data records are arranged in blocks, with these blocks then chained in chronological order using cryptography. Once recorded, information in a block cannot be changed without affecting all subsequent blocks in the chain. A consensus protocol is run in all of the nodes to ensure the accuracy and order of all records. A variety of protocols offering different levels of protection can be used (Reijers and Coekelbergh, 2018). While several advantages make the application of blockchain technology a viable alternative infrastructure able to improve and advance crowdfunding platforms, the technology also presents additional barriers for the users and operators of SCPs in terms of reliability (Centobelli et al., 2021; Chang et al., 2020; Daim et al., 2020; Yen and Cheng, 2021), transparency (Baudier et al., 2021; Daim et al., 2020; Garg et al., 2021), trustworthiness (Ahluwalia et al., 2020; Baudier et al., 2021; Daim et al., 2020), and social implications (Centobelli et al., 2021; Mukkamala et al., 2018; Zheng and Boh, 2021). This section explores the advantages and disadvantages of blockchain technology for crowdfunding in greater detail.

First, in regard to *reliability*, all information and transactional data pertaining to a funding campaign are recorded and easily accessible so that all users can access any information at any time (Mukkamala et al., 2018). With blockchain technology, data cannot be changed without altering all of the subsequent records in the chain. Therefore, crowdfunding platforms can store data like transaction records and project progress using blockchain technology, which offers a more secure and reliable system compared to other databases (Centobelli et al., 2021; Zhu and Zhou, 2016). However, such reliability does not necessarily extend to all applications of blockchain technology. Cryptocurrency is perhaps the most well-known application of blockchain technology. Given the increasing use of blockchain technology and cryptocurrencies in transactions and financing, several countries—including the US, UK, Japan, and Canada—have begun regulating this kind of currency in order to avoid fraud and illegal activities, which harm markets (Daim et al., 2020). However, several governments still treat cryptocurrencies as illegal sources of money, resulting in uncertainty regarding cryptocurrency transactions for both the investors and in-

vestees of cryptocurrency-based crowdfunding platforms (Chang et al., 2020). Uncertainties regarding cryptocurrency-based transactions are compounded by the volatility of cryptocurrency. Given its digital nature, the relatively low degree of regulation, and small market size, cryptocurrencies are far more volatile than most other currencies (Yen and Cheng, 2021). Such features reduce the reliability of cryptocurrency transactions (Chang et al., 2020; Daim et al., 2020).

Second, blockchain technology has been found to improve *transparency* (Baudier et al., 2021; Garg et al., 2021). A consensus must be reached before any transaction can proceed, with the transaction information simultaneously recorded by multiple computers in a network rather than stored in a single database. According to Daim et al. (2020, p. 2), a “blockchain is a distributed ledger, which means that the ledger cannot be managed by one person alone as the legitimacy of each block must be authenticated by the participating peers.” In other words, due to the immutable characteristic of the blockchain, any transaction errors, information alteration, and contribution records can be traced, authenticated, and verified, thereby enabling public—although not regulatory—control over the crowdfunding platform (Cai, 2018; Garg et al., 2021).

Third, in respect to *trustworthiness*, several studies recognize cheating and fraud as critical issues in crowdfunding systems (Ahluwalia et al., 2020; Baudier et al., 2021). Crowdfunding platforms can stage projects to defraud investors or donors. According to Zhao et al. (2017), there are two forms of blockchain, namely, private and public. While cryptocurrencies like Bitcoin and Ethereum are applications of public blockchain, which “allow anyone to participate in consensus mechanisms,” private blockchains are “restricted, where one has to be invited by an administrator to join a blockchain system” (Daim et al., 2020, p. 2). Therefore, to prevent fraud, crowdfunding platforms adopt blockchain technology on the expectation that it will enhance trust among investors and investees, provide technical solutions in terms of anti-fraud inspection, and improve the platform’s security and trustworthiness. However, blockchain technology is not a panacea for cybercrime in crowdfunding, particularly insofar as issues and uncertainties arise from other technical or human errors during the operation of such platforms (Baudier et al., 2021).

Finally, in terms of *social value contribution*, the application of blockchain technology enables a reduction in operational costs due to the use of cryptocurrencies and reduced connection and commission fees from third parties and financial intermediaries. Reduced costs means more funding to support social campaigns and enterprises. Documented work can also be reduced, resulting in a simplified operational process for crowdfunding platforms (Cai and Zhu, 2016). Meanwhile, the well-established cybersecurity capabilities of blockchain applications enable crowdfunding platforms to gain the attention and trust of fundraisers and donors, resulting in sustainable income and improving social value creation. Scholars agree that blockchain technology has the potential to serve as an alternative structure for social crowdfunding (Mukkamala et al., 2018; Zheng and Boh, 2021). This argument is consistent with social entrepreneurship as seeking creative approaches to social value contribution (Dai et al., 2017; Nucciarelli et al., 2017; Zheng and Boh, 2021).

## 3. Material and methods

This exploratory study comprises three cases of crowdfunding platforms that gradually adopted blockchain technology in their operation and transaction processes. Building on the emergent theory of how blockchain technology can facilitate crowdfunding platforms, this study adopted an interpretive research approach and employed a grounded theoretical approach to expand and contribute to the existing literature on crowdfunding and blockchain technology.

### 3.1. Research setting and sample

This study adopts an inductive case research design to explore how SCPs can be used to support social objectives. More specifically, this study assesses three SCPs: namely, EtherInvest, CreditFund, and CrypSupport). The adoption of multiple case studies can offer more accurate findings than the use of a single case study because it can suggest whether findings are specific to a single case or more generalizable (Yin, 2017). Another advantage of multiple case methodology is the ability to compare findings from different cases to develop theories beyond the limited settings of a single case (Gioia et al., 2013).

The selected case studies are world-pioneering, blockchain-based crowdfunding platforms primarily focusing on social and environmental projects. These SCPs have invested in blockchain technology to facilitate their transaction processes. They also collaborate with a variety of financial intermediaries and legal consultancy services to offer crowdfunding services for social and environmental projects, as well as raise funds for startup sustainable businesses. The selected SCPs have reached technological maturity and started developing blockchain-based applications for tracking and verifying transactions, information, and project progress.

### 3.2. Data collection

Close contact with the three SCPs allowed the researchers to gather detailed information and archival documents regarding their business models and technological development trajectories. The lead researcher first contacted senior managers of the three SCPs to gauge their interest in participating in this study. Access was permitted on the understanding that identities would remain confidential, although participant job titles are accurate. Subsequent meetings via Skype and telephone conversations with various participants in different positions at the selected SCPs allowed researchers to gauge the social contribution intention of these platforms as well as ensure that each platform provided interesting settings and rich data for this study.

As Table 1 shows, 29 semi-structured interviews were held with 5 top managers, 11 senior managers, and 13 middle managers engaged in different roles in the selected SCPs. In order to generate a comprehensive understanding of how blockchain applications were embedded within the organizations, and the possibility of their supporting the intention to contribute social value, this study specifically targeted top and senior managers. This study also interviewed middle managers recommended by top managers as experts in their field. Accordingly, the adoption of a snowball sampling strategy served to enrich data through the increased participation of interviewees in a variety of roles within the selected SCPs.

Data were collected in stages from mid-2019 to March 2020, primarily via Skype and telephone. Interviews typically lasted 1 to 1.5 hours. Interviewees were asked to share their experiences related to this study's aim without being directed to any specific aspect (Gioia et al., 2013). Data collection was completed when theoretical saturation was achieved (Glaser and Strauss, 1967). Semi-structured interview questions were used to encourage interesting themes and ideas throughout interviews, as well as follow-up questions in subsequent interviews (Klein et al., 2007). With the permission of interviewees, the interviewer recorded or took extensive notes during the interview. In addition to the analysis of the interview data, this study conducted archival research by reviewing published documents, presentations, and newspapers to verify and compare to participant views. This procedure facilitated the collection of data from multiple sources, thereby enhancing the reliability (Flick, 2018).

**Table 1**

Interviewee details.

Participant	Position	Year of tenure (year)	Interview time (min)
<b>Case 1: EtherInvest</b>			
1	Chief Executive Officer (CEO)	7	70
2	Co-founder	7	75
3	Chief Marketing Officer (CMO)	7	60
4	Chief Development Officer (CDO)	5	75
5	Senior Technology Officer	6	60
6	Campaign Consultant	5	65
7	Community Manager	7	65
8	Product Designer	6	70
9	Senior Front-end Engineer	7	60
10	Senior Fraud Analyst	5	60
11	Legal Advisor	5	75
<b>Case 2: CreditFund</b>			
12	Chief Executive Officer (CEO)	11	80
13	Co-founder	11	90
14	Chief Legal Officer (CLO)	7	70
15	Chief Technology Innovation Officer (CTIO)	6	60
16	Senior Fraud Strategist	7	60
17	Front-end Web Developer	6	60
18	Campaign Manager	5	60
19	Grant Writing and Fundraising Expert	3	60
<b>Case 3: CrypSupport</b>			
20	Chief Executive Officer (CEO)	9	90
21	Chief Technology Officer (CTO)	8	65
22	Director of Investor Relations	7	75
23	Marketing Expert	8	60
24	General Counsel	4	75
25	Senior Blockchain Engineer	5	60
26	Senior User Interface (UI) Engineer	3	60
27	Senior Fraud Prevention Engineer	5	60
28	Content Editor	5	60
29	Blockchain Engineer	7	60

### 3.3. Data analysis

Following data collection, data were analyzed using a thematic analysis approach—an approach for accurately identifying empirical themes grounded in case research (King and Brooks, 2018). After reading, analyzing, and comparing data, empirical findings were organized into themes and conceptual categories (Alvesson, 2010), with the latter based on the existing literature (King and Brooks, 2018). A cross-case comparison approach was deployed to identify similar findings across the three cases, after which conceptual categories were grouped into aggregate dimensions (Eisenhardt and Graebner, 2007; Gioia et al., 2013). More specifically, this study followed three data analysis stages in accordance with Gioia et al. (2013). First, raw data comprising interview transcripts and archival documents were synthesized and analyzed. The researchers read all of the transcripts and relevant documents and then coded the phrases repeated in these sources, identifying themes representing the perspectives of the interviewees in their own narratives. Second, empirical findings were further analyzed to identify connections and patterns, thereby producing conceptual categories based on empirical themes. Third, aggregate dimensions were generated based on conceptual categories. In this respect, findings from the existing literature were used to develop four theoretically rooted dimensions, with the conceptual categories identified in the second stage then grouped into these dimensions. For instance, the social implication dimension consists of “social value creation,” “developing communities for supporting society,” and “high cost.”

In all three stages of data analysis, two researchers coded the interview transcripts and relevant documents independently in order to ensure reliability. Coding outcomes were then carefully compared to ensure data consistency. Data analysis also involved face-to-face conversations and follow-up discussions between researchers and participants in order to maintain highly accurate data structure. The initial findings were also sent to several participants at all three SCPs to verify the results. Fig. 4 illustrates the data structure.

#### 4. Case studies

An important feature of exploratory research is the explicit reflexivity of the research context. That such reflexivity includes several different dimensions (Bourdieu, 1990; Hoang et al., 2020) highlights how the research background contributes to illuminating the research aims as “unthought categories of thought, which delimit the thinkable and pre-determine the thought” (Bourdieu and Wacquant, 1992, p. 40). All three SCPs examined in this study retain clues regarding their organizational and normative contexts. In other words, all three cases classified themselves as blockchain technology-based SCPs based on their application of blockchain technology, current policies, and intention to foster social campaigns and entrepreneurship.

##### 4.1. Case 1: EtherInvest

A crowdfunding platform primarily based on blockchain technology, EtherInvest allows investors to take part in the ongoing projects offered by entrepreneurs on its platform. This SCP seeks to introduce new ideas prioritizing the change of the old system—that is, new ideas intended to solve problems in society, work, and business. This company offers entrepreneurs and innovators a chance to exchange ideas and obtain funding from investors through cryptocurrency. EtherInvest uses smart contracts on the Ethereum network with Ethereum Request for Comments (ERC) compatible Zens, which is based on blockchain technology. More specifically, investees with innovative ideas can receive funding in the form of cryptocurrency to deploy their ideas through the crowdfunding platforms of EtherInvest. Investors can track the efforts of entrepreneurs and provide further support or question their work from the beginning to final stages of the project. Investors who believe that a project will become a resounding success buy

Zens from the entrepreneur. Accordingly, the Zens price is higher in projects perceived to have a greater chance of success.

The smart contract powered by blockchain technology—that is, Ethereum—helps verify information pertaining to the entrepreneur quickly, safely, and easily, dispensing with time-consuming paperwork. In addition to helping entrepreneurs and investors receive funding and support in order to turn their creative ideas into reality, this procedure protects investors from fraud, improving the crowdfunding platform's trustworthiness. According to EtherInvest's Chief Data Officer (CDO), the “investor can make an investment to an innovative idea via a similar safety procedure in the stock market.” In respect to the investment system, fundraisers' obligations are recognized by Ethereum smart contracts and Zen buyers' voting procedures. While the smart contracts stipulate the project development terms, Zen holders have the right to review the progress of the project and decide whether a project stage is complete and whether the fundraiser may continue the project. If the investor is satisfied with the progress of the project, the investees receive the next funding amount; in the event that they are unsatisfied, the unused investment is returned to the investors. Fig. 1 illustrates this funding process.

##### 4.2. Case 2: CreditFund

CreditFund claims to embrace the innovative implications of blockchain technology in its business model and operational process, specifically in respect to integrating blockchain technology with its internal reward system. Through CreditFund's crowdfunding platform, fundraisers can call for investment in projects ranging from business proposals, community support program, and environmental protection initiatives to the introduction of innovative technological ideas. However, CreditFund focuses on no more than three projects at the same time, believing that directing the attention of the community to a small number of projects makes for a higher success rate.

A unique feature of CreditFund is that the fundraiser only starts an investment proposal after funding other projects and providing constructive reviews of these projects. After contributing to a project, fundraisers receive an amount of credit points equivalent to the amount of funding and number of reviews they have provided. Fundraisers can start an investment project once they have received a certain amount of credit points, with the maximum value of a project depending on the credit points of the fundraiser. Investees can increase the maximum

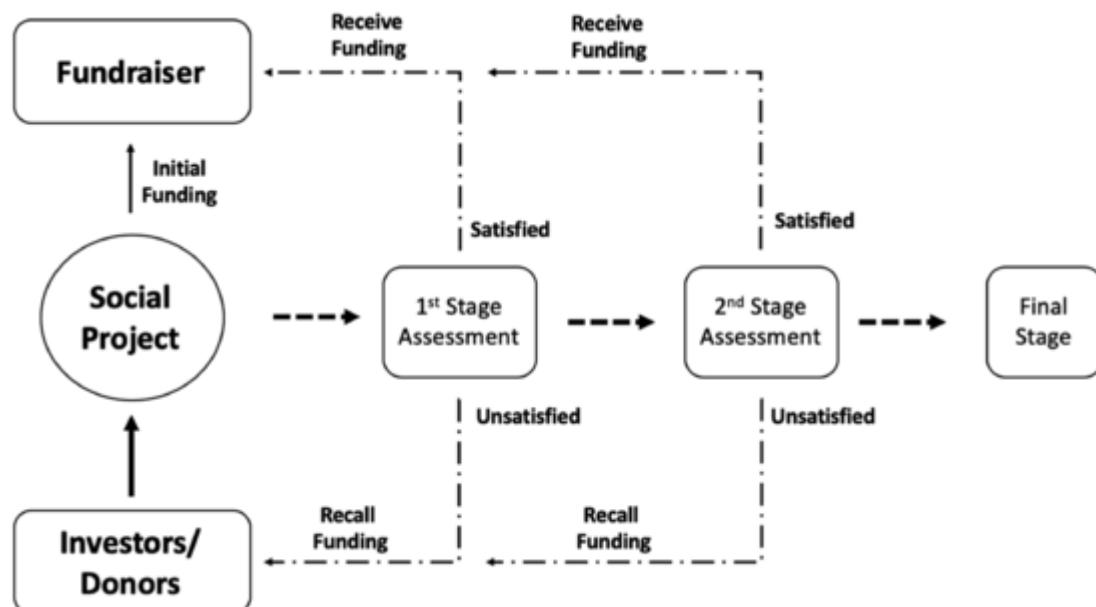


Fig. 1. The funding process in EtherInvest.

value of their project by investing and providing suggestions for other projects. CreditFund thus encourages fundraisers to improve their contributions before they can raise their own funds through the platform. Although the fundraiser can request investment for any project in the initial stage, CreditFund policy favors projects with higher social and environmental implications by allowing a maximum funding amount 25% higher than other business or technology projects. CreditFund also prioritizes social value creation by providing feature placement for non-profit organizations without requiring an initial contribution. Fig. 2 illustrates CreditFund's funding process.

Allowing investors to use blockchain technology-based currencies, CreditFund comprises investors and fundraisers from numerous countries, avoiding the restrictions and regulations of any one country. CreditFund users can introduce an investment campaign without needing to consider their country's banking restrictions. Users can choose any cryptocurrency (e.g., Bitcoin, Ethereum, Ripple, Bitcoin Cash, and Stellar Lumens) that they wish to use. The use of blockchain technology in its internal system and trading platform helps CreditFund avoid criminal activities, such as money laundering or fake donations.

#### 4.3. Case 3: CrypSupport

CrypSupport was established with the aim of supporting crowdfunding for small NGOs and charities. CrypSupport plans and manages digital marketing campaigns to attract potential contributors and allows these contributors to fund NGOs and charities directly using cryptocurrencies. CrypSupport's business strategy and technologies have indirectly helped connect businesses with charities and NGOs, allowing businesses to fulfil their social responsibilities while securing funding for NGOs and charities. CrypSupport does this in two stages. First, they develop digital marketing campaigns for partnering businesses, clearly communicating that customers are supporting an NGO or charity by buying a product from a partnering business. Second, the amount of money contributed is then transferred to NGOs and charities around the world using cryptocurrencies. Fig. 3 illustrates CrypSupport's funding structure.

Like EtherInvest, all agreements and contracts between CrypSupport, business partners, and NGOs and charities are in the form of using smart contracts on the Ethereum network. This technology helps secure

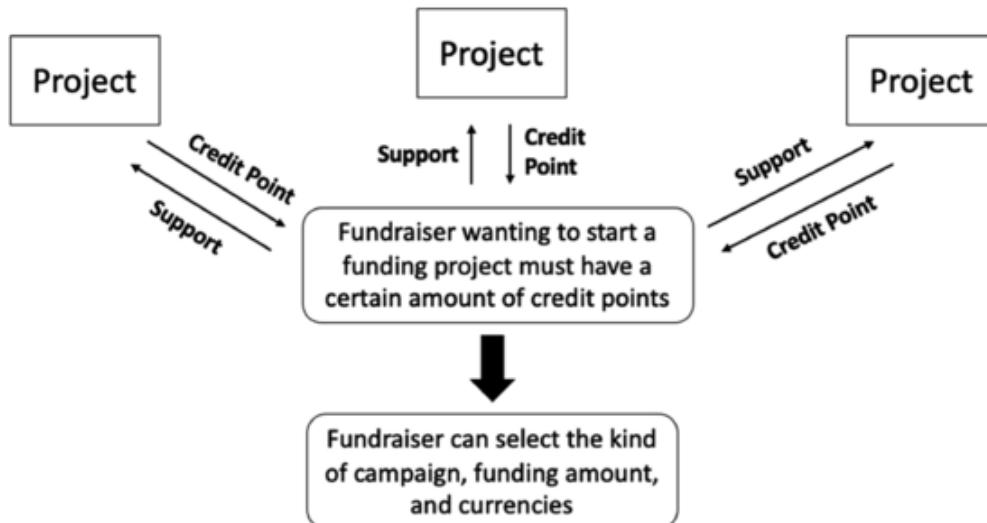


Fig. 2. The funding process in CreditFund.

#### Direct funding

#### Indirect funding

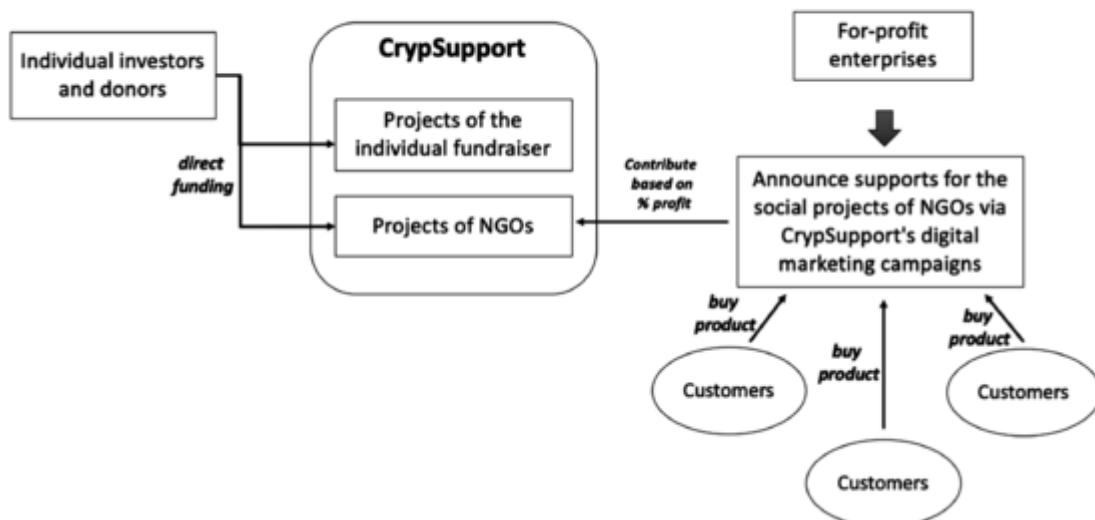


Fig. 3. The funding process in CrypSupport.

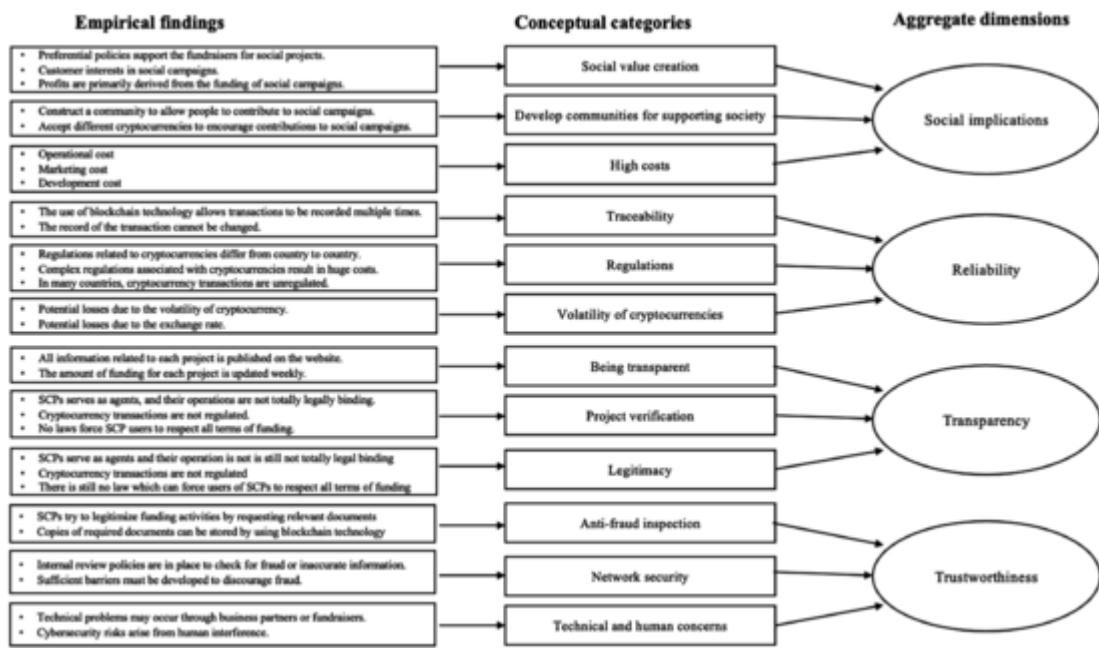


Fig. 4. Data structure.

the agreements and requirements of the partnering contracts regardless of international borders, as well as gain support from international contributors. Blockchain-based cryptocurrencies allow CrypSupport to transfer money quickly and safely from contributors and partnering businesses to NGOs and charities.

## 5. Results

Interview data were broken down into themes—namely, social implications, reliability, transparency, and trustworthiness—reflecting the impact of the adoption of blockchain technology on the selected SCPs. Fig. 2 presents the coding scheme, while Table 2 provides illustrative quotes for each code.

### 5.1. Social implications

Both EtherInvest and CreditFund contend that social value creation is the cornerstone of their business model—a core objective expressed in preferential policies supporting social and environmental projects, as well as the fact that most customer interest and profits were centered on social campaigns. As the Co-founder of EtherInvest explained,

At the initial development stage, we allow all of the investment projects, ranging from business, innovative ideas in technology, and social and environmental improvement ideas to change the world. However, the social ideas have gained the most interest from contributors although they may not bring them [investors] much return compared to other business projects.

According to the CEO of EtherInvest, the company intends to remain in the “growth stage” of the corporate lifecycle before advancing to the “mature stage” in the next two years. Upon reaching the mature stage, EtherInvest intends to reduce the commission fee—the company’s main revenue stream—from the current rate of 8% to 4%. The company is also developing its own cryptocurrency, with users charged no commission fees when trading with this cryptocurrency. In other words, EtherInvest wants to create sustainable profit by increasing the value of their cryptocurrency while maintaining their social contribution.

CreditFund’s senior managers believe that the company’s high success rate is vital for achieving its social objectives. Accordingly, Credit-

Fund focuses on no more than three projects at a time, developing a credit system intended to encourage the contribution of every user and achieve at least 95% of the funds required for each project. In this respect, the company’s acceptance of a wide range of cryptocurrencies has enabled it to attract the interest of clients from around the world. As CreditFund’s campaign manager explained,

We try to create a crowdfunding platform to deal with social issues at the first time and encourage our users from all over the world, with whatever support source, to stay in a small community with huge trust where they are willing to help one another.

According to the CEO and co-founder of CreditFund, although the crowdfunding platform has yet to earn as much as anticipated, the company has produced clear social value insofar as it provides an easy and safe crowdfunding channel for users. In respect to the company’s economic potential, CreditFund attributes such underperformance to development and marketing costs. As the company’s CEO noted,

[Although] we raised nearly USD 12 million [in] capital, almost 70% has been used to build infrastructure and human resources as well as overhead costs, and the rest has been used for marketing campaigns, promotions... as well as spending for other technologies that other crowdfunding platforms don’t have. It’s truly costly to introduce new technologies for users, who did not know anything about it yet.

Nonetheless, the Campaign Manager and co-founder of CreditFund believe that their efforts will pay off in the future, both economically and in terms of social value:

What we are doing is the future of financing and crowdfunding; yes, the social implications are obvious, and, of course, we also think about the economic consequences of our platform. When people come to us, or use similar services from anywhere else, they will start to believe that our system and technology can be offered more easily and with more safety. Then, more people will come and they will come more often (Co-founder, CreditFund).

Meanwhile, CrypSupport contends that, in addition to being a crowdfunding platform creating direct connections between fundraisers and supporters, the company encourages businesses to fulfil social responsibilities through financing NGOs and charities. Given the implementation of blockchain technology and digital marketing, CrypSup-

**Table 2**  
Representative quotes.

Dimensions and Categories	Illustrative Quotes	Interviewees
<b>Social Implications</b>		
Social value creation	What we are doing is the future of financing and crowdfunding; the social implications are indeed obvious, and, of course, we also think about the economic consequences of our platform.	Co-founder, CreditFund
Develop communities for supporting society	We try to create a crowdfunding platform to deal with social issues at the first time and encourage our users from all over the world, with whatever support source, to stay in a small community with huge trust where they are willing to help one another.	Campaign manager, CreditFund
High costs	Although we raised nearly USD 12 million [in] capital, almost 70% of this has been used to build infrastructure and human resources as well as overhead costs, and the rest has been used for marketing campaigns and promotions, as well as spending for other technologies that other crowdfunding platforms don't have.	CEO, CreditFund
<b>Reliability</b>		
Traceability	Due to the decentralization of the distributed ledger, if any transaction happens on the side of the investors or investees, it will be recorded multiple times and this record is unable to ever be changed. We also allow investors to evaluate the project at every interval; if they think it satisfies the requirement, they will continue, otherwise, they withdraw.	Senior Technology Officer, EtherInvest
Regulation	At the beginning, we set up a dedicated legal team and signed contracts with three different law firms in the EU, North America, and Asia. These efforts help us to adapt continuously to any complex regulations that our business may face anywhere. The downside is that these activities result in exorbitant costs.	CEO, CrypSupport
Volatility of cryptocurrencies	Potential losses from the volatility of cryptocurrency and exchange rate may result in the lack of money available to implement a project.	Campaign Manager, CreditFund
<b>Transparency</b>		
Being transparent	Published information includes the identity of project owners, the progress and the place where these projects were conducted. In addition, reviews made by investors have also been published in each project. Furthermore, the amount of funding for each project is also updated every week.	CDO, EtherInvest
Project verification	Our staff members need to do some interviews with investees, so that concise, detailed reviews are made and published on our website, after which investors can refer to them to make a decision.	Campaign Manager, CreditFund
Legitimacy	The Ethereum blockchain is implemented for validation and there are still gaps in our business since smart contracts are not protected by any regulations anywhere. Thus, we are considering additional mandatory provision or deposits for users.	Deputy Director, CrypSupport
<b>Trustworthiness</b>		

Table 2 (continued)

Anti-fraud inspection	The development of Ethereum technology allows us to store all of the valid data, and hence improve the trustworthiness of this crowdfunding platform. We will soon see that blockchain technology or other technologies can go further to support data verification and sharing.	Director of Investor Relations, CrypSupport
Network security	We also adopted a Redundant Array of Independent Disks and a firewall, as well as allowing online payments system such as PayPal along with Ethereum technology to protect information and transaction data.	Senior Technology Officer, EtherInvest
Technical and human concerns	Sometimes, technical problems may occur from the side of business partners or fundraisers, which is possibly because of the complexity of our organization, which results in the transaction errors. However, these problems happen infrequently, i.e., roughly five or six times per year.	Deputy Director, CrypSupport

port has cultivated a community in which individual contributors and businesses and their customers can contribute to social campaigns.

As such, all three businesses have contributed to social value creation by developing a crowdfunding platform that enables contributors to fund a social campaign through the use of blockchain technology. However, although this type of technology enables an easier, transparent, and safer approach to funding, development, operation, and marketing costs hinder the development and sustainability of associated businesses (Yunus et al., 2010).

## 5.2. Reliability

According to Mollick (2014) and Chang et al. (2020), reliability is integral to a crowdfunding platform's ability to contribute social value. EtherInvest's Senior Technology Officer linked the SCP's reliability to its policies and use of blockchain technology. In respect to the latter, the decentralization of the distributed ledger of blockchain technology allows each transaction record to be stored in several places. In regard to policy, EtherInvest employs a review process for each investment project, enabling investors to evaluate whether the progress of a project is on track and able to meet its objectives. As the Senior Technology Officer explained,

On the one hand, the blockchain itself is reliable, and due to the decentralization of the distributed ledger, if any transaction happens on the side of the investors or investees, it will be recorded multiple times and this record is unable to ever be changed. We also allow investors to evaluate the project at every interval; if they think it satisfies the requirement, they will continue, otherwise, they withdraw.

Meanwhile, CreditFund's Chief Technology Innovation Officer noted the importance of support from their business partners in respect to their ability to manage their technologies:

A funding platform like us is quite complicated, which includes an integration of multiple parts such as an Ethereum blockchain, cryptocurrency exchange platforms, so we worked with a variety of third parties, and they are helping us to upgrade and move forward (Chief Technology Innovation Officer, CreditFund).

CreditFund also has a dedicated legal team responsible for reviewing, reacting to, and resolving any issues arising from any regulations they encounter when dealing with international clients and partners, thereby ensuring CreditFund's reliability. As the company's Chief Legal Officer explained,

We expect our funding platform to be truly international since the idea of CreditFund came up. However, law and financial regulations in several countries have hindered us. On another side, we also get troubles in other countries, where a transaction made by cryptocurrencies is not legal.

Regulations appear to pose more significant difficulties than the money transfer process. Once an investment campaign reaches its funding goal or the campaign deadline is due, crowdfunding platforms need to transfer money to the fundraiser's account. Funds from investors are received by a funding platform in the form of cryptocurrencies. However, the funding platform needs to transfer money to the fundraiser account in the form of fiat money depending on their registered fiat currency. Both EtherInvest and CreditFund encountered difficulties in respect to the involvement of banks and the fiat money exchange. As EtherInvest's Legal Advisor noted,

Our transfer process may be faster when fundraisers can accept cryptocurrencies. However, most of them prefer fiat currency; hence, it is impossible to eliminate the involvement of the bank. The money transfer process now takes up to three or four working days to transfer and exchange cryptocurrencies completely to fiat money or vice versa.

According to the CEO of CrypSupport, the company is able to deal with various challenges related to the regulations in different countries or regions through the collaboration of their legal team and partner law firms. However, this also results in higher costs. As the CEO explained,

We think connection and legal matters are critical issues for companies like us, who develop business based on very new financial technologies. Hence, at the beginning, we set up a dedicated legal team and signed contracts with three different law firms in the EU, North America, and Asia. These efforts help us to adapt continuously to any complex regulations that our business may face anywhere. The downside is that these activities result in exorbitant costs.

Moreover, CrypSupport's Director of Investor Relations admitted that satisfying the financial regulations and legal requirements of each country had emerged as the main challenge to attracting clients to their blockchain-based company, particularly insofar as blockchain-based crowdfunding is still a relatively new concept.

Although we aim internationally at the beginning, we can only connect with companies in a few countries. In another country, our potential partner requires us to hold licenses from the Central Bank or the Ministry of Finance before they collaborate with us. I think they knew what we had done was good, but they needed a license to guarantee it (Director of Investor Relations, CrypSupport).

CreditFund's Campaign Manager identified the risks associated with the volatility of cryptocurrencies as a major issue impacting reliability. He notes that, while cryptocurrencies tend to be stable for several days following their exchange, project funding is sometimes stored until it is needed, potentially losing or gaining value between transactions due to the volatility of the market. Moreover, the direct exchange from cryptocurrencies to fiat currencies in several countries—including China and Vietnam—is currently illegal, causing additional challenges for companies like CreditFund to exchange cryptocurrencies into the local currency of the country in which a fundraiser is situated. As the company's Campaign Manager explained,

Even now, a cryptocurrency transaction is not very easily accepted in a lot of countries or regions. We think that this a big problem, as it causes huge impacts [on] the potential value creation of cryptocurrency [in] society, because potential losses from the volatility of cryptocurrency and exchange rate may result in the lack of money available to implement a project.

Like EtherInvest and CreditFund, CrypSupport depends on approximately 20 financial intermediaries and business partners. According to CrypSupport's Deputy Director, these connections help the company outsource some non-essential business functions. However, he also notes that there the company's management is concerned with the complexity of the company's management system and its dependence on third parties.

As such, the application of blockchain technologies helps EtherInvest and CreditFund reduce technical errors, complexity, and dependence on financial intermediaries like banks—improving their overall reliability. However, EtherInvest and CreditFund still need to access banks in order to exchange cryptocurrencies for fiat currencies. Meanwhile, CrypSupport's outsourcing of business functions helps it retain focus on core business activities, although the additional costs resulting from such outsourcing and legal needs do pose financial constraints. Finally, although the use of cryptocurrencies can help overcome the regulations of various countries, cryptocurrency transactions are still illegal in several regions. Therefore, cryptocurrency remains a risky payment approach—one compounded by the volatile nature of cryptocurrency.

### 5.3. Transparency

According to the CDO of EtherInvest, transparency is an essential component for crowdfunding platforms. EtherInvest seeks to maintain transparency by storing and publishing all project information on the company server and website. As the CDO explains,

Although information is stored by using blockchain technology, we also use our server and website to publish all information for investors. Published information includes the identity of project owners, the progress, and the place where these projects were conducted. In addition, reviews made by investors have also been published in each project. Furthermore, the amount of funding for each project is also updated every week.

EtherInvest also seeks to improve transparency by ensuring the traceability of the development and progress of projects. However, the company's co-founder notes that EtherInvest does not actually check the progress of a project or evaluate investor reviews: "Those procedures are being reported by investees; we are serving a role as an agent, to help to connect them. They need to justify that they have made the progress."

Interviewees from both EtherInvest and CrypSupport raised similar concerns regarding the regulation of smart contracts, noting that although the terms of smart contracts are fixed, there are no laws or regulations that can force users to adhere to all terms. In this respect, the Deputy Director of CryptSupport suggested the need for additional regulations or deposits to ensure that the users follow the terms of their contracts as legally binding, noting:

The Ethereum blockchain is implemented for validation and there are still gaps in our business since smart contracts are not protected by any regulations anywhere. Thus, we are considering additional mandatory provision or deposits for users. However, if we become stricter, users will turn their back on us.

CreditFund's Campaign Manager similarly emphasizes transparency as a fundamental aspect of any crowdfunding platform. In this respect, CreditFund's strategy of focusing on a limited number of projects at any given time allows the company to conduct an extensive investigation of the purposes, motivations, and potential of each campaign. Investors can access detailed reports for each project on CreditFund's website, allowing them to make informed decisions on whether to support a project.

As such, crowdfunding platforms maintain transparency by communicating project-related information and progress provided by fundraisers to investors. However, the inability of SCPs to verify this in-

formation—including that pertaining to project development—or examine potential projects manually can hinder transparency, allowing for fraud and the manipulation of disclosure information. Moreover, although blockchain technologies produce fixed terms in smart contracts, this form of contract has yet to be standardized in the legal system, indicating the unreliability of disclosed information and unenforceable contract terms.

#### 5.4. Trustworthiness

As a crowdfunding agency connected to NGOs, charities, and businesses, CryptSupport has sought to legitimize all users by requesting that they submit notarized copies of all relevant documents for review, after which soft copies are created and stored using blockchain technology. CryptSupport and other users thus enjoy easy and secure access to these documents. However, CryptSupport interviewees expressed concern regarding the lagging development of legal ecosystems compatible with blockchain technology. As the company's Director of Investor Relations noted,

The development of Ethereum technology allows us to store all of the valid data, and hence improve the trustworthiness of this crowdfunding platform. We will soon see that blockchain technology or other technologies can go further to support data verification and sharing. However, the biggest challenge is whether the legal support can catch up with these technological advances.

Other CryptSupport interviewees, including the Deputy Director, shared concerns that technical issues may lower the SCP's trustworthiness:

Sometimes, technical problems may occur from the side of business partners or fundraisers, which is possibly because of the complexity of our organization, and thus results in the transaction errors. However, these problems happen infrequently, i.e., roughly five or six times per year. Technical errors may happen, but I don't think that they would jeopardize the reliability of our business. (Deputy Director, CryptSupport).

Similarly, CreditFund's trustworthiness is ensured through the SCP's investment proposal review process. This review process comprises two stages. The first stage involves an initial examination of the relevant documents, fundraiser's identity, project purpose, and potential project outcomes. In the second stage, several interviews are conducted with applicants in order to verify the information and further investigate the proposed campaign's potential. All of the data collected during the two stages are published for CreditFund investors. Although this process is costly and time-consuming, the SCP uses this process to reduce instances of fraud and/or inaccurate information.

[Our] investees came from all around the world, we need to investigate each project and each owner carefully to understand whether these projects can deliver real results like the owner had mentioned. These stages create additional operating costs and wasted time, but they are necessary as we have experienced fraud and misleading information provided by a few fundraisers (Campaign Manager, CreditFund).

In respect to EtherInvest, both the CEO and Senior Technology Officer admit that there are still cybersecurity risks due to human interference that cannot be solved by blockchain technologies alone. Therefore, in addition to blockchain technologies, the SCP has adopted multiple cybersecurity approaches to protect users' information against cybercrime. As the Senior Technology Officer explained,

There is still a possibility, from the human side, for instance, for any staff to use a Trojan to hack into our system. Therefore, we face an absolutely huge cybersecurity risk. Hence, we also adopted a Redundant Array of Independent Disks and a firewall, as well as al-

lowing online payments system such as PayPal along with Ethereum technology to protect information and transaction data.

However, despite the reliable advancement of blockchain technology and adoption of multiple cybersecurity procedures, the majority of interviewees suggested that there are still risks due to the engagement of humans with peer-to-peer computing. Therefore, the only possible approach to improving trustworthiness involves developing sufficient barriers to discourage fraud attempts. As EtherInvest's CDO argues,

Trust is a subjective concept. Although blockchain is a highly reliable technology, it still cannot guarantee one hundred percent protection. The adoption of blockchain technology does not simply imply a more secure crowdfunding approach; it rather means that we regard the trustworthiness in this crowdfunding platform highly.

As such, crowdfunding platforms have embraced several technical and manual strategies to protect data, including close examination of applicants and building user trust in these services. However, strategies can work at cross-purposes. For instance, while CryptSupport's use of outsourcing has helped the company focus on core business activities, this can lead to technical errors, negatively impacting the SCP's reliability. Moreover, while blockchain technologies facilitate the trustworthiness and security of crowdfunding platforms, processing data and transactions using blockchain technologies still possess potential risks due to internal breaches.

## 6. Discussion

### 6.1. Theoretical contributions

Empirically analyzing blockchain technologies-based SCPs supporting social projects, this study documents how blockchain technologies are used in SCPs and critically evaluates the determinants influencing the social value contributions of these SCPs. In doing so, this study makes several contributions to the literature on blockchain technologies and crowdfunding.

First, adopting blockchain technologies serves to expand the scope of these SCPs, with the use of cryptocurrency enabling these platforms to bypass the financial regulations of certain areas and attract international users. Indeed, these SCPs are able to support social projects and receive contributions from investors or donors regardless of international borders. Blockchain technologies also help to reduce the amount of operations, improve data storage, and promote an easy and safe crowdfunding channel for users, thereby facilitating social value creation in crowdfunding platforms. These findings align with those of Zhu and Zhou (2016) and Dai et al., (2017), who found that blockchain technologies facilitate the development of crowdfunding platforms. Blockchain technology also help reduce commission fees and operational costs, as well as the transaction fees and waiting time incurred involved with using financial intermediaries. Such applications thus free up funds and time ordinarily spent on third parties, boosting the SCPs social value creation. These findings are consistent with studies demonstrating the benefit of blockchain technologies for social value creation, including Cai and Zhu (2016), Reijers and Coeckelbergh (2018), Medina-Molina et al. (2019), and Zheng and Boh (2021).

Second, although cryptocurrency transactions can help reduce technical problems inherent in traditional monetary transfers via financial intermediaries, a number of uncertainties have emerged. Significantly, cryptocurrencies have yet to be regulated in several countries, resulting in difficulties for investors and donors in these countries. Meanwhile, cryptocurrency transactions are illegal in several countries and regions, preventing blockchain technology-based SCPs supporting campaigns in these regions. Moreover, given the need to investigate and assess projects, some SCPs may encounter difficulties arising from the variation in the cryptocurrency to fiat money exchange rate. These issues reduce the reliability of the cryptocurrency transaction process. This finding

strengthens the assertions of several scholars (e.g., Cai and Zhu, 2016; Dai et al., 2017; Daim et al., 2020) that cryptocurrencies are not yet fully reliable for financial transactions.

Third, although all three SCPs claimed to have implemented blockchain technologies, they still use traditional technologies compatible with blockchain technologies to process, store, publish, and share information with users. Moreover, manual procedures like project examination and progress verification still require human involvement and follow-ups processes. This indicates that blockchain technology-based applications have not yet developed to the extent that they can be used for all SCP processes. Nonetheless, such technology has improved SCP transparency, particularly insofar as it provides for a decentralized information network for users. These findings are consistent with studies emphasizing the benefit of blockchain technologies for SCP transparency, including Noizat (2015), Zhu and Zhou (2016), Daim et al. (2020), and Baudier et al. (2021).

Finally, blockchain technologies-based SCPs continue working ways to legally adopt blockchain applications while developing appropriate approaches to avoiding fraud and human error. Although most blockchain studies suggested that blockchain applications like smart contracts have the potential to protect data storage and transactions (Chang et al., 2020; Zhu and Zhou, 2016), this study found that blockchain technology-based SCPs still face risks due to misleading or inaccurate information from fundraisers, as well as internal human error. To avoid these issues, such SCPs are required to employ additional cybersecurity procedures such as backup systems. Smart contracts are also undermined by the lack of regulation in most countries, resulting in user uncertainty and difficulty enforcing terms. As such, while the application of blockchain technologies improve SCP trustworthiness and security, they do not provide legal and financial guarantees (Baudier et al., 2021; Cai, 2018).

## 6.2. Practical implications

This study's detailed exploration of the possibility for social value creation in blockchain technology-based SCPs holds a number of practical implications. First, this study demonstrates that blockchain technologies provide an alternative base for crowdfunding platforms. Second, this study's findings support the argument that blockchain applications can support the development of crowdfunding, facilitate social value creation, and improve the transparency and trustworthiness of SCPs (Ahluwalia et al., 2020; Zhao et al., 2017). However, further efforts are necessary to exploit the potential of blockchain technologies and their application (Chang et al., 2020; Hartmann et al., 2019).

## 6.3. Limitations and future research directions

This study was designed to discern social value creation in the context of blockchain technology-based SCPs. Further research should explore the perspectives of users (e.g., fundraisers and investors/donors) in different contexts, including developing or developed countries, as contexts with and without regulations and legal support for blockchain technology-based SCPs. It may also prove useful to return to this study's cases and examine their success in attracting both fundraisers and investors/donors. Finally, due to the nature of the grounded theory approach, this study does not highlight the connections between themes of social purpose, transparency, trustworthiness, and reliability. Future research should focus on the links between emergent themes, including those not observed in this study, and explore the influences of such relationships within the social value creation capacity of blockchain technology-based SCPs.

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## Uncited References:

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## CRediT authorship contribution statement

**Loan T.Q. Nguyen:** Validation, Data curation, Writing – original draft, Writing – review & editing, Resources. **Thinh G. Hoang:** Conceptualization, Methodology, Supervision, Visualization. **Linh H. Do:** Formal analysis, Funding acquisition, Supervision, Project administration. **Xuan T. Ngo:** Resources, Validation, Writing – review & editing. **Phuong H.T. Nguyen:** Validation, Writing – review & editing. **Giang D.L. Nguyen:** Investigation, Writing – review & editing. **Giang N.T. Nguyen:** Investigation, Data curation, Writing – original draft.

## Declaration of competing interest

None.

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