Fundraising Campaigns in a Digital Economy: Lessons from a Swiss Synthetic Diamond Venture's Initial Coin Offering (ICO)

Jahja Rrustemi & Nils S. Tuchschmid

> *"Ideas are easy. Implementation is hard."*
>
> Guy Kawasaki

As economies digitalize and many local businesses gradually internationalize, crowdfunding platforms have offered a new way for ventures to raise capital. Relying on distributed ledger technology (DLT, blockchain), the method of "tokenization" now seems to be the next way for digital economics to be actualised in practise. Digitalizing some of the production and selling processes through crypto-tokenization technology has brought with it new perspectives and opportunities. Any thorough consideration of the logic of "distributed systems" applied to economics is bound to see that it potentially brings considerable disruptions and significant changes in how companies get access to funding. Cryptocurrencies, and subsequently "tokens" initially issued from "initial coin offerings" (ICOs) have answered an obvious need for efficient, borderless, and secure flows of capital. This article first summarizes what early academic research tells us about ICOs based on DLTs and their factors of success. We then use the case of LakeDiamond, a Swiss venture in the business of growing and polishing synthetic diamonds, to present and contextualize the process of holding an ICO, which ultimately did not succeed. In the final section, we present two fund raising models that have recently gained traction and popularity, namely "security token offerings" (STOs) and "initial exchange offerings" (IEOs), and highlight their main advantages compared to ICOs.

I. Introduction

Ten years ago, Pascal Gallo, a French researcher with a fresh doctorate in physics from Toulouse University embarked on a new journey at the Ecole Polytechnique Fédérale de Lausanne (EPFL). During his post-doctorate studies, he began the first experiments on technologies related to growing synthetic diamonds. Later, in 2015, he founded LakeDiamond, a start-up located at the EPFL Innovation Park specializing in lab-grown diamonds. According to LakeDiamond, these lab-grown diamonds have unique properties. Among others, they are "transparent to light, conductors of heat, eco-friendly, chemically inert, hard and elastic and biocompatible" (LakeDiamond — Summary fact sheet, October 2018), a set of characteristics that sounds extraordinary.

Diamonds are used in a variety of fields, from medicine and telecommunications to computer sciences. Industrial demand is there; supply, however, has been lacking. The manufacturing process relies on complex machinery, where layers of carbon are deposited in a crystalline pattern to gradually shape a fully lab-grown diamond. The process is done in reactors that are extremely costly to manufacture. LakeDiamond owned two of these, and intended to acquire fifty more in the next five years if the company could obtain the financing. With a limited number of reactors, the fifteen thousand plates of diamonds produced per year would not have been sufficient to finance such a rapid expansion of the company. Although opportunities were available, the heavy cost of the reactors and the low productivity of the manufacturing process hindered company growth. Under these circumstances, raising capital was the priority for Gallo and his associates, as is often the case when start-ups wish to expand. A decision was then made to launch an Initial Coin Offering (ICO) using the relatively new and still emerging distributed ledger technology (DLT) known popularly as "blockchain" or "Bitcoin" (more below).

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In this short paper, we aim to provide for readers a glimpse into the world of digital economics (cf. tokenomics), and specifically into the challenges that can be encountered during a campaign of cryptocurrency fundraising. Given the decline in confidence, we also explore the limits of ICOs, and present alternative solutions. Different models have become more popular nowadays, namely "security token offerings" (STOs) and "initial exchange offerings" (IEOs), for which we briefly highlight the pros and cons of each of these new solutions.

II. Crowdfunding

Obviously, raising capital for a start-up is often synonymous with ownership dilution: it relies on private investors, usually referred to as "business angels" (Elitzur & Gavious, 2003), to invest in the company in exchange for partial ownership of the firm. This "business model" is the most popular way to raise funds, yet the last decade has seen the emergence of new online financing platforms, known as crowdfunding. At its start, crowdfunding typically relied on small donations from a large audience who support the idea of financing a project or venture (Ahlers et al., 2015; Vismara, 2016; Vismara, 2018). Basically, the individuals who propose a new project and need financing will ask for capital without ceding ownership of future revenues or assets of the venture. Some sort of reward or gift may be promised if the project reaches a certain milestone. Or, in the case of simple donations, nothing is given in return. You may ask yourself, why would anyone provide funds without expecting anything in return if the project is successful? For one, the donations are usually in small amounts, rendering the gesture accessible to the public and the money loss not too taxing. Due to the platform being easily accessible and therefore available to everyone, funding can be provided without having to go through conferences or meetings to pitch your idea to potential private investors.

Also, the gains of the "investors" are perceived on the basis of the solutions provided by the project, if successful. From a theoretical standpoint, the last part is quite confusing. Imagine a society where companies can convince the general public that they should get financing free-of-charge for the simple fact that it could be beneficial to them in the future. Now, should the start-up not succeed, the cost of failure would be shouldered by a multitude of donors. Yet, on the other hand, owners would reap early investor rewards from any success. Difficulties arise, however, when individuals with bad intentions promise projects not actually designed to happen, that would "unfortunately" fail, yet bring short-term gains to one or a small few owners?

In an attempt to circumvent some of these issues, other online platforms, such as Crowdcube or AngelList, propose equity crowdfunding, also known as crowdinvesting, where each investor can obtain ownership in the start-up, with the lowest possible investment being as little as 10 dollars. This offers an effective solution that provides a bridge between donation-based crowdfunding and "initial public offerings" (IPOs) (Ritter & Welch, 2002), which are now common, though accessible only to companies that are relatively well-established. In parallel to crowdinvesting, crowdlending platforms have also become popular. On the latter, investors lend money to companies or individuals; amounts can vary from small to large. Nowadays, crowdinvesting and crowdlending represent the bulk of money that circulates on these platforms. In Switzerland for example, out of the circa 500 million CHF (€460 mln EUR, or $700 mln CAD) raised in 2018 through crowdfunding platforms, close to 90% came in the form of equity or loans (Dietrich, 2019).

III. Initial Coin Offering (ICO)

Crowdfunding has reached a turning point in recent years. The hype behind the exponential growth of Bitcoin's price drew in its wake the emergence of numerous Bitcoin-like replicas, also based on blockchain technology. Blockchains thereby changed the economic landscape by allowing users to exchange value without requiring an intermediary in a way that still ensures anonymity and transaction security through "distributed ledger technology" (DLT) (Pilkington, 2016; Vaizeyv & Hancock, 2016). This technology relies on synchronizing multiple databases located on separated devices through peer-to-peer (P2P) networks. There is no feature of a central administrator, and thus no need for a pay-only intermediary.

Distributed system operations are also extremely secure, pushing the leading edge of cybersecurity and artificial intelligence. Each device that is part of a blockchain saves a copy of the ledger independently, thus making a balanced network cryptographically secure. These features are essential in a context of digitally transferring value and assets between individuals.

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It was only a matter of time for alternative ways of financing through new cryptocurrencies to surface. Initial Coin Offerings (ICOs), are a capital raising mechanism based on distributed ledger technology that became extremely popular from 2014-2018 (Adhami et al., 2018; Amsden & Schweizer, 2018; Momtaz, 2018; Momtaz, 2019c). In an ICO, the start-up would issue a cryptocurrency or "token", where the token owners obtain, for example, a right to dividends or some kind of proprietary rights or services. The tokens could also be used as a means of payment.

Note that there is an apparent relationship between the advent of cryptocurrencies and the ever-increasing globalized economy. A borderless economy is no longer a farfetched concept, in small part due to blockchain technology and token economic thinking. ICOs still fall under the general definition of crowdfunding, the initial intent is still the same, though the legal definition of "ICO" for regulations currently varies depending on the jurisdiction in which one resides. The number of possible opportunities is endless as there are innumerable things that can be deemed valuable, where that value can be digitized and made transferable using tokens. In 2017, ICOs raised about $7.5 billion USD, compared to $3.6 billion USD for the venture capital market (Amsden & Schweizer, 2018). The potential for start-ups that, due to their geographic location or lack of internal funding, may not have access to typical fund-raising routes for obtaining much needed new sources of capital, cannot be understated (Neubert, 2019). As the world becomes increasingly connected through various networks, a trend also is found in the flow of capital becoming more and more internationalized (Pieters, 2017).

When it comes to allocating capital to newly founded start-ups, many will see the potential of high returns, the famous "home runs" that come to mind to everyone. Yet, the successful start-ups are few, and investing in them is a risky venture. The same applies to ICOs. The flexibility and freedom made possible thanks to tokenization has also attracted many counterfeits and scamming schemes, as illustrated by the infamous Pincoin and iFan, the crypto startup that raised $660 million USD without any product to show (Shifflett & Jones, 2018; Kean, 2018).

Yet, not all ICOs should be mistaken for frauds or scams. While the latter make the front page of newspapers because they attract readers' attention, the risk of losing or gaining money with ICOs stems more classically from business risk. In a volatile environment, where start-ups come and go, investors always face the possibility that their investment value will be reduced to nothing should the company not be able to successfully develop its product, or not find its client base and end up going bankrupt. Bankruptcy does not spare an ICO from "currency risk" or conversion risk of token devaluation. As tokens, aka. "cryptocurrencies", are extremely volatile compared with fiat currencies, token owners bear an additional risk not present in classic fundraising campaigns. Over the recent period of 2018 and up to June 2020 for example, the annualized volatility of Ether (ETH) and Bitcoin (BTC) with respect to USD were respectively equal to 83% and 66%.

Technological risk can also be associated indirectly with ICOs. If there is a secondary market on a digital platform, for example, on which tokens can trade, there is always a risk that the platform will be hacked. This usually results in wealth vanishing at the hands of someone else with little chance of getting it back.

Of course, with the rapidly growing number of ICOs from 2016-2018 came a growing number of research papers whose scopes are somehow wide. Some papers, for example, have focussed on pricing, or on the performance of tokens (Kostovetsky & Benedetti, 2018; Sockin & Xiong, 2018; Momtaz, 2019). Others analyze how company owners have used their share of the tokens as a way to finance their start-up, and some have tried to measure the success of ICOs in raising capital (Catalini & Gans, 2019; Fisch, 2019). Regulations and the requisite legal frameworks that go with them have also attracted interest among researchers, although the crowdfunding field tends to change quickly as governments and regulators adapt to new technologies, as well as to competition between various financial centers (Zetzsche et al., 2017).

Determining the potential for ICO success is also a major focus of the emerging literature regarding new ventures. In particular, identifying which factors pre-ICO are the main drivers that explain the successful cases of this new type of funding is essential. Due to the lack of an established institutional framework and intermediaries for conducting an ICO campaign, asymmetries between entrepreneurs and investors are almost certain to arise. Hence, start-ups must essentially rely on signals emitted to potential investors, in order to differentiate themselves from the competition. These signals can range, for example, from the availability of a white paper, to other small

investors already lined-up, to the number of patents acquired. The public would then use these signals to separate good ventures from bad ones. In the context of ICOs, the following characteristics of these signals and the context in which they are sent are deemed relevant by the literature.

First, a technical environment is needed. Indeed, due to the highly innovative nature of ICOs, usually linked to DLTs (invented by Satoshi Nakamoto in 2008), ICO-backed ventures (original ICO was Mastercoin, 2013) first need to properly grasp the knowledge required to apply DLTs to fundraising and business model transformation. They also need to convey these processes to a public that does not necessarily have expertise, which creates asymmetries as the knowledge gap can be too wide from the outset (Chester, 2017; Cohney et al., 2018; Long, 2018).

Second, ICOs have proven to be risky investments. They usually happen during the very early stages of a start-up venture, and the simple fact is that digital tokens alone do not offer any real or tangible value at issuance (Russo & Kharif, 2017), unless backed by a security, which most early ICOs were not. Adding to that, the risk of frauds and scams due to participating in a new and unregulated environment, results in a highly risky investment. Yet, this does not seem to deter "crypto investors", who are likely to be much less risk-averse compared to the average investor. The new digital economy environment in terms of cryptocurrencies so far has fostered a market where exaggeration and embellishment have become the norm instead of the exception, further increasing the asymmetries.

Third, the historically anonymous nature of DLTs, and consequently also of ICOs, renders sharing information between investors and new ventures as difficult (Kaal & Dell'Erba, 2018). Crypto-oriented venture companies do not necessarily disclose crucial information to investors, as it is not the norm in this particular industry, in contrast with the desire for anonymity from investors. This secretiveness hence has caused a reciprocal attitude from ventures in return (Kastelein, 2017; Shifflett & Jones, 2018).

In addition, conditions often lack being met for "Know Your Customer" (KYC) regulations, due to the reasons stated above. All of these circumstances combine to result in the current situation, where information sharing is still very opaque, with large asymmetries of information present (Kastelein, 2017; Poutintsev, 2018). Signals are therefore necessary elements as their principal objective is to indicate whether a venture is of high quality or not. Previous research has aimed at determining which signals are useful indicators of a successful ICO campaign. For example, researchers have found that Twitter activity plays a considerable role in detecting whether or not an ICO becomes successful. The availability of the code for developers, together with efforts of the start-up team to fix bugs and update their platform, also provide positive signals (Fisch, 2019). Yet, results have been mixed. For instance, some argue that a technical and well written white paper has a positive effect on the amount of funding raised, while others find the opposite (Adhami et al., 2018). In either case, an ICO that is accompanied by a white paper at least gives the opportunity to explore the start-up's business model and unique value proposition, which fundraising using a "token sale" is supposed to address.

Contradictory evidence has been put forward by Momtaz (2019b), who argues that one of the reasons why signals are difficult to assess for ICOs is due to moral hazard. The latter significantly influences and disrupts the validity of signals. In the context of ICOs as a new type of crowdfunding in the digital economy, a lack of institutional capacity to verify the validity of market signals, and subsequent general lack of ability to "punish" those that are partial or inaccurate, serves to incentivize ventures to bias their signals. Such behavior without adequate regulation and oversight in place partially explains the large amount of exit scams and fraudulent behaviors of ICOs from 2016-2019.

To summarize, the informational asymmetry present in most ICOs has rendered difficult the formal study of precisely which factors determine a successful fund-raising campaign. Hence, when considering the possibility of entering the digital economy through investment in cryptocurrency "tokens", a thorough and diligent analysis of each start-up project, and of the surrounding circumstances are still an essential aspect if one wants to invest successfully.

IV. LKD Token

The founder of LakeDiamond, Gallo, decided to follow an ICO model as a means of raising capital. However, LakeDiamond tokens did not offer any proprietary rights to the synthetic diamonds themselves for potential token owners. The ICO instead allowed

investors to purchase minutes of synthetic diamond production in the form of tokens called LKD.

LakeDiamond thus divided its business operation into two phases: the diamond growth stage and the diamond polishing stage. The investment in minutes of diamond production was therefore tokenized by the start-up under the growth stage. Owners of LKD tokens thus were able to partake in the growth aspect of synthetic diamond production through purchase of tokens in the ICO, and later, on an exchange. The start-up, on the other hand, shouldered costs and revenues related to polishing and auxiliary work on the diamonds. Through this original method of pre-selling minutes to produce synthetic diamonds, the start-up expected to raise capital quickly without ceding ownership.

The LKD tokens proposed by LakeDiamond were not registered as "asset" tokens under Swiss legislation. Instead, they fell under the category of "payment" tokens, meaning that they could not be advertised as an investment vehicle to potential future "investors", although the white paper and public presentations clearly alluded to potential profits. To summarize, the Swiss regulator (FINMA) currently classifies tokens under four different categories: utility, payment, asset, and hybrid. Each category of token falls under different legislation and taxation rules. The owners of LKD tokens could either have purchased diamonds for themselves, transferred the LKD they bought in the ICO using a smart contract, and benefited by this directly through the company's diamond sales, or later sold the LKD tokens on a secondary market. FINMA did not deem relevant the potential investment opportunities of the model and acknowledged mainly the payment characteristic. In other words, LKD tokens had to be treated both as value storage and as payment asset, since they could be traded for fiat or Ethereum currencies.

LakeDiamond developed a framework using blockchain technology to make sure that tokenization of the minutes of production was a transparent and secure procedure. The transaction process worked as follows: an initial order was made from an industrial client, for which a smart contract was created. The smart contract order was then attached with a corresponding Ether value. The owners of LKD tokens could then bid against each other using a smart contract, where the lowest bids gained precedence in the order of selling priority. Note that LKD owners had to enter their bids onto the platform beforehand, that is, ahead of the auction. Meanwhile, LakeDiamond started producing the diamonds and through a distributed ledger, offered proof of production to future minute owners. After the diamonds were delivered to industrial clients, the value of the diamonds was converted into Ether and attached to the specific smart contract. The most beneficial bids for LakeDiamond were selected to fulfill the order. The lowest bidding chosen token owners, finally got Ether in exchange for their LKD tokens.

V. LakeDiamond ICO

The LakeDiamond ICO was launched in October 2018 with the objective to close the ICO in only a few months, after reaching its target. Yet, the complexity of the LakeDiamond ICO design translated into a mitigated problem for investors. By March 2019, it became clear that LakeDiamond had not achieved its objective. During the ICO, it reached only the soft cap of 5 mln CHF ($7.2 mln CAD), a result that remained far less than the 60 mln CHF ($86.2 mln CAD) initially expected, and the minimum needed for the project to start. The start-up then decided to extend its ICO by one year and to focus mainly on institutional investors with a minimal investment of 100,000 CHF ($144,000 CAD). Nevertheless, for the owners of LKD tokens who participated in the first round and were promised that the ICO would come to an end by March 2019, the possibility to bid on tokens for minutes still existed. At the beginning of July 2019, LakeDiamond ran its first auction at a price of 0.61 CHF ($0.88 CAD), and thus the first series of tokens were used, or technically speaking, "burnt". Yet with a soft cap not high enough to have ensured company growth and an uncertain final output for the ICO, LakeDiamond had to resort to more standard financing sources, through loans and equity.

Hidden behind state-of-the art encryption technologies and exciting mechanisms, it seemed there were flaws linked to system design imperfections. A recurrent subject that came up in discussions was, for example, the relationship between industrial clients and token owners. Diamonds could be obtained at a production price through the company's e-commerce website. Hence, what could have prevented potential customers from skipping the bidding mechanism and acquiring diamonds through e-commerce? The answer was not clearly provided in the white paper itself.

In addition, from a supplier's standpoint, having

information on production prices is a peculiar situation. How could LakeDiamond negotiate with industrial clients for profitable prices, if prospective clients are at the same time aware of the minutes of production value? Which leads to another question: what are the token owners really buying? LakeDiamond did not clearly indicate in their white paper or website how they truly set the token price. Did it cover only production costs? Or did it include a portion of the profit margin? Or was there an altogether different formula they used? All of this uncertainty surrounding the use and valuation of the LKD tokens complicated any understanding of the value proposition.

Initial market interest was definitely there. The team and company were present in numerous articles, magazines, and conferences. Yet the capital raised did not meet expectations. Interestingly, LakeDiamond even partnered with Swissquote, a large Swiss banking group, to help promote LKD tokens among potential clients, and set up the LKD trading platform. This partnership should have helped to alleviate some concerns from clients, as Swissquote is a major actor in Switzerland's banking sector. Yet, it seemed that problems with the project from the investor's point of view were too significant and resulted in a disappointing ICO.

VI. What Went Wrong?

In LakeDiamond's defense, the period in which the company operated its ICO fundraising campaign was catastrophic for cryptocurrencies. The so-called "crypto winter" saw cryptocurrency prices decline significantly, and LakeDiamond's ICO came out right in the middle of it. It is thus quite understandable that potential investors were then reluctant to own LKD tokens when market signals were ringing strongly against cryptocurrencies generally. However, the difficulties faced by LakeDiamond stemmed primarily from the lack of clarity of their model and a wrongly designed contract.

If there are no clearly defined descriptions of what the investors are getting into or if the value proposition is difficult to grasp, it will only accentuate the impression that the company may not be prepared well enough to face future challenges. From the start, as researchers, we did not know how to address the many individuals who were looking to be part of the project. Were they donors, as in a crowdfunding venture, or were they potential investors taking part in a profitable opportunity? These two categories seem to be diametrically opposed to each other. Yet LakeDiamond, on its official publications, emphasized that the synthetic diamond technology would help improve society as a whole. They also stressed wishing to "address civilian applications only". If the founders were to lose control of the company by diluting their ownership shares, it could then open the door to military procurement, as it had great use in that sector.

LakeDiamond's argument was clearly directed to a more philanthropic target than financers. And yet in the same official document (LakeDiamond White Paper, 2018), profits or opportunities of monetary gains were also discussed, while "investors" were encouraged to take part in producing and selling synthetic diamonds. Note, however, that the word "investor" was never used in LakeDiamond's official documents after FINMA labelled LKD as a payment token. This prohibited the start-up from presenting the token as an investment product. Nevertheless, it was insinuated in their presentations that it was possible to "invest" in LKD as a way to "profit". Walking along a fine line between two targeted client bases that are motivated by completely opposing ideals could only have added to the confusion of the company's motivations.

As public confusion about the start-up's aims became increasingly apparent, LakeDiamond decided to expand the ICO deadline initially promised at the beginning of 2019, and to look for additional capital sources. This reflected another main cause of public concern: ICO "investors" were completely powerless. The company had no obligations to justify any actions towards them.Investors might have wondered, for example, if they were entitled to legal recourse, in case the company were to decide to lower the issued token price from 0.55 CHF ($0.79 CAD) to 0.30 CHF ($0.43 CAD), which would have caused the initial owners to lose 0.25 CHF ($0.36 CAD) per token.

Potential token owners also had difficulty understanding if they were capturing profit margins or only covering production costs. This crucial detail was left out of the white paper. Yet, it might not have mattered after all due to the particular type of auction system LakeDiamond had initially decided to put in place. If bidding to get access to the smart contracts was to be aggressive, then it was entirely possible to imagine LKD owners ending up with getting scraps compared to what was promised initially. Let us assume, for example, that there was a contract with an industrial client and

that the maximum price of growing the diamond was, for the sake of simplicity, 1 CHF ($1.44 CAD) per minute. Yet, due to the auction system, one should have expected some bids to be low. Let's say the final price was 0.7 CHF ($1 CAD). LakeDiamond would then have earned an additional 0.3 CHF from the auction, that is, the difference between the smart contract offer and the final bid. In short, this presented itself to investors as quite a discouraging system: stronger competition for bids led to lower the bids, and thus more profit for LakeDiamond. If the power structure had not been revealed as being heavily one-sided towards LakeDiamond, be it through voting rights, ownership dilution or guarantees for creditors, the ICO might have met with more success. Note that LakeDiamond became aware of the drawbacks of their auction mechanism and changed it. The new methodology intended to match buy orders with sell orders, starting with the lowest sell (or ask) price. It then had to result in one unique auction price at which these orders could be settled, and which satisfied both buyers and sellers.

Nevertheless, one should not forget the challenging context in which the company conducted its fundraising campaign. Diamond production is a niche industry. Attempting to explain the ins and outs of the production and polishing process to a crypto-investor audience was perhaps destined to be a de facto exercise in confusion. The added complication of requiring an explanation of the value proposition coming from blockchain technology only accentuated this already existing problem.

Swissquote's willingness to collaborate with LakeDiamond and to offer the vital financial services needed to successfully run the token operation came at the right time, but also with a hefty price. To participate in the ICO, one had to open an account on the Swissquote platform. This specific constraint put a limit on the number of potential investors reachable by the company in the partnership. Worse, LakeDiamond was at the same time restricted in terms of access to markets. It had to focus mainly on Swiss and European investors, which somehow went against the global and frontier-free essence of ICOs, even though the list of countries that prohibit ICOs, including the USA and China, was indeed quite long. Stated otherwise, LakeDiamond's difficulties raising funds were the combined product of an unfavorable legal, regulatory, and financial environment that the company had to face.

In the end, it seems to have been the initial idea itself of outsourcing production costs to the public that was not the right one. In hindsight, it is at least questionable whether there could have been actual added economic value from what LakeDiamond was proposing to its "investors". The crux of the problem might simply be that the business model was flawed. Applying blockchain technology and tokenisation must serve an economic purpose. In the case of LKD tokens, other than industrial firms in need of such diamonds, who should have been the main target market for the start-up? It was they, rather than the public, who should have been the marketing focus, as they are the principal actors in the diamond production process. If, instead of focusing on the general public, LakeDiamond had reached out to industrial firms with a competitive model, where diamonds would have been sold to them at a lower price, in exchange for shouldering the costs of production, the situation might have been different today. Instead, bringing in external finance-oriented parties who had no relation to the company's business model led to a confused general public that believed it would lose out entirely if things turned sour.

VII. Transition from ICOs to Newer Forms of Fundraising Mechanisms

The failure of LakeDiamond's ICO emphasizes a need for public and investors to bypass constraints imposed by more conventional method of raising capital. While deregulated environments bring obvious advantages, such as easier access to funding, they also exhibit some detrimental elements, such as little to no protection on the investors' side. By the end of 2019, the number of ICOs had drastically reduced, with a 95% drop in capital raised compared to 2018. Scams and juridical battles that ensued after the ICO hype might certainly explain the recent decline (Myalo, 2019). However, the decline in ICOs is also due to the development of alternative crowdfunding models that have emerged more recently (Oosterhout, 2019).

The new models have improved on some of the negative issues pertaining to ICOs, by providing the needed legal framework to operate transactions and verify ventures' credibility. Two fund raising models in particular have gained recent traction and popularity: STOs and IEOs. Out of the two, Security Token Offerings (STOs) offer the more regulated and rigid model. Recalling the LakeDiamond case, it was almost impossible for investors in ICOs to recoup their investment in case of bankruptcy. An STO's aim, however, is to provide some

investor protection on that specific matter. The tokens, or more precisely the security tokens, are backed by real life assets. A security token is thus a legal investment contract that expresses various rights of ownership, such as ownership of shares, periodic dividends, cashflows, payment of debts, the right to vote, etc. These several forms of ownership are then secured through smart contracts. In addition, STOs are supervised by regulatory authorities, like the SEC, which ensures that investments are protected by law. As a corollary, start-ups that seek to raise capital through STOs will have to go through a more time-consuming and expensive procedure than with ICOs, in exchange for greater confidence from an investor's point of view (Myalo & Glukov, 2019).

Initial Exchange Offerings (IEOs) on the other hand, are less restrictive than STOs, yet they still offer more protection than ICOs for investors. An IEO is a crowdfunding approach where the selection process is done by a cryptocurrency exchange. To summarize, it is the exchange's platform that takes on the responsibility for selecting ventures that will raise capital on their platform. The cryptocurrency exchange platform is also regulated by authorities as it is considered a trading platform (Takahashi, 2020). Note that it is in an exchange's best interest to promote serious and honest ventures. Their reputation would be tarnished and the platform would fail to attract investments if they promote ventures that are either highly unsuccessful or even worse, scams. In IEOs, companies are not required to be backed by assets like with STOs. In fact, IEOs somewhat preserve the same degrees of freedom already present in ICOs and the tokenization process. However, a venture must go through heavy verification processes from exchange platforms that have a restrictive set of requirements. This process is much less costly and time-consuming than for an STO.

In short, start-ups raising money through IEOs do not need to create an exchange platform, as they benefit from an already existing platform to issue and exchange tokens, which is not the case for STOs. The exchange platform has the responsibility of attracting investors and promoting multiple start-ups, thus creating an ecosystem where parties, ventures, and the platform, are mutually beneficial to each other. This means that start-up companies with a feasible DLT use case considering the importance of a trading platform for the company's future success are now faced with the following questions: which platform, if any, to join, and if so, at what costs?

The recent advent of new online fund-raising models exposes the limitations of ICOs, in part explaining why many ICOs were unsuccessful. Regarding LakeDiamond, the choice of raising capital through an ICO surely impacted the fate of the start-up. The company could have opted for an STO, but chose not to do so. At the time, STOs were quite recent and the learning process seemed both long and uncertain. It would have also implied the need for ceding some features of ownership, something that the company was not willing to accept. Unfortunately, the start-up found itself in the middle of a transition phase from ICOs to newer models. Their choice can certainly be criticized, with hindsight, while selecting the right option at the time was not so evident.

VIII. Conclusion

LakeDiamond is a textbook example of how simple misunderstandings of the overall fundraising process and unclear contract design for investors can have lasting effects on a company. The idea of using a digital token as part of a synthetic diamond growing production process looked promising at first, as illustrated by the numerous articles published in prestigious magazines, such as Forbes, and newspapers, such as Le Monde, to name just a couple. Swissquote, a major actor in the Swiss banking industry even partnered with the start-up, bringing an added source of trust to the general public. All signs pointed to a successful ICO for the young company. Yet, the ICO did not achieve the expected outcome. Reasons for this are numerous, but essentially boils down to a confusing tokenization procedure, an incorrectly targeted group of investors, and finally, for potential token owners, to the absence of any basic monitoring, not to mention proprietary right. As we recall from signaling theory, a qualitative white paper can be a significant factor for a successful venture. The LakeDiamond white paper unfortunately did not bridge the knowledge gap with investors and the overall mechanism still remained too difficult to understand.

It would be wrong to highlight only "negatives". The company still raised a few million Swiss Francs and appeared in a position to get its business off the ground. However, the learning curve for the company was steep and the costs, not only monetary, but also in terms of missed opportunities, cannot be neglected. Indeed, according to an article published in "Le Temps" in February 18, 2020 (Ruche), LakeDiamond was "on the brink of bankruptcy", after having already announced

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that they were over-indebted in January 22, 2020.

The choice of using an ICO instead of an STO or IEO can be questioned as well. But, even if a newer model might have offered a clearer pathway to success, it would also have come at a cost: a heavier constraint on the start-up along its fund-raising campaign, and at least partial surrender of control.

Indeed, one cannot ignore that fundraising is always a game played by two entities: the company and investors, both initially motivated by their own interests. Conflicts are thus to be expected, and the search for alignments is part of the deal-making process. For these reasons, the source of financing must be correctly selected. More than just the usual expression of transparency that does not say much, providing information, allowing for some kind of control or at least for a way to appreciate the business situation and to properly manage expectations is needed if one is to target a successful fundraising campaign. In other words, whatever the technology used and whatever its name, be it blockchain, smart contracts, or tokens, ICOs, STOs, or IEOs, the company looking for funds cannot free itself from these basic business-investor constraints. LakeDiamond expected to raise capital without yielding much authority to potential investors. This proved to be an unexpectedly ambitious undertaking that culminated in a complicated situation: a delayed ICO and a company that was still looking for funding.

Finally, one should recall that the revolutionary nature of ICOs was supposed to stem from the removal of intermediaries. The recent rise in popularity of alternatives that offer some measure of control for start-ups, thus somehow seems to go against the distributed mentality behind blockchain's initial large success. Some might argue that the development of new alternatives to ICOs with increased protection for investors was to be expected. Others might respond that traditional models of fundraising campaigns already provide these features. Ultimately, the following question remains: are we just reinventing the wheel with the latest STOs and IEOs, or are the latter truly innovative and revolutionary capital raising models for investors? The future will tell us.

Notes and Acknowledgments

The analysis conducted in this paper is based on documents that were publicly available at the time of LakeDiamond's Initial Coin Offering (ICO). They are made on the basis of the White Paper(s), marketing presentations, some press articles, and presentations at conferences. A first version of this paper was drafted: June 17, 2019.

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About the Authors

Jahja Rrustemi is a scientific collaborator at the Haute Ecole de Gestion Fribourg (HEG-FR), University of Applied Sciences and Arts Western Switzerland. He holds a Master of Science in Wealth Management at the University of Geneva. The main focus of his research relates to Portfolio Allocation Methods, Risk Minimization, Forward-looking Risk Measures as well as Cryptocurrencies and the Tokenization of the economy.

Nils S. Tuchschmid is professor of Finance and head of the Finance Institute at the Haute Ecole de Gestion Fribourg (HEG-FR), University of Applied Sciences and Arts Western Switzerland. Before joining HEG-FR, Nils was a Partner, Head of Tactical Trading Strategies and Chairman of the Investment Committee at Tages Group. Previously, he was the Co-Head of the Alternative Funds Advisory team at UBS and Head of Multi-Manager Portfolios at Credit-Suisse. He also worked as Strategist and Head of quantitative research and alternative investments at Banque Cantonale Vaudoise. Nils was Professor of Banking and Finance at HEG Geneva and Professor of Finance at HEC Lausanne University. He holds a Ph.D. in Economics from the University of Geneva.

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