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The influence of ICObench ratings on Initial Coin Offerings' success

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Master in Management

Supervisor:

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Concluding this master journey proved to be very challenging, especially when it is not possible to be fully focused and committed to it due to professional reasons.

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Resumo

A Oferta Inicial de Moedas (ICO) é um tema moderno e tem estado em voga desde a sua criação. Comummente denominadas como Token Sales, as OIC são assistidas por tecnologia de blockchain e surgiram com o objetivo de apoiar os empresários no financiamento dos seus empreendimentos, que ainda se encontram na fase inicial, numa escala descentralizada e global. Tem vindo a reunir cada vez mais pessoas e dinheiro ao longo dos anos, levando muitos estudos a serem desenvolvidos no seu contexto, a fim de compreender esta mudança nos mercados de capitais públicos. Apesar deste facto, os OIC são ainda um tópico fértil onde ainda mais ramos de investigação podem nascer para serem analisados.

Os ratings das OIC já provaram ter impacto no sucesso dos projetos, desta forma, este estudo visa fornecer provas com o apoio de uma base de dados mais robusta, com 5581 OIC.

Com base nos ratings disponíveis no site ICObench, foram realizados testes de hipóteses, apoiados em gráficos de boxplot, a fim de medir e compreender a associação entre as variáveis.

Este documento confirma as conclusões de literatura anterior, mostrando que os ratings estão de facto associados ao sucesso dos projetos. Conclui, deste modo, que ratings maiores têm uma influência positiva na angariação de fundos das OIC.

Outras variáveis como a plataforma onde operam, o número de moedas aceites como pagamento, o número de membros da equipa, se foi estabelecido hard-cap e soft-cap e outras, foram incluídas no presente estudo.

Além disso, a base de dados foi dividida pelos diferentes setores e desenvolvida uma visão geral sobre a distribuição das classificações e do desempenho dos projetos, para cada um. Estes dados podem contribuir com alguns insights e ajudar investigações futuras a dar o próximo passo na realização de análises individuais e detalhadas para cada sector.

Abstract

The Initial Coin Offering (ICO) is a modern topic and has been in vogue since its creation. Commonly denominated as Token Sales, the ICOs are assisted by blockchain technology and emerged for the purpose of supporting entrepreneurs on financing their ventures, that are still in the initial phase, in a decentralized and global scale. It has been gathering more and more people and money over the years, leading many studies to be conducted around its sphere, in order to understand this shift in public capital markets. Despite this fact, ICOs are still a fertile topic where even more branches of research can be born to analyze.

ICO ratings already proved to have impact on the success of the projects, in this way, this study aimed to provide evidence with the support of a more robust database, with 5581 ICOs.

Based on the ratings available at ICObench website, hypothesis tests were carried out and supported with boxplot graphs, in order to measure and understand the association between the variables.

This paper finally reassures previous literature, by showing that ratings are in fact associated with the success of the projects. It concludes that higher ratings have a positive influence on the fundraising success of the ICOs.

Other variables as the platform where they operate, the number of currencies accepted as payment, the number of team members, if the hard-cap and soft-cap were established and others were included in this study.

Additionally, the database was divided by the different sectors and developed an overview on the ratings distribution and the projects' performance for each one of them. This may give some insights and help future research take the next step on performing individual and detailed analyses for every sector.

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Acronyms:

API - Application Programming Interface

DLT - Distributed Ledger Technology

FOMO - Fear of missing out

HCT – Human Capital Theory

ICO - Initial Coin Offering

IPO - Initial Public Offering

MSME - micro, small and medium-sized

ROI – Return on Investment

R&D – Research and Development

SEC - Securities and Exchange Commission

SNA - Social Network Analysis

CHAPTER 1

Introduction

There is no doubt that different events on the technological field have been contributing to new ways of thinking, disruptive developments and revolutionizing the traditional approach to financing ventures (Deloitte, 2018).

Consolidated by the appearance of Bitcoin, Distributed Ledger Technology (DLT) is now a buzzword that characterizes the innovative technological development (Swan, 2015) of recording and sharing data across several data stores, also known as ledgers. "This technology allows for transactions and data to be recorded, shared, and synchronized across a distributed network of different network participants" (Natarajan et al., 2017).

According to Fisch (2019), "ventures utilizing DLT are knowledge-intensive and technology-driven". With the contribution of Spence (1973) studies on signaling theory, it is argued by the first author that "venture's technological capabilities are a crucial indicator of quality and a prerequisite for success in a highly technological and innovation-driven environment". Blockchain technology is a fast-evolving form of DLT.

One of the most relevant applications of blockchain technology that have been gaining widespread adoption (Fisch, 2019) are ICOs, which have empowered entrepreneurs and pioneers (Chen, 2018) by reforming finance and introducing to micro, small and medium-sized (MSME) companies an alternative fundraising method (Brochado & Troilo, 2021).

As follows, tokens, that are a form of cryptocurrency that businesses use in order to raise capital through blockchain, represent the financial globalization phenomenon and decentralized network governance (Hacker and Thomale, 2019).

ICO are mainly associated to new projects (Giudici & Adhami, 2019), making its biggest weakness the limited and asymmetric information between investors and issuers (Block et al., 2020). Despite the unlikelihood of already established companies resorting to token sales, it is possible to observe this tendency changing and the investor base enlarging outside of the "blockchain community", for example institutional investors (ESMA, 2019; Brochado & Troilo, 2021). The value or real-world usage of the tokens sold while the ICO is occurring is little to none (Russo and Kharif, 2017), once it generally happens in the early stages in the lifecycle of a venture (Kaal and Dell'Erba, 2018; Fisch, 2019).

These are some of the major reasons why ICO projects need to send strong and valuable signals to potential investors (Chen, 2019; Giudici & Adhami, 2019; Fisch, 2019), usually with

the support of a document with official announcements (Block et al., 2020), the so-called "white paper" or "token sale term" (Giudici et al., 2020), frequently recurring to an advisory board.

Despite the challenges, lack of regulation and risks (Ivashchenko, et al., 2018) that also characterize the ICOs, we can name some successful projects that collected large amounts of money, such as EOS and Telegram, with 4.2 billion dollars and 1.7 billion dollars raised, respectively.

Notwithstanding little being "known about the dynamics of ICOs as a funding mechanism… unclear what factors determine the amount of capital raised" (Fisch, 2019) and against many warnings from SEC, the appetite to invest in digital tokens keeps maturing and many studies being conducted.

Repeatedly, besides knowing ICOs are not regulated, and investors facing uncertainty and information asymmetries (Brochado & Troilo, 2021; Chen 2019) for relying on a limited set of information, an effort has been made and published conclusions after observable patterns help to direct decisions. Having a comprehensive approach on the projects´ technical background is a crucial precondition to perform a logical decision when participating in ICOs (Fisch, 2019) and whitepapers compile the details, goals and techniques about the project, also including information about the team and money accepted (Brochado, 2018).

1.1.   Initial Coin Offerings (ICOs)

Initial coin offerings (ICOs), token sales (Deloitte, 2018), or occasionally accepted as initial cryptotoken offerings (Chuen & Lee, 2017), are capable of replacing other formats of raising capital by selling digital tokens (Giudici & Adhami, 2019).

Initial Coin Offerings are built on and operate under DLT, which is required for tokens' emissions (Fisch, 2019). The distributed ledger technology together with blockchain technology is labeled as revolutionary, accepting the design of complex structures (Giudici et al., 2020; Kosba et al., 2016), the smart contracts (Ibba et al., 2018), and believed to have the power of driving public capital markets towards a decentralized economy (Fisch, 2019; Elnaj, 2018).

Blockchain reputation grew when cryptocurrencies like Bitcoin emerged (Catalini & Gans, 2018). Bitcoin opened the road for the development of virtual coins in 2008 (Nakamoto, 2008), and currently about 2000 other types of digital currencies have been released and became an attractive form of investing in our digital age.

Refreshing and transforming transfers of digital assets around the globe, ICOs do not make use of any centralized intermediary (e.g., banks) (Adhami et al., 2018), disrupting the normal

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pattern followed by most currencies and building a decentralized governance mechanism (Brochado & Troilo, 2021).

Initial coin offerings "are unregulated offerings of digital tokens on the Internet, built on the blockchain technology, as to provide a means to collect finance for a project" (Giudici et al., 2020). When and where the business model is based on blockchain technology, ICOs enable the financing of projects (Fisch, 2019; Brochado, 2018).

Thus, ICOs' teams exchange digital tokens with the public for fiat currency or other cryptocurrencies (Brochado, 2018), in order to finance the advancement of new technological platforms and services (Rohr & Wright, 2017; Howell et al., 2018). Since ICOs occur in the initial phase of a venture, developments tend to happen once ICO is concluded (Kaal and Dell'Erba, 2018). Subsequently, with the price now determined by the slopes of supply and demand instead of the promotion teams, digital tokens can be traded in a secondary market, in this case on crypto exchanges (Brochado, 2018).

Regardless of the reason, making an informed decision when investing on ICOs helps to mitigate risks (Hsu & Ziedonis, 2013). With many studies displaying patterns, investors are keener to follow a mindful analysis, focusing on the right indicators. According to Fisch (2019), one essential indicator of quality is "venture's technological capabilities" and "that a high investment risk can be reduced by a careful evaluation of several characteristics, such as the venture's source code and the technical information provided in a white paper." To contour information' opaqueness and possible moral hazard (Giudici et al., 2020; Block et al., 2020), "intellectual capital" became the priority and a must needed core competence in the development of the project and in the involvement with the investors (Ahlers et al., 2015).

1.2.   The influence of ratings on ICOs

Hereafter, the constitution of ICOs' ecosystem is based on actors that can be individuals or organizations with interest on investing or being financed (Campino et al., 2020; Spinedi et al., 2019).

Emphasizing the pertinency of the information provided, we borrow from the literature the relationship between marketing, quantity and quality of the information spread and the consequent success of the projects (De George et al., 2018; Brochado & Troilo, 2021). As stated by Ahlers et al. (2015), people or companies will tend to invest in high-quality ventures. A pattern of events and conditions can be observed: starting with the desire of the investors for high-quality ventures, these ventures are predominantly characterized by advanced technology; and by consequence, teams should signal these capabilities to the investors, that by chance will

feel attracted by the likelihood of success shown through the possession of high technological capabilities (Fisch, 2019).

In their communications, promoters should use plain language, provide as much information as possible and keep an eye on regulatory guidance (Brochado & Troilo, 2021).

Jong et al. (2018) found evidence that unveiling more information, consequently becoming more transparent with investors and having high expert ratings on ICO-rating platforms like ICObench, are positively correlated with the fundraising success of ICOs.

Additionally, Liu and Wang (2019) affirm that the ratings attributed by external parties have a significant impact on the success of a project, once it can determine the success of an ICO very accurately.

Even though, ICOs phenomenon is still new, volatile and presenting systematic risks, the interest to know more about it is growing and this paper intends to understand if ratings hold a significant part contributing for its success, since it is possible to enlarge research regarding ratings impact on ICOs.

1.2.1. Study purpose

Initial Coin Offerings is still a contemporary and unexplored mechanism in many strands and this was the biggest motivation to start this project, to elucidate people on this rising trend that is the face of globalization and digital world.

Whilst many jump into the token/crypto investments, whether potentiated by the power of FOMO (fear of missing out) or by the expectations on high ROI (returns on investment) (Fisch et al., 2019), one must not forget that there are still projects battling to reach the amount of funding sought (PwC 2017). Besides the "hype" created around it (Gächtera & Gächterbc, 2020), ICO projects are also vulnerable to the laws of supply and demand (Anson, 2018).

Furthermore, there is relevance in highlighting the fact that there are many risks involved when investing in a ICO (e.g., SEC, 2017).

Investors should be educated enough and familiarized with related topics, as DLT, to contradict the pattern which shows that close to 10% of funds are lost or stolen (EY, 2018), endowing them to better understand and evaluate the information provided by the entrepreneurs (Fisch, 2019) and diminish uncertainty (Giudici et al., 2020).

Although relying on already existing concepts' definitions from published literature, the intention is to bring in awareness on ICOs' ratings influence, later illustrating its impact on projects' success and shed light on new results from a robust database.

The research sought to provide stronger evidence that higher ratings contribute to projects' positive outcomes. In addition, this study was seeking to investigate the relationship and differences between the different types of ratings, namely global, team, vision, product and profile ratings and provide insights on the characteristics of the projects depending on the sector they are included, the number of restrictions, if they operate on the Ethereum platform, the number of cryptocurrencies accepted, and others.

CHAPTER 2

Literature Review

The important role of ICOs in financing entrepreneurship and innovation has been perceived by the literature (Chen, 2018). Furthermore, diverse writers manifested interest on performing studies under the theme of ICOs characteristics, contrasting these with IPOs and crowdfunding. Many others focused on debating the advantages, disadvantages and risks both for the entrepreneurs and investors and testing the reasons why some ICOs fail or succeed in the primary and secondary markets (Brochado, 2018).

2.1. Concept of Initial Coin Offering

Initial Coin Offerings (ICOs), also named "token sales", or "token launches" (Deloitte, 2018), are an alternative and emerging format of raising capital from investors through the issuance and sale of digital tokens (Giudici et al., 2020), and, in some ways, similar to Crowdfunding or IPOs. ICOs are built on blockchain technology, allowing the financing, in a decentralized and global scale, of projects that are still in the initial phase (Hacker and Thomale, 2019; Brochado & Troilo, 2021).

2.1.1. Definition of ICO

Initial Coin Offerings are a recent phenomenon that have received increasing attention from entrepreneurs, investors and financial sector regulators, for raising capital, in exchange for digital tokens (Howell et al., 2018), for blockchain technology new ventures. These tokens "can be eventually traded on an electronic secondary market over the Internet and used in the future to buy products or services from the issuers" (Giudici et al., 2020), at times, to obtain profits (Adhami et al., 2018) or even to hold a share of the company (Sameeh, 2018). "The rights attached to ICO tokens are a key determinant of the value perceived by the pledgers" (Amsden & Schweizer, 2018 as quoted in Giudici et al., 2020).

To better contextualize, cryptocurrencies had their start in 2008 when Satoshi Nakamoto released Bitcoin, (Nakamoto, 2008) and made this an important milestone in the history of blockchain technology (Fisch, 2019).

Thereupon, the idea of ICOs happened instantly when it was realized that cryptocurrencies allowed smooth payment processes and consequently money could be easily raised (Chuen & Lee, 2017) through this technology-oriented phenomenon. This is one of the reasons why ICOs are many times described as "open calls for funding" (Adhami et al., 2018).

When deciding to start an ICO, teams can choose between developing from scratch a blockchain for that specific purpose or opt for building their ICO on an already existing blockchain. Most of the times, Ethereum blockchain is the chosen one, totalizing 83% of the cases, simply because "it allows for the execution of 'smart contracts' that automatically calculate the amount of funds raised, verify and confirm transactions, and distribute new tokens upon the completion of the sale" (Fenu et al., 2018; Giudici et al., 2020).

People that want to invest in projects that still are in the idea stage, can find in ICO the big opportunity (Chen, 2018). Considering that ICO are mainly associated to new projects (Giudici & Adhami, 2019), it is crucial to be aware of its consequent biggest weaknesses, for instance the limited and asymmetric information between investors and issuers (Block et al., 2020). Therefore, the decision should have support on the white paper (EY, 2017) or "token sale term" that represents a document including all information on "IT protocols, adopted blockchain, token pricing and distribution mechanism, as well as details on the project to be developed (eventually a business plan, including a team description)" (Giudici et al., 2020), helping to minimize the lack of information (Howeel et al., 2018) and per times serving as an effective signal (Fisch, 2019).

Briefly, this unaudited paper (Giudici et al., 2020), which is developed by the ventures' teams, includes the venture's particularities and goals, deemed as necessary for the interested people and it is an important tool for ICO's campaign (Cohney et al., 2019). However, even if the project is clearly documented in the white paper, it should be not forgotten the "risks of investment in fraudulent token" (Tiwari et al., 2019 as quoted in Brochado & Troilo, 2021) and Zombie ICOs that are ICOs with very reduced chance of creating a successful market for their tokens (Kaal and Dell'Erba, 2017).

Additionally, entrepreneurs are able to start creating their own "ecosystem of stakeholders" in an introductory level and investors guarantee their access to the output as soon as it is available on the market (Brochado, 2018). Deloitte (2018) also states that this methods of raising funds allow ICOs teams to develop the project following guidelines based on an already existing customer database.

There are distinct types of tokens (Fisch, 2019) among them; (1) coins/currency tokens, (2) security/investment tokens, (3) utility tokens (Howell et al., 2018) and finally (4) hybrid tokens (Santos, 2018 as quoted in Brochado, 2018).

2.1.2. Differences between ICO, Crowdfunding and IPO

Selling tokens that give the investors certain rights in exchange for funding also shares its similarities with other financing methods like crowdfunding and IPOs.

ICOs are built on blockchain technology, allowing the financing, in a decentralized and global scale, of projects that are still in the initial phase (Roosenboom et al., 2020), although expected to be launched within one or two years (EY, 2017) and are in some ways similar to Crowdfunding or IPOs (Biasi & Chakravorti, 2019).

Putting ICOs and IPOs side to side it is notable that the first ones have lower transaction costs and facilitate democratization of the access to finance since ICOs don't resort to intermediaries (Kaal & Dell'Erba, 2017).

The same authors, Kaal and Dell'Erba (2017) note that the differences between these two approaches can arise due to many different causes. On one side, ICOs are related to initial stage offerings of a digital project/idea, through the sale of digital tokens in crypto exchange. On the other side, IPOs sell to the public, shares of a growing or maturing company in stock exchanges (Momtaz, 2018, as quoted on Brochado, 2018). Unlike ICOs, that have been getting higher attention from regulators on the last years, IPOs are already consistently regulated. Must be notice that ICO white papers do not have a fixed structure nor homogeneous information, contrary to prospects used on IPOs.

Mollick (2014) described the concept of crowdfunding as 'the efforts by entrepreneurial individuals and groups – cultural, social, and for-profit – to fund their ventures by drawing on relatively small contributions from a relatively large number of individuals using the internet, without standard financial intermediaries'. This definition partially conveys the description given by Fenu et al. (2018) to ICOs' concept. One of the major differences between crowdfunding and ICOs can be found in the very nature of what they are trying to raise. On crowdfunding the money that is collected consists of government-issued fiat currencies, but on ICOs funds collected are mostly based on cryptocurrencies. One other big difference between ICOs and crowdfunding lays on the liquidity factor, which means its possibility to be transacted in a secondary market (crypto exchange) (Chen, 2018).

The following points that we can underline are mainly similarities between the two fundraising mechanisms which make possible the investment on initial phase ventures (Chen et al., 2018). Reward crowdfunding (Howeel et al., 2018) is easily equated to utility tokens that allow the investor/purchaser direct access to what is expected to be released, for example product or service. Both do not have the need to resort to platforms (Fisch, 2019).

2.1.3. Advantages and disadvantages of an ICO

As Portuguese people would traditionally say, ICOs are a two-edged sword. This means that, despite bringing many benefits, as allowing easy access to investors from all over the world (Debler, 2018), ICOs also have their own disadvantages. Below are mentioned some of the advantages and disadvantages.

Since ICO bring up together a group of interested people from the beginning of the process, the so-called ICO ecosystem, it stimulates network effects (Giudici & Rossi-Lamastra, 2018), in which the consequent prospect of appreciation of the token leads more users to adhere the platform. On this wise, it is anticipated that if the number of users of the platform increases, its value increases as well (Catalini & Gans, 2018 as quoted in Brochado & Troilo, 2021). The fact that the project is receiving funds at an early stage, it offers to the entrepreneurs the advantage of understanding demand and adjust the concept accordingly based on the existent "customer base" (Deloitte, 2018).

ICOs represent then many advantages for investors as the possibility of diversification of portfolio (Adhami & Guegan, 2019), investment on a liquid asset contrasting with crowdfunding (Howell et al., 2018), engaging on initial phase projects (Chen et al., 2018) and last but not least hand in hand with representing globalization, the opportunity it offers to invest on a global scale (Kaal and Dell'Erba, 2017).

Investing in ICOs although having potentiality for massive levels of ROI and enabling diversification of portfolio, it may also, in some cases, bring uncertainty and throw investors on a river of risks (ICOrating, 2017), since tokens are not a "safe haven asset" (Adhami & Guegan, 2019) and is still in early stages of policies elaboration (Fisch, 2019). "It is like trying to hit a moving target blindfolded... We are using 100-year-old laws to deal with a 21st-century technology." (Lanis, 2018 as quoted in Prial, 2018).

ICOs demand is proven to be taking place in investment world, however many projects are still not capable of achieving the funds needed. One of the possible reasons why this happens may be due to the fact that in contrast to IPOs, the procedure involves selling tokens at an early stage which leads to auction a big percentage of tokens, but when the value of the project is low (Brochado, 2018).

Inherently some risks associated with purchasing tokens on ICOs cannot be hidden. (Brochado, 2018) Considering that investors are buying tokens in its initial 'early-stage investments' (EY 2017), the uncertainty is very high and no return can be assured. The white paper is one of the only supports investor have to evaluate the project. No tangible product, software or visible service is available yet (Kaal and Dell'Erba, 2017). Adding to that, unveiling

important information is a good sign to investors, however, others teams can try to copy it, being crucial to establish a safe system of relationships.

Primary market can be uncertain, but secondary market can be extremely volatile too as a result of the lack of information on embryonic ventures (Kaal and Dell'Erba, 2017).

Nowadays, blockchain-based token sales are being somehow controversial, once is argued by some that these sales simply represent new tools that will be leveraged by hucksters and unscrupulous charlatans (Rohr & Wright, 2017), enabling attacks to the wallets and crypto exchanges (Autonomous Next, 2018 as quoted in Brochado & Troilo, 2021), through the ease of copying tokens and its characteristics, downsizing barriers to entry (Brochado, 2018). EY (2018) points out the fact that these cyber-attacks are regular, with an average of 10% of funds being lost or stolen.

To conclude the reasoning in a positive way, we can highlight the fact that there is a big variety of tokens types, for example; some offering economic rights equivalent to shares; others empowering investors by giving them access to the project as soon as it is launched which highlight the good side of ICOs.

2.1.4. ICO overview

ICOs have been conquering space in the investment market since the launch of MasterCoin in 2013, the first ICO. Afterwards it has been gathering huge amounts of capital (Moedl, 2018) on account of its novelty and valorization of cryptocurrencies, mainly Bitcoin, during the years 2017 and 2018 (OECD, 2019). Its peak of interest was registered in 2017, measured by the Google Trends Research Index, with around 442 projects concluded, totalizing USD 6.4 billion (thousand million) of funds. In terms of numbers, the year 2018 still managed to surpass the previous one, with about USD 21 billion (thousand million) raised, in a total of 1051 token sales launched. In later years, due to Bitcoin depreciation it was possible do observe the reduction of investments on ICOs (Coinschedule, 2020).

ICOs tend to occur "in nations with developed capital markets, advanced digital technologies, and availability of crowdfunding, whereas taxes have no discernible effects" (Huang et al., 2019 as quoted in Brochado & Troilo, 2021).

As reported by Kranz et al., (2019), token sales' lifecycle can be summarized in three principal phases, namely: 1) pre-token sale; 2) token sale; 3) post-token sale. The next paragraphs summarize the main topics of each, according to Kranz et al. (2019) and Campino et. al. (2020).

The first point is characterized by consuming the biggest share of time and it is when promoters' priority is based on making choices on the type of tokens to be sold (donation, utility, currency or security tokens), if the project should be capped or not (no cap, soft-cap, hard-cap, collect and return, dynamic ceiling), establish tokens' pricing model (between fixed or floating) and token' sales schedule. When all the decisions mentioned above are made, the last exercises on this stage includes the development of a smart contract and the White Paper disclosure.

Secondly, "token sales" that, as explicit on the name, is when the official sales occur, backed by the previously activated smart contract and generally lasting 41 days.

Finally, yet importantly, the last stage implies the distribution of the tokens "to the investors' wallets via the smart contract" (Campino et al., 2020). Nevertheless, the process does not finish here and the issuers should put some effort into developing the promised product or service, continuously providing information to the investors to keep them informed and creating awareness.

2.1.5. Success factors

Bearing in mind that initial coin offerings' importance in studies has grown and received more and more attention from investors, it is an advantage to possess knowledge on the theme and avoid risks based on uninformed decisions. Using the words of Fisch (2019), "Identifying and understanding the influence of these factors reduces the considerable uncertainty that investors face and enables more informed investment decision-making".

Outlining some of the most crucial factors that can provide investors with some clues on which project to invest in (Tiwari et al., 2019), it is possible to mention the white paper, that when well-written and comprising critical facts, serves as guidance. Fisch (2019) added that it may also be an "effective signal, and high-quality code is associated with an increased amount of funding".

Additionally, Giudici & Adhami (2019) enrich theory by showing the significant weight that bigger teams have on leading projects to achieve its goals.

Other factors as human capital has also been pointed as valuable shapers to ICOs' success (An et al., 2019). Human capital importance has been put on a level that is told to be capable of helping to overcome eventual lack of financial capital (Brush et al., 2001) and endow teams with aptitude of foreseeing and exploring market opportunities (Unger et al., 2011) to success. Additionally, the promoters' network is crucial for a strong campaign (An et al., 2019), since it

helps promoting and giving the brand wide exposure, also building up the possibility of increasing tokens 'value and consequently the investment.

According to Campino et. al. (2020) variables related to the geographical location and the teams' ratings have a significant impact to determine projects' success. Teams' ratings and products' ratings given by external parties have a positive impact on the project.

Furthermore, ICOs ratings and reviews that can be found on cryptocurrencies and ICOs websites, are in truth good indicators of the legitimacy of the projects. The reviews and social media profiles contribute equally.

On the other side, although ICOs are labelled as "disruptive", this usually has a negative impact on its success, since it is not as easy and clear to understand the concept and the goals are perceived as hard to achieve (Gompers & Lerner, 2001; Momtaz, 2020a), leading the investors to avoid it.

2.2. ICOs and Ratings

2.2.1. What is conceptualized as rating?

When performing an evaluation regarding quality, quantity or other factors, we are usually confronted with the term rating. Defined as a "measurement of how good… something is, especially in relation to other people or things" by Oxford Dictionary (2021), a rating is in fact just a "classification according to a grade" (Mirriam Webster, 2021) and this concept of grading has become extremely relevant in an industry that has been growing tremendously, as it is the case of ICOs.

On a final note, it is agreed to be, by general consensus, a classification according to grade or rank, and we can find it when searching about the innumerous token sales available to invest in.

2.2.1.1. ICObench platform and the platform's rating system

As we can find described on their website (icobench.com), ICObench presents itself as being the top analytical platform and also a free rating platform for ICOs. Besides joining together a blockchain community, it provides analytical, legal and technical information.

The ratings presented on the ICObench platform are the result of analytical evaluation performed by the bot Benchy and different independent experts. While an ICObench expert is basically an active member of ICObench community, possessing the power to vote whilst following the platform's rating methodology suggestions, the Benchy bot is an artificial intelligence-supported bot created by ICObench with informational purpose only. It is possible

to chat with it via different channels, such as Telegram or Slack, about issues related to ICOs, such as ICO team, ICO ROI, in which exchanges the ICO is trading and legal reviews. This development is still on the initial phase, but is expected to improve over time, helping more and with better quality of response.

Different sectors are available on the ICObench platform such as banking, software, big data, artificial intelligence, investment, infrastructure, retail, health, tourism, education energy, sports and others. When selecting an ICO on the platform, it is shown some details of the ICO, among them it is included information about the ICO's team, history, financial information, rating and its own white paper.

The rating scale varies from 1 to 5, where 1 corresponds to the lowest rating and 5 to the highest rating.

It is updated at least once a day in the platform and to calculate it, it is made a combination of an objective analysis of the ICO's profile (through an assessment algorithm based on more than 20 criteria) and the subjective independent experts' ratings. The assessment algorithm is the same used for every ICO and is mainly divided in four big groups namely; teams, ICO information, product presentation and marketing and social media.

The ICObench platform warns that the rating classification should not be taken as an advice for investment, but rather an informative indicator.

On a weekly basis, the ICObench platform produces and releases reports with information on multiple topics as the results, amounts funded, statistics, evolution and trends of the ICOs. On a monthly basis, the platform publishes with a more detailed approach, other group of topics, as for example:
- Monthly statistics;
- Geographic statistics;
- Aggregate Statistics;
- Initial Exchange Offering (IOE) statistics - a variation of ICOs, operated directly by the cryptocurrency exchanges;
- Industry statistics;
- Ranking statistics.

On a bi-monthly basis, subscribers with a professional account are gifted with a detailed report, where in addition to the complete market analysis they have access to a database with listings, ratings and statistics.

Finally, on an annual basis, a year-on-year comparative analysis is released through the ICObench platform.

2.2.1.2. Types of ratings (global, team, vision, product, profile)

As mentioned above, the algorithm and evaluations can be divided in different groups that result on different types of ratings. On this paper, the 5 types of rating available on ICObench platform are going to be included, specifically:

- global rating;

- team rating;

- vision rating;

- product rating;

- profile rating.

2.2.2. Previous studies on the influence of ratings on ICOs

Besides ICOs being one of the main topics studied in the field of blockchain technology, there is still a lot of space for new contributions to enrich the research (Brochado & Troilo, 2021).

Decision making is an essential human cognitive process, occurring on a daily basis. So, when deciding on which ICO to invest in, investor should consider different aspects, pay attentions to the signals the promoters share and perform an evaluation based on different indicators.

Reducing uncertainty and information asymmetry is crucial and it is worth investigating the impact of different strategies and factors. Among several factors, the ratings attributed to the innumerous ICOs where investors can spend their money is one example (Giudici et al., 2020).

The ratings can be published on various websites and platforms, including the ICObench, which presents itself as being the top analytical platform and also a free rating platform for ICOs (ICObench, 2021).

Ratings attributed by third parties favor the replacement of traditional third-party involvement (Liu & Wang, 2019), since, as the own definition of the concept state, ICOs don't resort to intermediaries (Kaal & Dell'Erba, 2017), facilitating the democratization of the access to finance (OECD, 2019).

By lacking this intermediary, the teams involved need to take the responsibility of preparing and disclosing quality signals that show that it pays to invest (Fisch, 2019).

Consequently, ratings given by external parties, which are based on the perception held from the signals given by the teams, become an important characteristic and indicator to consider when assessing the group (Xuan et al., 2020).

Further studies, analyzing ICO success determinants, in particular the promoters' network which is crucial for a strong campaign (An et al., 2019), were unable to incorporate data about ratings in their test.

Still concerning promoters' characteristics, it is important to highlight the impact, already proven by previous studies, that third-party ratings given to the teams have on the ICOs outcome. Higher ratings will lead to higher possibility of success (Momtaz, 2020).

As mentioned on the chapter 2.1.5., regarding some success factors; although ICOs are labelled as "disruptive", this usually has a negative impact on its success. The "rating vision" ends up being impacted and offering lower ratings since it is not as easy and clear to understand the concept and the goals are perceived as hard to achieve (Gompers & Lerner, 2001; Momtaz, 2020a), leading the investors to avoid it.

Therefore, it is feasible to say that there is a link between experts' ratings and projects' outcome, being successful or not (Fenu et al., 2018; Xuan et al., 2020).

CHAPTER 3

Conceptual Model and Research Hypotheses

3.1. Research Background

The money collected by the biggest projects accompanied the growth of the ICO phenomenon that grew on interested members over the years. Despite the challenges, lack of regulation and risks (Ivashchenko, et al., 2018) that also characterize the ICOs, some successful projects that collected large amounts of money are, for example, EOS and Telegram, with 4.2 billion dollars and 1.7 billion dollars raised, respectively.

Figure 3.1. - ICOs started, ongoing, ended and monthly raised amount from February 2019 and january Adapted from: ICObench, ICO Market Weekly Review Week #03, 2020
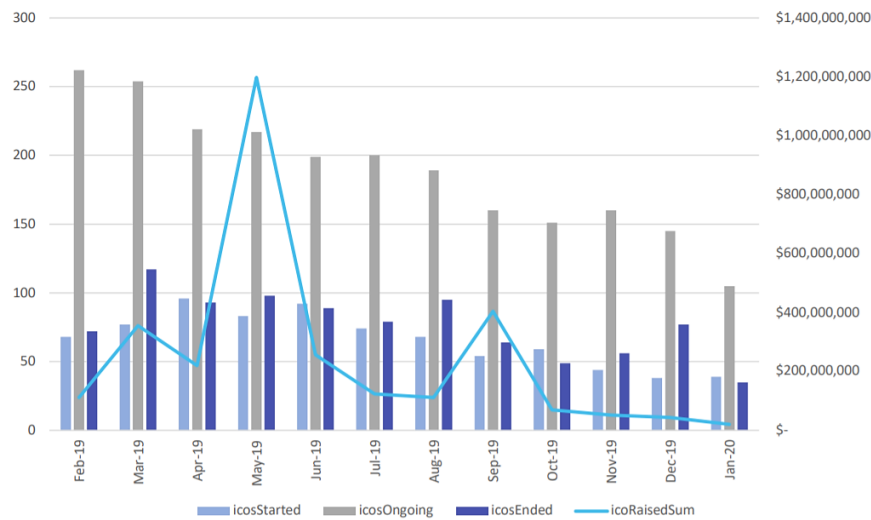
Besides enabling diversification of portfolio, it may also, in some cases, bring uncertainty and throw investors on a river of risks (ICOrating, 2017), since tokens are not a "safe haven asset" (Adhami & Guegan, 2019).

There are different ways of assessing the viability of an ICO. One can be based on the observation of the total money raised and another way can focus on the return on investment.

Outlining some of the most crucial factors that can provide investors with some clues on which project to invest in (Tiwari et al., 2019), it is possible to mention the white paper, that when well-written and comprising critical facts, serves as guidance. Fisch (2019) added that it may also be an "effective signal, and high-quality code is associated with an increased amount of funding". Additionally, Giudici & Adhami (2019) enriched theory by showing the significant weight that bigger teams have on leading projects to achieve its goals.

Closer to the topic being studied on the present paper, the author Jong et al. (2018) shared that communicating and giving more details, consequently becoming more transparent with investors and having high expert ratings on ICO-rating platforms like ICObench, are positively correlated with the fundraising success of ICOs.

Repeatedly, although there are ICOs that are very successful and bring numerous benefits to investors, and besides all the findings published with the intuition of helping promoters and investors on how to cope with this new era, within the ICO world, there are also some that fail badly, perhaps because performance is not the best, or there is still the possibility that they are just a fraud.

In order for investments in ICO to go as expected by interested parties, precautions must be taken since they operate unregulated. Expert's ratings become in this manner, a good parameter to identify the best projects, by their contribute on reducing information asymmetries (Liu & Wang, 2019).

3.2. Research Hypothesis

As mentioned in the chapter 2.2.1.1. where it is explained how ICObench platform and the platform's rating system work, the ICOs' ratings result from the combination of an automated analysis from the ICObench's algorithm, also known as the bot Benchy, along with the experts' assessment (ICObench, 2021).

Refreshing and transforming transfers of digital assets around the globe, ICOs do not make use of any centralized intermediary (e.g., banks) (Adhami et al., 2018), disrupting the normal pattern followed by most currencies and building a decentralized governance mechanism (Brochado & Troilo, 2021).

However, this is where Liu and Wang (2019) have intervened on enriching theory, concluding that the ratings attributed by third parties favor the replacement of traditional third-party involvement. They also give strong insights on whether the ICO looks promising for the future or not. Therefore, it is feasible to say that there is a link between experts' ratings and projects' outcome, being successful or not (Fenu et al., 2018; Xuan et al., 2020).

Following this thought, building upon the research of previous scholars and their findings on performance indicators of ICOs, the focus of this this thesis is based on the analysis of the influence ratings may have on the achievement of the projects' funding goal. More specifically, this paper tries to gather data and evidence of how decisions based on ratings have impact on the project's success.

Literature research played a key role on deciding the best methods and investigations to apply on the project.

Thus, the research question of this thesis can be introduced:

- Hypothesis 1: The different types of ratings are related to each other
> *a. does their behavior changes when they are successful or not?*
- Hypothesis 2: Higher ratings have a positive influence on fundraising success
- Hypothesis 3: Different characteristics have different levels of influence on project success

With regard to the research design, the investigation will be conducted through a quantitative analysis based on secondary data, explained in more detail on the following chapters.

CHAPTER 4

Contextualization

4.1. Database analysis

Up until the 20th of September 2021, 5728 ICOs have raised about USD 27 billion (icobench.com on September 2021). Currently, this is still the total number of Initial Coin Offerings.

The present master's thesis investigation will only consider the totality of the ICO projects until the end of 2019, corresponding to 5581 ICOs. This is indeed a richer number than previous studies which examine a smaller sample.

The database used also consider all the sectors, what doesn't happen on other investigations conducted, which are in general more focused on the banking sector.

There are different ways of assessing the viability of an ICO. Nonetheless, the correct procedure to measure ICOs' success is debatable, not having unanimity amongst opinions.

For the purpose of this thesis, the measure was formulated considering the dependent and binary variable of achievement of the soft capital (Jong et al., 2018), that coincides with the minimum amount the team sets out to raise (Brochado & Troilo, 2021). In short, if the project raised the same or higher amount comparing to the soft-cap, they are considered successful and the other way around. Throughout the analysis, for the binary variables, 0 represent "No" and 1 represents "Yes".

Several independent variables obtained from the database were selected to execute the analysis, as defined in the next chapter, on table 1.

Descriptive statistics were conducted on the characteristics of the database, in order to have a better understanding of the context.

It was in the year of 2018 that most of ICOs had their start (59,3%), followed by 2017 (21,7%), which is in line with theory, defending that ICOs have been gathering huge amounts of capital (Moedl, 2018) on account of its novelty and valorization of cryptocurrencies, mainly Bitcoin, during the years 2017 and 2018 (OECD, 2019).

Despite some of the projects may be included on various sectors due to its higher coverage, the majority if focused on one sector only (34,3%) and does not have any restriction in any country (59,1%).

The majority of the teams are constituted from 4 to 15 members (60,8%). The importance of the presence on social media, that has already been proven to have influence on the ICO success, appears to be recognized by the promoters, being that a significant part of the projects

has from 8 to 11 social media platforms (58,4%) (the maximum number of social media platforms analyzed is 13).

In a more financial matter, the database shows that most of the projects define a soft-cap (54,2%) and hard-cap (73,7%). However, this does not mean that the ones who define a soft-cap also establish a hard-cap and vice versa.

The ICOs usually accept only one currency for the transaction (36%).

Confirming what we said earlier, regarding the Ethereum platform being the most used, are the database percentages, with 87.1% actually operating on it. Ethereum blockchain facilitates the process and "allows for the execution of 'smart contracts' that automatically calculate the amount of funds raised, verify and confirm transactions, and distribute new tokens upon the completion of the sale" (Fenu et al., 2018; Giudici et al., 2020).

Back to the main topic of this paper, concerning ratings, in this case, more specifically about the number of ratings or experts that participate on the evaluation of the projects, the number is unfortunately low, gathering the majority of the population (77,7%) on the interval of 1 to 4 ratings per each ICO.

4.2. The distribution of ratings and ICO success by sector

The database provides us with an enormous amount of information and details, per sector as well.

Despite the complexity of evaluating each sector, some explanatory tables were performed manually on excel to identify some similarities and discrepancies between them.

The ratings were divided in three groups to deliver a broader view and highlight some discrepancies (0,1 to 2,9; 3 to 3,9; 4 to 5).

On table 4.1. the distribution is calculated on the global rating and profile ratings, that are said to be the ones with higher impact on the fundraising success. The remaining ones, team rating, vision rating and profile rating can be analyzed in annex A.

If we have a closer look on the sectors with a higher rate of success (table 6.1), as entertainment, banking and casino & gambling, we spot the common characteristic that correspond to higher tam ratings. Teams and connections among projects are defended by many authors who share that it makes the difference, making it important to select "well-connected" people in the industry (Fisch, 2019; Giudici & Adhami, 2019).

Table 4.1. Overview of how the rating, (global and profile) are distributed in each sector

	Total ratings (Global and Profile)	rating Global						ratingProfile					
		0,1 to 2,9	%	3 to 3,9	%	4 to 5	%	0,1 to 2,9	%	3 to 3,9	%	4 to 5	%
Art	89	41	46%	34	38%	14	16%	41	46%	37	42%	11	12%
Artificial Intelligence	501	177	35%	202	40%	122	24%	185	37%	227	45%	89	18%
Banking	556	253	46%	222	40%	81	15%	275	49%	210	38%	71	13%
Big Data	447	158	35%	183	41%	106	24%	165	37%	206	46%	76	17%
Business services	1256	534	43%	504	40%	218	17%	578	46%	511	41%	167	13%
Casino & Gambling	164	84	51%	62	38%	18	11%	91	55%	58	35%	15	9%
Charity	125	57	46%	49	39%	19	15%	55	44%	58	46%	12	10%
Communication	457	179	39%	192	42%	86	19%	194	42%	208	46%	55	12%
Cryptocurrency	2262	1087	48%	828	37%	347	15%	1153	51%	848	37%	261	12%
Education	216	80	37%	95	44%	41	19%	88	41%	104	48%	24	11%
Electronics	114	51	45%	42	37%	21	18%	52	46%	48	42%	14	12%
Energy	173	75	43%	74	43%	24	14%	75	43%	74	43%	24	14%
Entertainment	578	255	44%	231	40%	92	16%	270	47%	243	42%	65	11%
Health	276	129	47%	109	39%	38	14%	143	52%	109	39%	24	9%
Infrastructure	588	218	37%	242	41%	128	22%	237	40%	256	44%	95	16%
Internet	641	262	41%	250	39%	129	20%	280	44%	271	42%	90	14%
Investment	974	475	49%	349	36%	150	15%	488	50%	372	38%	114	12%
Legal	104	36	35%	46	44%	22	21%	39	38%	52	50%	13	13%
Manufacturing	165	93	56%	53	32%	19	12%	90	55%	54	33%	21	13%
Media	384	142	37%	163	42%	79	21%	152	40%	174	45%	58	15%
Other	359	191	53%	115	32%	53	15%	197	55%	116	32%	46	13%
Platform	3080	1450	47%	1171	38%	459	15%	1576	51%	1160	38%	344	11%
Real estate	228	118	52%	82	36%	28	12%	120	53%	83	36%	25	11%
Retail	344	132	38%	147	43%	65	19%	142	41%	145	42%	57	17%
Smart Contract	821	292	36%	350	43%	179	22%	317	39%	376	46%	128	16%
Software	821	301	37%	356	43%	164	20%	335	41%	359	44%	127	15%
Sports	158	70	44%	62	39%	26	16%	76	48%	62	39%	20	13%
Tourism	188	93	49%	69	37%	26	14%	95	51%	70	37%	23	12%
Virtual Reality	134	51	38%	50	37%	33	25%	55	41%	62	46%	17	13%

CHAPTER 5

Methodology

5.1. Opening remarks

The main goal of a quantitative research approach is to draw a representative sample from a population, in order to study and generalize the results of that sample for the population as a whole (Marshall, 1996).

The priority is then to look for the best source to collect the data for the analysis, in order to attain a representative sample.

Among the several websites that collect and share data about ICOs, the ICObench was the chosen one. It has a complete database with most of the projects, it is considered the number one analytical platform and also a free rating platform for ICOs, so their data is reliable and has been used in previous studies.

5.2. Data, variables and methods

The secondary data which is planned to be considered on the analysis, is originated from the ICObench website (icobench.com), as mentioned before, and it has been previously extracted via a premium subscription which gave access to an API (Application Programming Interface), totalizing 5581 ICO projects002E

From the database and triggered from recent literature on the determinants of ICO success (Adhami et al., 2018; Fisch, 2019; Giudici & Adhami, 2019) there are several variables that we can highlight and that will enrich the analysis, among them: (1) 1. rating global; (2) rating team; (3) rating vision; (4) rating product; (5) rating profile; (6) hard-cap limit is defined; (7) soft-cap limit is defined; (8) sector; (9) soft-cap achieved; (10) ICO Year; (11) Ethereum platform (identifying if the project is based on Ethereum platform); (12) finance accepting (number of currencies accepted by the project; (13) restrictions (number of countries where it is restricted); (13) total ratings (number of experts/evaluations on the project).

These are the major variables that will help in the course of the analysis to be conducted in this work. The focus is mainly on the impact of ratings on ICOs success.

Nonetheless, it will also be possible to observe the characteristics of the successful and unsuccessful ICOs of our data base, on a general matter, and have a perspective of the differences identified between the multiple sectors. In more detail, there are twenty-nine sectors included on the database, as sports, art, artificial intelligence, tourism, banking, bid data, communication, education, and others.

The total data extracted from the website mentioned above was rigorously disposed and organized in different pages inside Excel, in order to arrange the inputs in a clearer manner and thereby facilitate the investigation.

In specific, the data was studied in order to understand its meaning in real context, and later homogenized, giving rise to clear variables that can be exported to SPSS software.

On a more comprehensive approach, the major challenge while processing the database is related to the fact that the not all projects which have specified a soft-cap did it using the same currency (in the total of 5581 projects, 2555 have not defined soft-cap limit). A part of the ICOs that have defined the soft-cap, disclose the value in USD (1814), EUR (131), BTC (25), ETH (787) and the remaining in different currencies.

Because both currencies and cryptocurrencies can be extremely volatile on a five-year exchange rate average (converting to USD), this procedure would not result on a safe result.

The work sequence started by downloading the price history of the cryptocurrencies and currencies, specified earlier. The objective is to correspond an USD exchange rate (Adhami et al., 2018) to each soft-cap defined, based on the start date of the ICO.

In this manner, this secondary data can be studied statistically and graphically, so that it is possible to make a detailed descriptive analysis. SPSS software tool will assume the major procedures to generate the results expected.

All in all, it will be employed statistical tests where it is possible to understand in depth the existing connections between ratings, how much they impact the final outcome of a project and some characteristics of each sector.

Table 5.1 - Variables included in the analysis

Variables	Description
Dependent variable	
Soft-cap achieved	Binary variable of soft-cap threshold achievement
Independent variables	
ICO Year	Year of the ICO campaign
Numb_social_media	Number of social media platforms used
total_categories	Number of categories the ICO integrates
rating	ICO classification from 1 to 5
ratingTeam	Team rating from 1 to 5, attributed by ICObench
ratingVision	Vision rating from 1 to 5, attributed by ICObench
ratingProduct	Product rating from 1 to 5, attributed by ICObench
ratingProfile	Profile rating from 1 to 5, attributed by ICObench
finance_hardcap1	Binary variable - ICO hardcap is defined
finance_softcap 2	Binary variable - ICO softcap is defined
total_ratings	Number of experts evaluating the ICO
ethereum_platform	Binary variable - identifying if the project is based on Ethereum plat
finance_accepting3	Number of currencies accepted by the project
total_team_members	Number of team members
restrictions	Number of countries where it is restricted

Results

6.1. Interpretation of the results

To calculate the percentage of success, the ones which did not present information, "missing", were excluded. The next step includes dividing the total number of projects that achieved

The table 6.1. displays and extends the knowledge about the distribution of the ratings per sector. It is possible to do a cross analysis, together with the tables 4.1. and 4.2., and have a general view on the relationship between the different groups of ratings and the percentage of success.

As mentioned earlier, for the binary variables, 0 represent "No" and 1 represents "Yes".

Table 6.1 – Overview of the success distribution in each sector

	Total ratings	Missing	Available ratings	Successful	Unsuccessful	Success %
Art	89	5	84	19	65	23%
Artificial Intelligence	501	14	487	100	387	21%
Banking	556	22	534	167	367	31%
Big Data	447	18	429	112	317	26%
Business services	1256	39	1217	346	871	28%
Casino & Gambling	164	5	159	45	114	28%
Charity	125	6	119	22	97	18%
Communication	457	18	439	99	340	23%
Cryptocurrency	2262	63	2199	570	1629	26%
Education	216	5	211	41	170	19%
Electronics	114	2	112	27	85	24%
Energy	173	5	168	40	128	24%
Entertainment	578	22	556	154	402	28%
Health	276	9	267	53	214	20%
Infrastructure	588	29	559	136	423	24%
Internet	641	21	620	161	459	26%
Investment	974	25	949	256	693	27%
Legal	104	1	103	23	80	22%
Manufacturing	165	5	160	29	131	18%
Media	384	9	375	97	278	26%
Other	359	12	347	84	263	24%
Platform	3080	100	2980	793	2187	27%
Real estate	228	8	220	50	170	23%
Retail	344	12	332	71	261	21%
Smart Contract	821	24	797	185	612	23%
Software	821	22	799	221	578	28%
Sports	158	5	153	41	112	27%
Tourism	188	6	182	39	143	21%
Virtual Reality	134	5	129	24	105	19%

The following cross table displays the results of a group of variables when analyzed together with the soft-cap achievement variable. The ICOs have a different distribution in terms of success. The database is composed of 25% of successful projects and 72% successful ones. For the remaining ones there was no data available to conclude on this characteristic.

Table 6.2. - Cross table between dependent and independent variables

(Dependent variable: "*Soft-cap achieved*", where 0 represents "No", and 1 represents "Yes")

| | | Soft-cap achieved | | | | | |
| | | 0 | | | 1 | | |
		Count	%	Mean	Count	%	Mean
ICO Year	2015	0	0,0%		2	0,1%	
	2016	1	0,0%		20	1,4%	
	2017	476	15,9%		478	34,0%	
	2018	1855	61,9%		757	53,8%	
	2019	655	21,8%		148	10,5%	
	2020	11	0,4%		1	0,1%	
finance_hardcap1	0	1117	27,9%		341	24,1%	
	1	2889	72,1%		1076	75,9%	
finance_softcap2	0	1769	44,2%		786	55,5%	
	1	2237	55,8%		631	44,5%	
ethereum_platform	0	540	13,5%		169	11,9%	
	1	3466	86,5%		1248	88,1%	
finance_accepting3				1,64			1,44
total_categories				2,92			2,83
total_ratings				3,09			6,58
total_team_members				11,13			13,86
restrictions				1,41			1,32
		4006	72%		1417	25%	

To measure the strength and direction of association between two variables, the Spearman's rho correlation coefficient (which varies from 0 to 1) was employed on SPSS software, confronting the variables regarding ratings: rating global, rating team, rating vision, rating product and rating profile.

From the outputs obtained (Annex B) it was verified that the values are positive and statistically significant, indicating that the variables are associated.

Figure 6.1. demonstrates in a clearer way the strong relationship established between the variable rating (global) and the variable ratingProfile, meaning this is the variable that contributes the most for the global rating, although the others do it as well.

Figure 6.1. - Correlations between the different variables of ratings
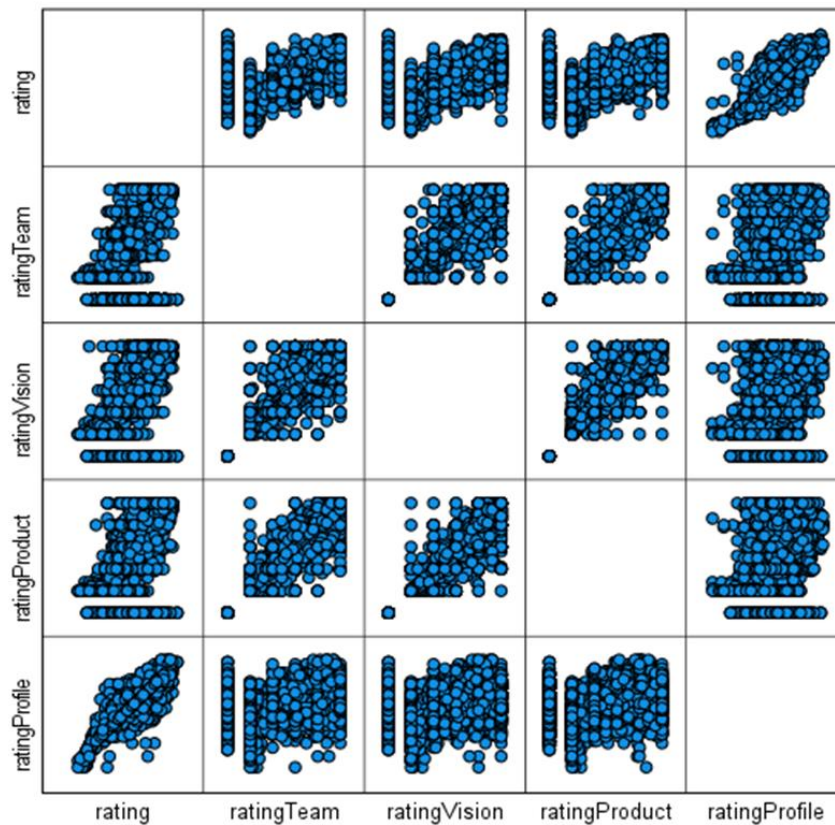
Other strong associations possible to highlight happen between the variables:

- ratingTeam and ratingVision;
- ratingProduct and rating Vision.

Later, the same analysis was performed, however, the variable "finance_softcap2" (if the minimum threshold was included) was introduced to see if the ratings have the same behavior, depending on whether they have established it or not, since it is our approach to measure success.

The conclusions reached are the same, when compared with the previous analysis and also between the two conditions, achieving or not the threshold. The values are positive and statistically significant, with the variables being correlated and the rating profile being the one more associated with the global rating. (Annex C and C.1.).

Table 6.3. – Average of the ratings per variable

	Mean
rating	2,955
ratingTeam	1,736
ratingVision	1,761
ratingProdu	1,631
ratingProfile	2,909

Moving along, in a global perspective, including the 5581 ICO projects, the highest average between the five ratings, belong to the rating (Global), followed by the rating Profile (Annex D and D.1.).

Table 6.4. – Average of the ratings per variable, achieving or not the soft-cap

	Soft-cap achieved	
	0	1
	Mean	Mean
rating	2,86	3,22
ratingTeam	1,48	2,49
ratingVision	1,51	2,49
ratingProduct	1,39	2,33
ratingProfile	2,84	3,12

If we include the variable "soft-cap achieved", we are provided with the same pattern. The highest average ratings are attributed to the rating (Global) and rating Profile, both when the achieve the soft-cap settled or not (Annex E and E.1.).

However, through this analysis it is also possible to verify through the boxplots, annex D.1 and annex E.1. that the average of the ratings when the projects achieve the soft-cap, is higher than when they do not.

In this regard, a statistical hypothesis testing was developed, more specifically the Mann Whitney Test, to better evaluate the existence of differences in the mean value of the distribution and give an answer to:

Hypothesis 1: Higher ratings have a positive influence on fundraising success

All variables have shown statistically significant differences, for a 5% significance level. Then we can assume that the groups, the one which did not reach soft-cap and the one that did, exhibit different distributions.

Again, ratings have higher averages when they belong to the group which collected enough money to be considered successful. This, together with the conclusion in the previous paragraph, means and confirms, that higher ratings in fact contribute to the success of an ICO project (Annex F).

Table 6.5. – Mann Whitney Test results

		Soft-cap achieved	
		0	1
		Mean	Mean
rating		2,86	3,22
Mann-Whitney U	2047893		
Asymp. Sig. (2-tailed)	0,000		
ratingTeam		1,48	2,49
Mann-Whitney U	2049126,5		
Asymp. Sig. (2-tailed)	0,000		
ratingVision		1,51	2,49
Mann-Whitney U	2076616,5		
Asymp. Sig. (2-tailed)	0,000		
ratingProduct		1,39	2,33
Mann-Whitney U	2069721		
Asymp. Sig. (2-tailed)	0,000		
ratingProfile		2,84	3,12
Mann-Whitney U	2207560,5		
Asymp. Sig. (2-tailed)	0,000		

For other categories as "total_categories", "total_ratings", "total_team_members", "restrictions" and "finance_accepting3", conclusions were drawn based on the boxplot details.

All the variables demonstrate a similar pattern and behavior. Both the number of categories an ICO integrates, the number of evaluations that build the final rating, the number of team members per project, the number of restrictions faced and the number of currencies accepted are concentrated in first or on the middle quartiles. Higher numbers in each category represent mainly outliers.

Figure 6.2. – Boxplots analyzing the distributions of the variables
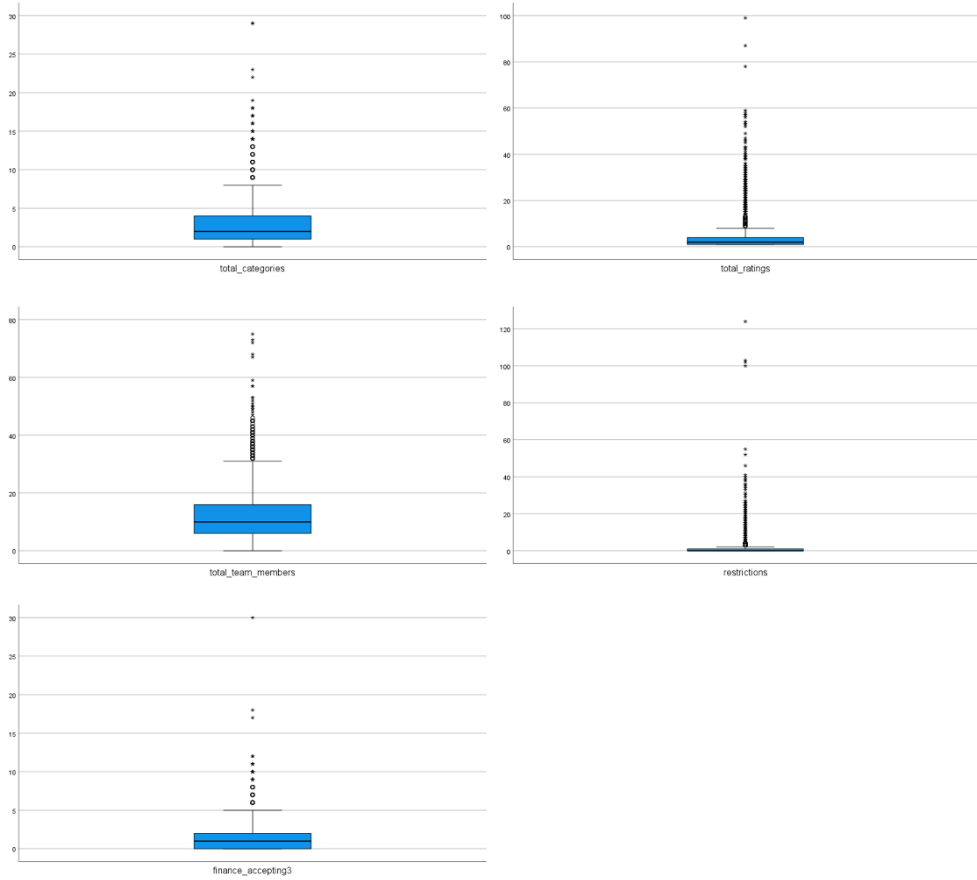
Subsequently, it was tested whether or not some other variables are associated with the success. These specific variables are "finance_hardcap1" (0/1), "finance_softcap2" (0/1) and "Ethereum_platform" (0/1), confronted with "soft-cap achieved" (0/1) (Annex G).

Thus, the statistical chi-square test of independence was performed to verify whether there are significant differences between the successful ICOs and those variables in particular.

Being that:

H0: In the population, the two categorical variables are independent.

H1: In the population, the two categorical variables are dependent.

For the variable "finance_hardcap1" (Annex H) we conclude that, by rejecting the null hypothesis, there is a statistically significant association with the success of an ICO, they are dependent. Nevertheless, when looking at the Cramer's V value, that measures the association between the variables, we find there is a weak association.

The same occurs to the variable "finance_softcap2" (Annex I). The value presented is statistically significant, however there is not a strong relationship between the variables too.

Yet, the variable "ethereum_platform" shows a different behavior, being that it is independent from the variable "soft-cap achieved". Concluding, there is no significant association between them, it does not impact its success (Annex J).

Table 6.6. – Chi-square test of independence

Variables		Soft-cap achieved
finance_hardcap1	Pearson Chi-Square	7.763
	p	0,005
total_softcap2	Pearson Chi-Square	53.742
	p	0,000
ethereum_platform	Pearson Chi-Square	2.222
	p	0,136

At last, to evaluate if there are differences in the average value of the distributions, on the remaining variables, it was run a Mann-Whitney Test (annex K).

Once again, all variables included have shown statistically significant differences, except for the variable "total_categories", which is the only one where the distribution of the rating when the project does not reach the fundraising goal is the same as when it reaches it.

The others ("finance_accepting3", "total_categories", "total_ratings", "total_team_members", "restrictions") have statistically significant relationship with the "soft-cap achieved". Their ratings distribution, when they reach or not the soft-cap value is different, meaning these variables are indicators and have an influence on ICOs success.

Table 6.7. – Additional Mann Whitney Test results

		Soft-cap achieved	
		0	1
		Mean	Mean
finance_accepting3		2,86	3,22
Mann-Whitney U	2538229,5		
Asymp. Sig. (2-tailed)	0,000		
total_categories		1,48	2,49
Mann-Whitney U	2824496		
Asymp. Sig. (2-tailed)	0,780		
total_ratings		1,51	2,49
Mann-Whitney U	2020334,5		
Asymp. Sig. (2-tailed)	0,000		
total_team_members		1,39	2,33
Mann-Whitney U	2273448,5		
Asymp. Sig. (2-tailed)	0,000		
restrictions		2,84	3,12
Mann-Whitney U	2684410		
Asymp. Sig. (2-tailed)	0,001		

CHAPTER 7

Discussion

7.1. Summary of results

This thesis reviews previous studies conclusions on initial coin offerings' ratings and patterns, known to have an important contribution on ICO success (Giudici et al., 2020), with the input of quantitative analysis.

Since there are still very few analyses on the impact of ratings on ICOs fundraising goal, it is still a challenge to find authors supporting or not the conclusions obtained.

Ratings are usually published on websites and platforms, including the ICObench, that was the chosen source for this paper's purpose. Ratings given by external parties, which are based on the perception held from the signals given by the teams, became an important characteristic and indicator to consider when assessing the best project (Xuan et al., 2020).

Hypothesis 1: The different types of ratings are related to each other

a. does their behavior changes when they have established a soft-cap?

To answer Hypothesis 1, it was used the Spearman's rho correlation coefficient, that proved the existence of a strong correlation, in both cases. Team ratings also showed a strong association with the global rating, validating that teams are an important indicator and influence investor's decision (Momtaz, 2020; Giudici et al., 2020; Fisch, 2019).

Hypothesis 2: Higher ratings have a positive influence on fundraising success

The Mann Whitney Test was applied to better evaluate the existence of differences in the mean value of the distribution. Findings on this chapter provide important conclusions; all variables showed statistically significant differences, thus we found proof to argue that higher ratings do contribute to the success of the projects. (Fenu et al., 2018; Momtaz, 2020)

Hypothesis 3: Different characteristics have different levels of influence on project success

This study adds to the literature, for example, that the Ethereum platform, besides being the most sought-after (Fenu et al., 2018; Giudici et al., 2020), it does not have any impact on the success of the projects.

Therefore, repeating literature, it is feasible to say that there is a link between experts' ratings and projects' outcome, being successful or not (Fenu et al., 2018; Liu & Wang, 2019; Xuan et al., 2020).

7.2. Contributions to theory

If there is a market that is growing exponentially, is cryptocurrencies. Nonetheless, population in general is still at an embryonic level of knowledge concerning these topics. This is not merely

due to lack of interest but also explained by the lack of explanatory studies, opportunities to be in contact with these concepts and context and lack of definition of basic terms.

Even though, ICOs phenomenon is still new, volatile and presenting systematic risks, the interest to know more about it is growing and among multiple topics possible to addressed, ratings hold a significant part contributing for its success, however there is still a lack of research regarding its true impact as well.

This paper outlines some basic terms and characteristics of ICOs, later relating it to their classifications, as known as ratings.

Although the conclusions found are in line with the already existent literature, this study enriches theory through a robust database, with 5581 ICO from all sectors.

It is expected to contribute to a more detailed understanding of the peculiarities of ICO projects, giving essential tools to interested people, helping them to know what to expect and how to act accordingly in this field. The insights presented are in their majority related to the ratings, which have shown to have influence on the project success.

Thus, the final goal is to provide solid evidence (based on a robust database analyzes trough quantitative tests), on the impact ratings have on ICO projects to give guidance both to promoters and investors when confronted with this information.

7.3. Practical implications

The present research extends the knowledge by providing evidence on the rating effect on ICOs success in obtaining funding.

The practical contribution is grounded on the conclusions reached after performing mainly quantitative analysis, that confirm the relationship between ratings and ICO success, which was measured using the achievement of the soft-cap threshold.

A higher rating appears to be an effective indicator that the project will be successful, and the global rating and profile rating seem to have a big association between them.

In short, the present paper enriches the evidence on ICO pioneer research and unfold the truth that ratings and ICOs projects success are associated. Ratings then plays a big role, making it important to put some efforts on the projects and signal their characteristics in the best way, so that it can be perceived both by external experts, identifies by the bot which evaluates them also, and more importantly the investors.

CHAPTER 8

Conclusions and Recommendations

8.1. Strengths and limitations

The literature review started with providing some evidence on the role of ratings in the performance of a ICO project. Naturally, by creating a database including all sectors, instead of focusing on a specific sector only, we were able to address a wider range of cases, with a more robust base of 5581 projects. The possibility of drawing conclusions about the generality of the ICOs, is a positive factor about the research.

Trade-offs need to be made between the inclusion or exclusion of data, improving or not the existing data through external sources. ICObench is the only source of data used in the context of this paper. By not using different databases originated from different platforms and websites, we avoid the possibility of conflicts between data, however we also become dependent on the accuracy of its information.

The limitations of this research are curiously related to its strength. The fact that no sector was excluded, consequently favoring the constitution of an enormous database, slowed down the process of organizing it and made harder the homogenization procedure, that was performed on excel. Both the data and the variables were presented in different currencies or categories. Not to mention, it is difficult to eliminate possible bias in the analysis, because this procedure is done manually, highlighting potential degree of human error.

Plus, an additional weakness felt while conducting the analysis is, since many variables and data were possible to study, it would be very time consuming to homogenize them all to perform further and more detailed research, including all the variables available. Notwithstanding, the suggestions were saved and presented in the following chapter.

Another concern is related to the ICObench platform, being that its data is generally uploaded by hand and relying on the information given by the promoters, perhaps jeopardizing it. ICObench users cannot assume that this data is fully correct or complete. ICO information can also be retrieved from many different online sources, that have no trustworthy entities backing what they are assuming.

In a final note, the reader of this paper should bear in mind that ICO data is still growing on accuracy and completeness, still lacking some crucial information about the projects.

8.2. Suggestions for future research

The amount of research on the ICO phenomenon has been growing over the years. Despite this fact, ICOs are still a fertile topic where even more branches of research can be born to analyze.

Considering that the study showed that higher ratings are good indicators of success, future research could focus on investigating the process of how the rating is attributed and which are the characteristics of the projects that demonstrate quality.

Additionally, since it was performed an analysis considering the totality of the sectors, it would enrich theory if it was possible to conduct extensive research on every sector, individually (e.g., artificial intelligence, software, education).

It would also be interesting to follow one project, from its creation, to publishment and finally the attribution of the rating, by the ICObench logarithm and external experts, to perceive the whole process and stand out possible indicators of success along the process, helping promoters understand what are the essential steps to follow and how to approach them.

Several topics, more generic and combining other areas of research, that crossed my mind while writing and reading for this study purpose are, for example:

- examine the behavior of the ratings over the years and, involving psychology, also understand if people, together with the unstoppable technological developments, have become more critical when judging projects;

- the luck surrounding ICOs: how can the outcome bias shape the perception of an ICO and respective team skills and competence;

- deeper understanding on the introduction of cryptocurrencies in the accounting of the companies;

- evaluation of the personal characteristics of the external experts rating the projects, from technological and blockchain background, professional experience, social media presence and others considered relevant.

Maybe one of the most important direction future research should take, may rely on understand and teach schools and university boards on how to introduce this new buzzing concepts in the studies' programs since early ages.

Simultaneously, it would contribute for higher number of people familiar with these concepts and help future and current business managers in becoming more aware of this phenomenon that is changing the traditional world as we know it, allowing them to act accordingly.

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Annexes

Annex A. Overview of how the rating (team, vision, product) are distributed in each sector

	Total ratings (Team, Vision, Product)	No rating	ratingTeam						ratingVision						ratingProduct					
			0,1 to 2,9	%	3 to 3,9	%	4 to 5	%	0,1 to 2,9	%	3 to 3,9	%	4 to 5	%	0,1 to 2,9	%	3 to 3,9	%	4 to 5	%
Art	41	48	9	22%	11	27%	21	51%	6	15%	15	37%	20	49%	10	24%	16	39%	15	37%
Artificial Intelligence	312	189	47	15%	91	29%	174	56%	182	58%	92	29%	179	57%	202	65%	120	38%	131	42%
Banking	314	242	75	24%	85	27%	154	49%	255	81%	112	36%	141	45%	278	89%	122	39%	108	34%
Big Data	288	159	53	18%	76	26%	159	55%	164	57%	75	26%	160	56%	182	63%	108	38%	109	38%
Business services	747	509	165	22%	216	29%	366	49%	599	80%	246	33%	363	49%	659	88%	283	38%	266	36%
Casino & Gambling	100	64	31	31%	27	27%	42	42%	47	47%	31	31%	38	38%	52	52%	35	35%	29	29%
Charity	73	52	24	33%	18	25%	31	42%	25	34%	24	33%	28	38%	31	42%	27	37%	19	26%
Communication	279	178	61	22%	84	30%	134	48%	181	65%	86	31%	142	51%	198	71%	110	39%	101	36%
Cryptocurrency	1238	1024	313	25%	347	28%	578	47%	1265	102%	367	30%	582	47%	1344	109%	439	35%	431	35%
Education	126	90	22	17%	41	33%	63	50%	58	46%	37	29%	73	58%	68	54%	55	44%	45	36%
Electronics	71	43	19	27%	22	31%	30	42%	12	17%	20	28%	34	48%	20	28%	27	38%	19	27%
Energy	87	86	21	24%	23	26%	43	49%	54	62%	26	30%	45	52%	68	78%	32	37%	25	29%
Entertainment	340	238	81	24%	102	30%	157	46%	264	78%	114	34%	152	45%	283	83%	131	39%	116	34%
Health	159	117	39	25%	49	31%	71	45%	97	61%	56	35%	75	47%	126	79%	57	36%	45	28%
Infrastructure	364	224	67	18%	105	29%	192	53%	231	63%	109	30%	200	55%	260	71%	125	34%	155	43%
Internet	383	258	82	21%	104	27%	197	51%	288	75%	105	27%	200	52%	309	81%	134	35%	150	39%
Investment	546	428	152	28%	165	30%	229	42%	531	97%	167	31%	228	42%	572	105%	187	34%	167	31%
Legal	64	40	21	33%	12	19%	31	48%	7	11%	16	25%	33	52%	10	16%	24	38%	22	34%
Manufacturing	103	62	44	43%	28	27%	31	30%	47	46%	33	32%	37	36%	63	61%	33	32%	21	20%
Media	216	168	42	19%	55	25%	119	55%	158	73%	66	31%	112	52%	177	82%	70	32%	89	41%
Other	185	174	42	23%	47	25%	96	52%	167	90%	49	26%	95	51%	177	96%	69	37%	65	35%
Platform	1704	1376	392	23%	494	29%	818	48%	1674	98%	527	31%	831	49%	1813	106%	619	36%	600	35%
Real estate	119	109	29	24%	39	33%	51	43%	87	73%	41	34%	52	44%	101	85%	41	34%	38	32%
Retail	206	138	45	22%	48	23%	113	55%	131	64%	65	32%	100	49%	137	67%	90	44%	69	33%
Smart Contract	490	331	97	20%	129	26%	264	54%	370	76%	132	27%	271	55%	403	82%	171	35%	199	41%
Software	523	298	110	21%	156	30%	257	49%	339	65%	166	32%	268	51%	382	73%	200	38%	191	37%
Sports	102	56	30	29%	27	26%	45	44%	37	36%	33	32%	40	39%	41	40%	42	41%	27	26%
Tourism	103	85	25	24%	27	26%	51	50%	60	58%	40	39%	40	39%	70	68%	41	40%	29	28%
Virtual Reality	80	54	16	20%	13	16%	51	64%	19	24%	21	26%	46	58%	24	30%	27	34%	35	44%

Annex B – Spearman's rho test: ratings

<table>
<tr><td colspan="9" align="center">Correlations</td></tr>
<tr><td></td><td></td><td></td><td>rating</td><td>ratingTeam</td><td>ratingVision</td><td>ratingProduct</td><td>ratingProfile</td></tr>
<tr><td rowspan="15">Spearman's rho</td><td rowspan="3">rating</td><td>Correlation Coefficient</td><td>1,000</td><td>.571**</td><td>.559**</td><td>.565**</td><td>.925**</td></tr>
<tr><td>Sig. (2-tailed)</td><td></td><td>0,000</td><td>0,000</td><td>0,000</td><td>0,000</td></tr>
<tr><td>N</td><td>5581</td><td>5581</td><td>5581</td><td>5581</td><td>5581</td></tr>
<tr><td rowspan="3">ratingTeam</td><td>Correlation Coefficient</td><td>.571**</td><td>1,000</td><td>.970**</td><td>.974**</td><td>.443**</td></tr>
<tr><td>Sig. (2-tailed)</td><td>0,000</td><td></td><td>0,000</td><td>0,000</td><td>0,000</td></tr>
<tr><td>N</td><td>5581</td><td>5581</td><td>5581</td><td>5581</td><td>5581</td></tr>
<tr><td rowspan="3">ratingVision</td><td>Correlation Coefficient</td><td>.559**</td><td>.970**</td><td>1,000</td><td>.976**</td><td>.426**</td></tr>
<tr><td>Sig. (2-tailed)</td><td>0,000</td><td>0,000</td><td></td><td>0,000</td><td>0,000</td></tr>
<tr><td>N</td><td>5581</td><td>5581</td><td>5581</td><td>5581</td><td>5581</td></tr>
<tr><td rowspan="3">ratingProduct</td><td>Correlation Coefficient</td><td>.565**</td><td>.974**</td><td>.976**</td><td>1,000</td><td>.432**</td></tr>
<tr><td>Sig. (2-tailed)</td><td>0,000</td><td>0,000</td><td>0,000</td><td></td><td>0,000</td></tr>
<tr><td>N</td><td>5581</td><td>5581</td><td>5581</td><td>5581</td><td>5581</td></tr>
<tr><td rowspan="3">ratingProfile</td><td>Correlation Coefficient</td><td>.925**</td><td>.443**</td><td>.426**</td><td>.432**</td><td>1,000</td></tr>
<tr><td>Sig. (2-tailed)</td><td>0,000</td><td>0,000</td><td>0,000</td><td>0,000</td><td></td></tr>
<tr><td>N</td><td>5581</td><td>5581</td><td>5581</td><td>5581</td><td>5581</td></tr>
</table>

**. Correlation is significant at the 0.01 level (2-tailed).

Annex C – Spearman's rho test: ratings and finance_softcap2

<table>
<tr><td colspan="9" align="center">Correlations[a]</td></tr>
<tr><td colspan="3">finance_softcap2 = 0</td><td></td><td>ratingTeam</td><td>ratingVision</td><td>ratingProduct</td><td>ratingProfile</td></tr>
<tr><td rowspan="15">Spearman's rho</td><td rowspan="3">rating</td><td>Correlation Coefficient</td><td>1,000</td><td>.460**</td><td>.450**</td><td>.453**</td><td>.930**</td></tr>
<tr><td>Sig. (2-tailed)</td><td></td><td>0,000</td><td>0,000</td><td>0,000</td><td>0,000</td></tr>
<tr><td>N</td><td>2555</td><td>2555</td><td>2555</td><td>2555</td><td>2555</td></tr>
<tr><td rowspan="3">ratingTeam</td><td>Correlation Coefficient</td><td>.460**</td><td>1,000</td><td>.982**</td><td>.984**</td><td>.327**</td></tr>
<tr><td>Sig. (2-tailed)</td><td>0,000</td><td></td><td>0,000</td><td>0,000</td><td>0,000</td></tr>
<tr><td>N</td><td>2555</td><td>2555</td><td>2555</td><td>2555</td><td>2555</td></tr>
<tr><td rowspan="3">ratingVision</td><td>Correlation Coefficient</td><td>.450**</td><td>.982**</td><td>1,000</td><td>.986**</td><td>.312**</td></tr>
<tr><td>Sig. (2-tailed)</td><td>0,000</td><td>0,000</td><td></td><td>0,000</td><td>0,000</td></tr>
<tr><td>N</td><td>2555</td><td>2555</td><td>2555</td><td>2555</td><td>2555</td></tr>
<tr><td rowspan="3">ratingProduct</td><td>Correlation Coefficient</td><td>.453**</td><td>.984**</td><td>.986**</td><td>1,000</td><td>.315**</td></tr>
<tr><td>Sig. (2-tailed)</td><td>0,000</td><td>0,000</td><td>0,000</td><td></td><td>0,000</td></tr>
<tr><td>N</td><td>2555</td><td>2555</td><td>2555</td><td>2555</td><td>2555</td></tr>
<tr><td rowspan="3">ratingProfile</td><td>Correlation Coefficient</td><td>.930**</td><td>.327**</td><td>.312**</td><td>.315**</td><td>1,000</td></tr>
<tr><td>Sig. (2-tailed)</td><td>0,000</td><td>0,000</td><td>0,000</td><td>0,000</td><td></td></tr>
<tr><td>N</td><td>2555</td><td>2555</td><td>2555</td><td>2555</td><td>2555</td></tr>
</table>

**. Correlation is significant at the 0.01 level (2-tailed).
a. finance_softcap2 = 0

<table>
<tr><td colspan="9" align="center">Correlations[a]</td></tr>
<tr><td colspan="3">finance_softcap2 = 1</td><td>rating</td><td>ratingTeam</td><td>ratingVision</td><td>ratingProduct</td><td>ratingProfile</td></tr>
<tr><td rowspan="15">Spearman's rho</td><td rowspan="3">rating</td><td>Correlation Coefficient</td><td>1,000</td><td>.635**</td><td>.620**</td><td>.631**</td><td>.906**</td></tr>
<tr><td>Sig. (2-tailed)</td><td></td><td>0,000</td><td>0,000</td><td>0,000</td><td>0,000</td></tr>
<tr><td>N</td><td>3026</td><td>3026</td><td>3026</td><td>3026</td><td>3026</td></tr>
<tr><td rowspan="3">ratingTeam</td><td>Correlation Coefficient</td><td>.635**</td><td>1,000</td><td>.954**</td><td>.963**</td><td>.498**</td></tr>
<tr><td>Sig. (2-tailed)</td><td>0,000</td><td></td><td>0,000</td><td>0,000</td><td>0,000</td></tr>
<tr><td>N</td><td>3026</td><td>3026</td><td>3026</td><td>3026</td><td>3026</td></tr>
<tr><td rowspan="3">ratingVision</td><td>Correlation Coefficient</td><td>.620**</td><td>.954**</td><td>1,000</td><td>.964**</td><td>.474**</td></tr>
<tr><td>Sig. (2-tailed)</td><td>0,000</td><td>0,000</td><td></td><td>0,000</td><td>0,000</td></tr>
<tr><td>N</td><td>3026</td><td>3026</td><td>3026</td><td>3026</td><td>3026</td></tr>
<tr><td rowspan="3">ratingProduct</td><td>Correlation Coefficient</td><td>.631**</td><td>.963**</td><td>.964**</td><td>1,000</td><td>.487**</td></tr>
<tr><td>Sig. (2-tailed)</td><td>0,000</td><td>0,000</td><td>0,000</td><td></td><td>0,000</td></tr>
<tr><td>N</td><td>3026</td><td>3026</td><td>3026</td><td>3026</td><td>3026</td></tr>
<tr><td rowspan="3">ratingProfile</td><td>Correlation Coefficient</td><td>.906**</td><td>.498**</td><td>.474**</td><td>.487**</td><td>1,000</td></tr>
<tr><td>Sig. (2-tailed)</td><td>0,000</td><td>0,000</td><td>0,000</td><td>0,000</td><td></td></tr>
<tr><td>N</td><td>3026</td><td>3026</td><td>3026</td><td>3026</td><td>3026</td></tr>
</table>

**. Correlation is significant at the 0.01 level (2-tailed).
a. finance_softcap2 = 1

Annex C.1. – Ratings/finance_softcap2 boxplots
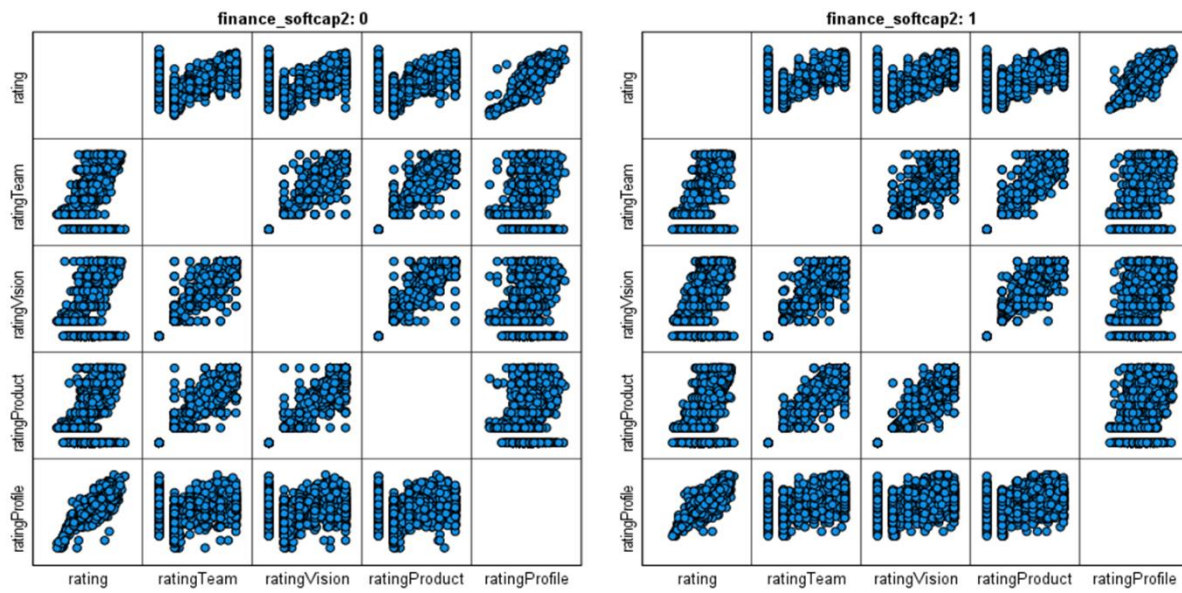
Annex D – Ratings descriptive statistics

					Descriptive Statistics
	N	Minimum	Maximum	Mean	Std. Deviation
rating	5581	0,5	4,9	2,955	0,7804
ratingTeam	5581	0,0	5,0	1,736	1,9122
ratingVision	5581	0,0	5,0	1,761	1,9261
ratingProduct	5581	0,0	5,0	1,631	1,8077
ratingProfile	5581	0,1	5,0	2,909	0,7581
Valid N (listwise)	5581				

Annex D.1. – Ratings boxplot
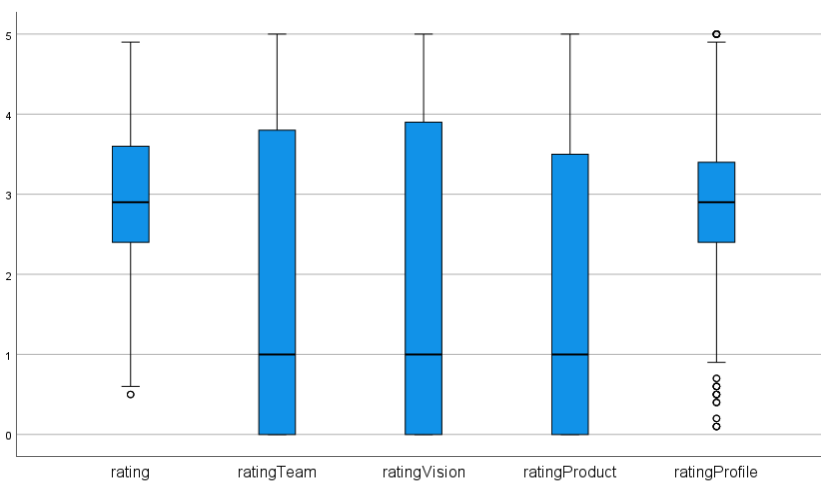
Annex E – Ratings descriptive statistics, achieving or not the soft-cap

		Cases					
		Valid		Missing		Total	
Soft-cap achieved		N	Percent	N	Percent	N	Percent
rating	0	4006	100,0%	0	0,0%	4006	100,0%
	1	1417	100,0%	0	0,0%	1417	100,0%
ratingTeam	0	4006	100,0%	0	0,0%	4006	100,0%
	1	1417	100,0%	0	0,0%	1417	100,0%
ratingVision	0	4006	100,0%	0	0,0%	4006	100,0%
	1	1417	100,0%	0	0,0%	1417	100,0%
ratingProduct	0	4006	100,0%	0	0,0%	4006	100,0%
	1	1417	100,0%	0	0,0%	1417	100,0%
ratingProfile	0	4006	100,0%	0	0,0%	4006	100,0%
	1	1417	100,0%	0	0,0%	1417	100,0%

Annex E.1. – Ratings boxplot, by achieving or not soft-cap
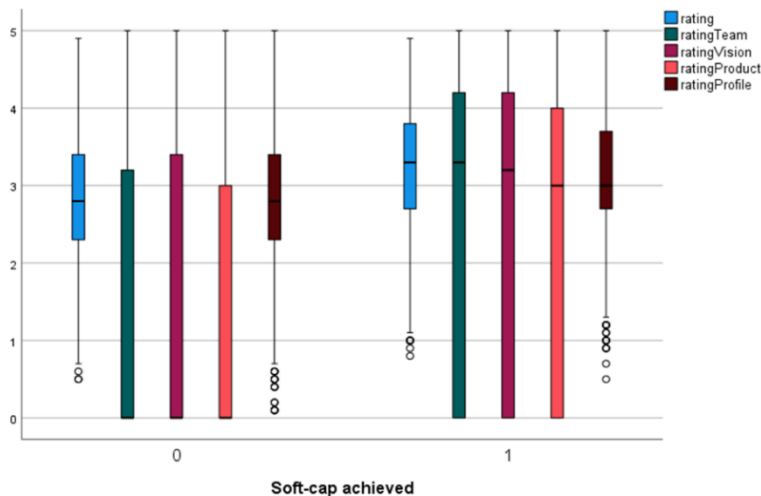
Annex F – Hypothesis for the Mann Whitney Test and Results

H0: The distribution of the ratings when the ICO does not reach the soft-cap is equal to when it does

H1: The distribution of the ratings when the ICO does not reach the soft-cap is not equal to when it does

Mann-Whitney Test

Ranks

Soft-cap achieved		N	Mean Rank	Sum of Ranks
rating	0	4006	2514,71	10073914,00
	1	1417	3269,77	4633262,00
	Total	5423		
ratingTeam	0	4006	2515,01	10075147,50
	1	1417	3268,90	4632028,50
	Total	5423		
ratingVision	0	4006	2521,88	10102637,50
	1	1417	3249,50	4604538,50
	Total	5423		
ratingProduct	0	4006	2520,16	10095742,00
	1	1417	3254,36	4611434,00
	Total	5423		
ratingProfile	0	4006	2554,56	10233581,50
	1	1417	3157,09	4473594,50
	Total	5423		

Test Statistics[a]					
	rating	ratingTeam	ratingVision	ratingProduct	ratingProfile
Mann-Whitney U	2047893,000	2049126,500	2076616,500	2069721,000	2207560,500
Wilcoxon W	10073914,000	10075147,500	10102637,500	10095742,000	10233581,500
Z	-15,617	-16,601	-16,022	-16,167	-12,467
Asymp. Sig. (2-tailed)	0,000	0,000	0,000	0,000	0,000

a. Grouping Variable: Soft-cap achieved

Annex G – Summary of "finance_hardcap1", "finance_softcap2", "ethereum_platform" combined with "soft-cap achieved"

	Case Processing Summary					
	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
finance_hardcap1 * Soft-cap achieved	5423	97,2%	158	2,8%	5581	100,0%
finance_softcap2 * Soft-cap achieved	5423	97,2%	158	2,8%	5581	100,0%
ethereum_platform * Soft-cap achieved	5423	97,2%	158	2,8%	5581	100,0%

Annex H – Chi-Square Test "finance_hardcap1" and "soft-cap achieved"

Crosstab					
			Soft-cap achieved		
			0	1	Total
finance_hardcap1	0	Count	1117	341	1458
		% within finance_hardcap1	76,6%	23,4%	100,0%
		% within Soft-cap achieved	27,9%	24,1%	26,9%
		% of Total	20,6%	6,3%	26,9%
	1	Count	2889	1076	3965
		% within finance_hardcap1	72,9%	27,1%	100,0%
		% within Soft-cap achieved	72,1%	75,9%	73,1%
		% of Total	53,3%	19,8%	73,1%
Total		Count	4006	1417	5423
		% within finance_hardcap1	73,9%	26,1%	100,0%
		% within Soft-cap achieved	100,0%	100,0%	100,0%
		% of Total	73,9%	26,1%	100,0%

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	7.763[a]	1	0,005
Continuity	7,570	1	0,006
Likelihood Ratio	7,883	1	0,005
Fisher's Exact Test			
Linear-by-Linear	7,762	1	0,005
N of Valid Cases	5423		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 380.97.

b. Computed only for a 2x2 table

Symmetric Measures			
		Value	Approximate Significance
Nominal by Nominal	Phi	0,038	0,005
	Cramer's V	0,038	0,005
N of Valid Cases		5423	

Annex I – Chi-Square Test "finance_softcap2" and "soft-cap achieved"

Crosstab			Soft-cap achieved		Total
			0	1	
finance_softcap2	0	Count	1769	786	2555
		% within finance_softcap2	69,2%	30,8%	100,0%
		% within Soft-cap achieved	44,2%	55,5%	47,1%
		% of Total	32,6%	14,5%	47,1%
	1	Count	2237	631	2868
		% within finance_softcap2	78,0%	22,0%	100,0%
		% within Soft-cap achieved	55,8%	44,5%	52,9%
		% of Total	41,3%	11,6%	52,9%
Total		Count	4006	1417	5423
		% within finance_softcap2	73,9%	26,1%	100,0%
		% within Soft-cap achieved	100,0%	100,0%	100,0%
		% of Total	73,9%	26,1%	100,0%

Chi-Square Tests	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-	53.742[a]	1	0,000
Continuity	53,289	1	0,000
Likelihood Ratio	53,712	1	0,000
Fisher's Exact Test			
Linear-by-Linear	53,732	1	0,000
N of Valid Cases	5423		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 667.61.
b. Computed only for a 2x2 table

Symmetric Measures		Value	Approximate Significance
Nominal by	Phi	-0,100	0,000
Nominal	Cramer's V	0,100	0,000
N of Valid Cases		5423	

Annex J - Chi-Square Test "ethereum_platform" and "soft-cap achieved"

Crosstab			Soft-cap achieved		Total
			0	1	
ethereum_platform	0	Count	540	169	709
		% within ethereum_platform	76,2%	23,8%	100,0%
		% within Soft-cap achieved	13,5%	11,9%	13,1%
		% of Total	10,0%	3,1%	13,1%
	1	Count	3466	1248	4714
		% within ethereum_platform	73,5%	26,5%	100,0%
		% within Soft-cap achieved	86,5%	88,1%	86,9%
		% of Total	63,9%	23,0%	86,9%
Total		Count	4006	1417	5423
		% within ethereum_platform	73,9%	26,1%	100,0%
		% within Soft-cap achieved	100,0%	100,0%	100,0%
		% of Total	73,9%	26,1%	100,0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	2.222[a]	1	0,136
Continuity Correction[b]	2,087	1	0,149
Likelihood Ratio	2,260	1	0,133
Fisher's Exact Test			
Linear-by-Linear	2,221	1	0,136
N of Valid Cases	5423		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 185.26.
b. Computed only for a 2x2 table

Symmetric Measures

		Value	Approximate Significance
Nominal by Nominal	Phi	0,020	0,136
	Cramer's V	0,020	0,136
N of Valid Cases		5423	

Annex K – Mann Whitney Test: "finance_accepting3", "total_categories", "total_ratings", "total_team_members", restictions" combined with "soft-cap achieved"

Ranks

Soft-cap achieved		N	Mean Rank	Sum of Ranks
finance_accepting3	0	4006	2786,89	11164293,50
	1	1417	2500,27	3542882,50
	Total	5423		
total_categories	0	4006	2708,57	10850517,00
	1	1417	2721,71	3856659,00
	Total	5423		
total_ratings	0	4006	2507,83	10046355,50
	1	1417	3289,22	4660820,50
	Total	5423		
total_team_members	0	4006	2571,01	10299469,50
	1	1417	3110,59	4407706,50
	Total	5423		
restrictions	0	4006	2750,40	11018113,00
	1	1417	2603,43	3689063,00
	Total	5423		

Test Statistics[a]

	finance_accepting3	total_categories	total_ratings	total_team_members	restrictions
Mann-Whitney U	2538229,500	2824496,000	2020334,500	2273448,500	2684410,000
Wilcoxon W	3542882,500	10850517,000	10046355,500	10299469,500	3689063,000
Z	-6,139	-0,280	-17,240	-11,163	-3,429
Asymp. Sig. (2-tailed)	0,000	0,780	0,000	0,000	0,001

a. Grouping Variable: Soft-cap achieved