COORDINATING CROWDFUNDED INNOVATION PROJECTS IN THE CRYPTOCURRENCY SECTOR THROUGH NARRATIVES

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IN MEMORY OF

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May they rest in peace.

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Abstract

Initial Coin Offerings (ICOs) are innovation projects that serve as a crowdfunding mechanism. This study discusses the need to examine how cryptocurrencies are created, particularly through ICOs. ICO projects are described as radical, multistakeholder innovation projects that involve communicating potential value and use of cryptocurrency between project teams and crowdfunders through whitepapers and YouTube videos. The study aims to identify useful dictionaries containing active signals and cues used in successfully crowdfunded ICO narratives from project teams (Marketer Generated Content) and crowdfunders' comments (User Generated Content).

The literature review highlights three gaps: a lack of understanding the effectiveness of specific signals/cues and crowdfunders' trust, a lack of diversification in signal/cue specific constructs, and a lack of understanding of positive tone signals/cues in the ICO context. The study tests the use of specific signals and cues. It does so with dictionaries that have been validated for academic studies in Marketer Generated Content (MGC) and then correlates with their use in User Generated Content (UGC) in ICOs.

The study collected and analysed textual data on 20 ICOs through YouTube video transcripts, comments, and whitepapers, and used Computer Aided Text Analysis (CATA) software and customised digital dictionaries. The analysis aimed to identify patterns of cues/signals in project and crowdfunder narratives. The selection of the dictionaries was based on their relevance to the signals/cues being measured and bundled into constructs for analysis using CATA software.

Overall, the study shed light on the coordination practices of ICOs, identifying the dictionaries that suit ICOs, and test and confirm hypotheses using signalling theory to address the gaps in the literature. The finding was that positive signals and cues from the project instigator's whitepapers and video-transcripts have been used in crowd conversations in YouTube comment-sections, but much less so negative ones. Eight useful academic dictionaries have been identified. This study can be extended to other studies to explore further the issue of narrative coordination of innovation projects, but it also contributes to practitioners with practical application in an effort to coordinate ICO crowdfunding.

1. Chapter 1: Introduction

1.1. Background of the research

1.1.1. What is cryptocurrency (digital coins)?

The innovation discussed in this research pertains to cryptocurrencies. A cryptocurrency is a digital asset (otherwise virtual or digital token) designed to work as a medium of exchange. Cryptocurrencies are often used as a medium of exchange, a store of value, or as a unit of account (King and Nadal, 2013).

Cryptocurrencies can be categorised into 4 broad types (Fokria et al., 2021; Garriga et.al, 2020; Cong and Yiao, 2021): Payment Cryptocurrencies, Stablecoins, Media and Entertainment Tokens and Central Bank Digital Currencies.

1. Payment Cryptocurrencies are a circulating medium as well as a form of peer-to-peer electronic cash to enable financial digital transactions (Titov et al., 2021; Sukarn and Pujiyono, 2020).

2. Stablecoins are cryptocurrencies that are pegged to an official government issued currency such as the Euro or U.S. Dollar for example (Baur and Hoang, 2021; Bank for International Settlements, 2020; Board of Governors of the Federal Reserve System, 2022).

3. Media and Entertainment Tokens are used as a currency to measure and reward human attention for instance media content, online gambling and electronic games. The most notable example is the Basic Attention Token (BAT). It rewards both users for the attention they pay to certain content as well as content creators themselves (Basic Attention Token, 2021 and Theta Labs, 2021).

4. Central Bank Digital Currencies are cryptocurrencies that are issued by official national central banks and are pegged to a respective traditional currency of the issuing nation. All major nations central banks are working on their own versions of this type of Cryptocurrency that they intend to eventually issue (Ozilli, 2022; Bank for International Settlements, 2021).

In recent years, the use of cryptocurrencies has expanded beyond their original purpose as a medium of exchange. Decentralised Finance (DeFi) platforms built on blockchain technology have emerged, offering financial services such as lending, borrowing, and trading without the need for institutional intermediaries (Drescher, 2018). This has the potential to revolutionise traditional finance by offering financial services to those who are underbanked or unbanked and enabling greater financial inclusion (Ayarci and Birkan, 2020; Benedetti and Kostovetsky, 2018).

Cryptocurrencies are based on blockchain technology and thus part of the recent developments of the internet that are widely known as WEB3 (Chohan, 2022). Web1 refers to the early days of the internet where the audience read information off web pages. This period was then followed by Web2,

where the audience was now able to also write and post information in text-, audio- and video-formats (Garon, 2022; Voshgmir, 2020). Web3 does the same but adds a layer of trust by adding blockchain technology to the internet (Zarrin et al., 2021). This technology stores information on a ledger. That ledger is publicly legible. It cannot be altered. Therefore, it is able to make digital goods unique and hence rare and declares ownership in the digital sphere (Chohan, 2022; Zarrin et al., 2021).

Cryptocurrencies use cryptography to secure their transactions and control the creation of new units. They operate independently of a central bank and are decentralised, meaning they are not issued or backed by any governmental or economic institution. The first cryptocurrency, Bitcoin, was created in 2009 by an anonymous person or group of people using the fictitious name Satoshi Nakamoto (Narayanan et al., 2016). Cryptocurrencies use decentralised ledger technology known as blockchain to record transactions. A blockchain is a public ledger that is distributed across a network of computers, allowing for a secure and transparent record of all transactions (Nakamoto, 2008). “A blockchain is a shared digital ledger, which is maintained by a group of nodes that are not fully trusted by each other” (Dinh et al., 2017; Huimin et al., 2019).

Once a transaction is verified and added to the blockchain, it is considered permanent and cannot be altered (Buterin, 2014). The preservation of singular coin ownership data is conserved within a computerized registry fashioned with robust cryptographic measures, thereby safeguarding transactional data, regulating coin generation, and validating coin ownership transfer.

Cryptocurrencies, while offering the potential for high returns, are also widely regarded as risky investments due to their highly volatile nature and lack of regulation (Doszhan et al., 2020). Cryptocurrencies are known as risky investments in the open markets, among practitioners, investors and journalists. That is so because of the opaqueness and novelty of the technology as well as exchange rate risks and price volatility risks (Baumöhl, 2019; Van Alstyne, 2014; Kristjanpoller and Bouri, 2019; Baur et al., 2018). The value of cryptocurrencies can fluctuate dramatically in short periods of time, with some experiencing significant declines in value over the course of a day or even an hour (Dhyrberg, 2016). The cryptocurrency market is highly speculative, with the vast majority of investment being driven by speculation rather than the underlying value of the tokens themselves (Haykir and Yagli, 2022). This speculative investment can further contribute to the high volatility of the market, as market sentiment can change quickly and cause significant declines in value (Haykir and Yagli, 2022).

There are four factors that influence the value of a cryptocurrency, these being oil and commodity prices, bans on cryptocurrencies in various markets, the opinions of opinion leaders, price manipulation of investors and information noise based on hype (Doszhan et al., 2020). Additionally, the energy consumption required to maintain the integrity of blockchain systems and its security is a significant factor (De Vries, 2018).

An additional source of risk is their lack of regulation control and volatile estimation of value have caused scepticism or even alarm among traditional financial institutions and governments (Doszhan et al., 2020; Ofir and Sadeh, 2019; Zetzsche et al., 2017). The regulatory environment surrounding cryptocurrencies is still developing, with governments and financial institutions grappling with how best to regulate this new asset class. One of the primary concerns is their potential for illegal activities, such as money laundering and the financing of terrorism, due to their anonymous nature and lack of government oversight (Trozze et al., 2022). The absence of regulation in the cryptocurrency market adds an additional risk, as there is little to no protection for investors in the event of fraudulent activities or market manipulation (Trozze et al., 2022). The anonymity of transactions in the cryptocurrency market also raises concerns about criminal activities, such as money laundering and the funding of terrorism, which can negatively impact the reputation and value of cryptocurrencies (Trozze et al., 2022).

Despite the risks and concerns of cryptocurrencies, their popularity and market capitalization have continued to grow, with the total market capitalization of all cryptocurrencies reaching hundreds of billions of dollars as of 2021 (Narayanan et al., 2016). The emergence of digital currencies has gained popular acceptance due to their ability to facilitate swift and effective payment systems via a decentralised distributed ledger, free from the influence of political machinations or governmental oversight. (Corbet et al., 2020).

The popularity of cryptocurrencies, especially Bitcoin, has skyrocketed in recent years and reached new heights during the COVID-19 pandemic. The pandemic has created economic uncertainty and instability, leading many investors to seek alternative investment options (Sarkodie and Owusu, 2022). The pandemic has led to a surge in online commerce and digital transactions, providing further momentum for the growth of cryptocurrencies (Sarkodie et al., 2022). The pandemic has accelerated the shift towards digital financial services, and cryptocurrencies have become a popular option for online transactions due to their fast and secure nature (Hong and Yoon, 2022). Cryptocurrencies, with their decentralized and secure nature, have become an attractive option for many. The decentralization of cryptocurrencies eliminates the need for intermediaries and central authorities, which provides greater security and control for investors (Narayanan et al., 2016). This is particularly important during times of economic instability, when trust in traditional financial institutions can be lost. Additionally, cryptocurrencies are often seen as a hedge against inflation, as the supply of some cryptocurrencies, such as Bitcoin, is limited and predetermined (Böhme et al., 2015). In conclusion, the rising popularity of cryptocurrencies can be attributed to their capacity to provide a secure and swift alternative investment option in times of economic instability, their potential as an inflation-hedge, and their decentralized nature, thus eliminating the requirement for go-betweens and central authorities in online transactions.

Furthermore, the increasing adoption and recognition of cryptocurrencies by governments, institutions, and businesses has further increased their popularity (Vigna and Casey, 2015). This

recognition has provided greater legitimacy and stability to the market, making cryptocurrencies a more attractive option for investors. Moreover, the increasing availability of crypto exchanges and wallet services has made it easier for individuals to invest in and store cryptocurrencies, further boosting their popularity (Bonneau et al., 2015). On the 4th of January, 2021, the largest banking regulator in the United States, the US Treasury OCC, also known as "The Office of the Comptroller of the Currency", issued new guidance that permits federally regulated banks to use stablecoins and public blockchains as a settlement infrastructure within the United States financial system to conduct payments (The Office of the Comptroller of the Currency, 2021). The US Treasury OCC's decision magnifies the significance of public blockchain based Initial Coin Offering (ICOs) as successful ICO projects can now be used officially as a store of and for the purpose of transferring value, similarly to regular money. The significance of cryptocurrencies in general and ICOs specifically has increased due to the Corona crisis, that has accelerated the difficulties of investing in and paying with regular currencies.

1.1.2. What is an ICO project?

An effective way to finance the development of the cryptocurrency innovation is through a crowdfunding project. Initial-Coin-Offering (ICO) projects use crowdfunding as a means of financing themselves. An ICO is a type of crowdfunding campaign project in which a company creates and sells tokens, typically in exchange for Ethereum or Bitcoin, to raise capital for its project or business (Schückes and Gutmann, 2021). These tokens are traded in a way that is similar to stocks and provide the holder with a share in the ownership of the project evaluation.

The purpose of Initial-Coin-Offering projects (ICOs) is to raise funding for new cryptocurrencies; however, they do it by circumventing typical modes of fiat funding, institutional investors and institutional analysts (Domingo et al., 2020). This is unlike traditional stock trading initiatives. ICOs are a start-up entrepreneurial financing project-financing by means of crowdfunding in the early project stages (Domingo et al., 2020). The purpose of an ICO is to raise funding for a new cryptocurrency that is yet to be created. This is done by speaking directly to the investor providing them directly with information about the technology and its potential value. ICOs interact directly with the crowdfunders to circumvent typical modes of funding, such as institutional investors in stock markets and banks, in an effort to avoid regulatory restrictions (Domingo et al., 2020). Successfully completed ICOs are often launched on markets where they are publicly traded, after they have raised their funding.

ICOs provide several benefits over traditional forms of financing, such as banks or institutional investors. Firstly, ICOs allow companies to reach a global audience of potential investors, as the internet enables a company to reach investors anywhere in the world (Schückes and Gutmann, 2021). Secondly, ICOs can provide a faster and less bureaucratic way of raising capital, as they typically have fewer legal and regulatory requirements than traditional forms of financing (Schückes and Gutmann, 2021). Additionally, ICOs provide a new way for investors to invest in and support innovative projects,

with the potential for high returns on investment (Ayarci and Birkan, 2020; Benedetti and Kostovetsky, 2018). This is because the tokens issued in an ICO are similar to stocks, providing the holder with a share in the ownership of the company or project (Fisch and Momtaz, 2020). This allows investors to invest in and support projects they believe in, and potentially benefit from their success (Schückes and Gutmann, 2021).

ICOs may aim to establish Payment Cryptocurrencies, Stablecoins, Media and Entertainment Tokens or similar projects. Central Bank Digital Currencies are however out of the realm of ICOs since these are officially issued by their respective governments.

ICOs "*can offer different financial and non-financial rights and rewards*" (Chiu and Geene, 2019). For example, non-financial rewards can be a better way to transmit information or keep track of items and events. The ICO project's goal is to create a ledger that stores value, transmits value, or verifies the existence of exchange of value in a transaction so the main financial benefit of the ICO product is the reliability of the proof guaranteed by blockchain technology.

However, ICOs also carry some risks. Firstly, the lack of regulation in the ICO market can lead to a higher risk of fraud and scams. This is because there is little to no oversight of the process and companies can easily issue tokens without any real underlying value (Schückes and Gutmann, 2021). Secondly, the value of tokens can be volatile and subject to fluctuations, making it difficult for investors to determine the true value of their investment (Masiak et al., 2019).

Further, ICOs can be opaque and can harbour various forms of uncertainties. Blockchain technology is still new and changing. ICOs are performed at early and uncertain development stages. Therefore, the cryptocurrencies produced by ICOs can potentially be unusable after the financing of the ICO is successfully completed. The ICO project can only promise a potential reward (Fisch, 2019; Fisch and Momtaz, 2020). Project initiators tend to reveal little information to interested potential investors (Fisch, 2019; Momtaz, 2020a, 2020b). The outright nonexistence of regulation facilitates unethical behaviour and increases levels of uncertainty (Huang et al., 2020).

1.1.2.1.Definition of ICOs as multistakeholder, multidimensional[1], radical Innovation projects

Lill and Wald (2021) define innovation projects as independent temporal units that survive for more than 30 days, have an assigned, clear goal, a budget and a definitive deadline and are made up of project teams with a minimum of at least three members. Utterback (1994) defines innovation projects as projects that create, develop, and commercialise new product ideas. The development and implementation of new ideas create value for stakeholders and parent organisations/sponsors. Innovation projects tackle ill-defined problems requiring creativity to be solved, and their outcome is related to this problem (Mortati et al., 2023). A clear definition that suits the aims of this study is that Innovation projects are temporal initiatives that aim to bring novel or ameliorated processes, products, services or even business models to the marketplace (own definition).

According to the OECD (2005), innovation projects can take various forms and can be classified into different categories according to the type of innovation they produce, such as incremental, radical, or disruptive. Incremental innovations are modest improvements to existing products, services, or processes, while radical innovations represent significant breakthroughs that have the potential to fundamentally change the market. Disruptive innovations, in contrast, generate new markets by disrupting present ones. Schumpeter (1942) argued that innovation projects are characterised by "creative destruction", meaning that they replace old products, services, and processes with new and improved ones. This is especially relevant in today's rapidly changing business environment, where organisations must constantly adapt to new technologies, market trends, and changing customer preferences.

Innovation project managers must be able to balance the trade-off between taking risks and achieving the project's objectives, as well as effectively manage the multiple stakeholders involved in the project. This is true for every innovation project including ICOs. However, innovation types that are not radical usually happen within socio-technical systems that are regulated, both in terms of transactions and in terms of communication with the stakeholders. This is because innovation success was found to relate to the systematic decrease of decision-making uncertainty (Van Riel et al., 2004). The management of innovation projects is faced with challenges such as shorter product development cycles and constantly altering project requirements (Chin, 2004). The abilities to take risks and manage them are key contributors to success in innovation projects in general (Gurd and Helliar, 2017). Entrepreneurial mindset is key, and supervisors of innovation projects ought to attempt to set up a robust project environment in which self-organising teams can flourish and succeed.

Teams in innovation projects sustain their endeavours and coordinate the collaboration between various teams and the organisation, they ought to further employ interactive control in addition to belief systems (Lill and Wald, 2021). According to a study on the type of communication suitable for

innovation projects advising on brief and relevant communication e.g., succinct readability and short length have immediate and not direct effects on content performance, and their indirect effects are governed by the amount of highly skilled and low-skilled individuals that a content attracts (Hu et al., 2020).

ICOs clearly are radical innovative projects. They are temporal endeavours with the explicit sole aim of fundraising to develop and market a novel coin technology that can provide significant breakthrough in common commercial and investment problems of value exchange. This has been described in the section about crypto currencies. ICOs are arguably radical innovation projects due to their potential to introduce to the market a new way of financing that affect two areas, their use of blockchain technology that reduces risk in transactions, and their potential for providing new opportunities for investors. This dual financial/technical innovation ICOs provide an alternative to traditional forms of financing such as venture capital and angel investing (Schückes and Gutmann, 2021). ICOs allow entrepreneurs to raise funds for their projects and businesses through the sale of tokens to a global network of investors (Ayarci and Birkan, 2020; Benedetti and Kostovetsky, 2018; Manning and Bejarano, 2016; Momtaz, 2020a). This enables entrepreneurs to bypass the traditional gatekeepers of finance, such as venture capitalists, and reach a wider audience of potential investors (Schückes and Gutmann, 2021). Moreover, ICOs allow entrepreneurs to raise funds quickly, without having to go through the lengthy and bureaucratic process of securing traditional forms of financing (Schückes and Gutmann, 2021; Cerchiello et al., 2019).

Another radical innovation of ICOs is the use of blockchain technology (Campino and Brochado, 2022). The use of blockchain allows for greater transparency and security in the process of fundraising, as well as the creation of decentralised and autonomous organisations (Feng et al., 2019; Frankfurt School Blockchain Center, 2017; Zarrin et al., 2021). This can lead to increased trust among investors and more efficient and effective allocation of resources (Schückes and Gutmann, 2021).

The success of an innovation project depends on careful coordination of resources and the communication and negotiation between the project and its stakeholders, which is explained in the next section.

The definition of multidimensionality of crowdfunded projects comes from Zeng, Li, Wu and Xu (2014). They write that multidimensionality in crowdfunding projects comes from three dimensions , them being structural, relational and cognitive. The structural dimension refers to the network configuration. The relational dimension refers to the obligation, expectation and trust within the network. The cognitive dimension suggests the shared language and schema in the network (Zeng, Li, Wu and Xu, 2014). The author makes a footnote with this definition, and he repeated the footnote in the relevant places where the author mentions multidimensionality

1.1.2.2. .General Theory of Project Coordination

To summarize the discussion that follows, project coordination refers to the process of organizing and synchronizing the various activities, resources, and stakeholders involved in a project to ensure its successful completion. This involves overseeing the project's progress, facilitating communication between team members, and managing any issues or conflicts that may arise. Project coordination also involves developing and adhering to a project plan, including budget planning, related timelines, and the allocation of resources, to make sure that the project remains on track and meets its objectives. Overall, effective project coordination plays a crucial role in ensuring that projects are completed on time, within budget, and to the desired quality standards.

The innovation project has to be coordinated as an ecosystem of diverse and multiple stakeholders. This ecosystem can be broken down into various stakeholder groups. These stakeholders can comprise industry associations, universities, network organizations, government and non-governmental bodies, suppliers, knowledge brokers, contractors, private and public research institutions, competitors, financial partners, intermediate and end-users, specialized consultants, and organizations from other industries. (Van Lancker et al., 2016). Throughout all phases of an innovation project, the process should be open to these stakeholder groups with a range of feasible collective arrangements, in an effort to access their varied expert knowledge as well as other resources. The type of collaboration arrangement and openness between the project team and particular stakeholders depend on the characteristics of these stakeholders and the nature of interdependence between the two parties. As a general rule, a sizable heterogeneous network has a positive influence on the advancement of (radical) innovation (Van Lancker et al., 2016). Institutional influence and power - both formal and informal institutions - play a powerful influential role in the coordination of the ecosystem of stakeholders with usually quite explicit regulation in place.

In order to understand how innovation projects are coordinated, two aspects need to be looked at: (1) the activities in the project lifecycle phases and (2) the way the project teams coordinate their communication with the crowdfunders to establish a supportive relationship with them.

Lifecycles of innovation projects usually follow a linear phase-based approach. For example (Tidd and Bessant 2005) propose a framework for managing innovation projects. They include four key stages: idea generation, idea selection, development, and commercialization. In the idea generation phase, the project identifies and evaluate potential opportunities for the innovation. In the idea selection phase, they must evaluate the ideas based on their potential impact and feasibility. During the development stage, projects build and test prototypes to validate the idea. Finally, in the commercialization phase, projects launch the innovation to the market and scale it up. The lifecycle model is generic as it is supposed to relate to many different species of innovation projects however this model can be further honed into the specific circumstances of the particular project. Of the

innovation process phases, the three main ones are the phase of idea development, the subsequent phase of invention, followed by the phase of commercialization (Van Lancker et al., 2016).

The phase of idea development contains several activities. They include the identification of probable innovation sources, the generation of ideas that are innovative for the sake of making use of opportunities and trends. Another one of these activities is assessing the feasibility of said ideas and then choosing the most enticing ideas for continued advancement. The invention phase focuses more on techno-scientific facets. Facets that begin with project design, leading up to testing proof of concepts. They are then compacted in the phase of invention. The phase of commercialization includes the rather socio-economic phases that are aimed at end-user adoption. Examples include demonstration activities and constituting marketing strategies (Van Lancker et al., 2016).

1.2. Justification for this research

Despite their exponential growth and disruptive potential, academic research on ICOs remains fragmented, with limited focus on the intricate interplay of signals and cues within narratives presented during ICO campaigns (Kim and Croidieu, 2016; Lee et al., 2019).

Crowdfunded ICOs have experienced remarkable growth, attracting billions of dollars in funds and reshaping the landscape of fundraising (Fan-Osuala and Jank, 2018). In this context, the narratives presented by ICO projects play a pivotal role in capturing investor attention, establishing credibility, and conveying project vision (Giudici and Adhami, 2019). Understanding how signals and cues within these narratives influence investor behaviour and contribute to the unprecedented success of some ICOs while causing scepticism in others is of paramount importance to both entrepreneurs and investors (Ahmad et al., 2021).

The success of crowdfunded ICOs is inherently tied to the ability of project founders to craft compelling narratives that resonate with potential investors (Giudici and Adhami, 2019). However, despite its significance, the investigation into the underlying factors influencing investors' responses to signals and cues within ICO narratives remains limited (Benedetti and Ksotovetsky, 2018).

Economic Implications: The narrative elements within ICO campaigns often serve as vital indicators of project viability and potential return on investment (Ahmad and Kowalewski, 2021). By examining the economic implications of signals and cues in ICO narratives, research into signals and cues can provide valuable insights for entrepreneurs aiming to optimize their communication strategies to attract funding (Block et al., 2021). Moreover, understanding how these narrative elements impact investor risk perception and investment choices will empower stakeholders to make well-informed decisions in this high-risk investment space (Doszhan, et al. 2020).

Sociocultural Impact: The narratives of ICO projects often extend beyond the purely technical realm, resonating with broader themes and values (Jancenelle and Cavusgil, 2019). Investigating the impact of signals and cues on perceptions of ICOs and their potential to drive financial inclusion and foster various forms of change will contribute to a more comprehensive understanding of the transformative potential of crowdfunding in the digital age (Bao and Huang, 2017).

Regulatory Challenges and Opportunities: The narratives presented during ICO campaigns also have implications for regulatory considerations (Bank for International Settlements, 2020). Analysing how signals and cues can inadvertently contribute to misinterpretations (or potentially even deception) will inform the development of regulatory frameworks that safeguard investor interests without stifling innovation (Ofir and Sadeh, 2019). Addressing the regulatory challenges surrounding narrative elements in ICOs is vital to foster a transparent and trustworthy crowdfunding environment (Zetsche et al., 2017).

Identification of Investment Patterns and Trends: The study of signals and cues within narratives of crowdfunded ICOs can provide valuable insights into investment patterns and trends in the cryptocurrency sector (Zhang and Long, 2018). By analysing the types of narratives that resonate with investors and the factors that influence their investment decisions, this research can identify emerging trends and preferences within the ICO space (Yeh and Lee, 2019). Understanding these patterns can aid both entrepreneurs and investors in making informed choices, improving project success rates, and maximizing investment returns (Yadav, 2017).

Mitigation of Investor Risks: Investing in ICOs carries inherent risks due to the high volatility and lack of regulatory oversight in the cryptocurrency market. Analysing how signals and cues affect investors' risk perceptions and their willingness to participate in ICOs can help identify potential red flags and warning signs in ICO campaigns (Doszhan et al. 2020). A deeper understanding of signals and cues could lead to the development of risk mitigation strategies for investors and contribute to the establishment of best practices for entrepreneurs to enhance transparency and credibility in their narratives (Fisch and Momtaz, 202).

Assessment of Marketing and Communication Strategies: ICO narratives serve as powerful marketing and communication tools to attract investors and create a brand identity for projects (Ahsan and Baker, 2018). By examining the effectiveness of different narrative elements, this research can provide valuable guidance on crafting persuasive and impactful communication strategies. Entrepreneurs can use these insights to optimize their marketing efforts, ensuring that their projects reach a wider audience and stand out in the highly competitive ICO landscape (Kumar and Krishan, 2002).

Impact on Project Sustainability and Longevity: Effective storytelling within ICO narratives can not only influence the initial funding success but also impact the long-term sustainability of projects (Astrauskaite, 2018). Understanding how signals and cues shape the perception of a project's long-term viability and potential for growth can help predict its longevity in the cryptocurrency market. The

investigation of signals and cues can inform entrepreneurs about the importance of crafting narratives that align with their project's long-term goals and values (Chan et al., 2019).

Informing Blockchain Adoption Strategies: Beyond their fundraising aspect, ICOs are instrumental in promoting the adoption of blockchain technology and decentralized applications (Manning and Bejarano, 2016). Investigating how signals and cues in narratives impact perceptions of blockchain technology can provide valuable insights into the blockchain adoption process (Feng and Wong, 2019). This research can inform strategies to foster wider acceptance and integration of blockchain solutions, thereby unlocking the full potential of this transformative technology.

Policy Recommendations for Investor Protection: As the ICO landscape continues to evolve, regulators face challenges in ensuring investor protection while fostering innovation (Ajmani and Mokni, 2018). Analysing the impact of narrative elements, such as signals and cues, on investor decision-making can lead to policy recommendations that enhance investor protection measures in the ICO ecosystem (Ofir and Sadeh, 2019). Signal and cue research can contribute to the development of regulatory frameworks that strike a balance between supporting innovation and safeguarding investors' interests (Ajmani and Mokni, 2018).

Enhancing Transparency and Accountability: Transparency and accountability are essential components of a healthy and sustainable crowdfunding ecosystem (Daskalakis and Georgitseas, 2020). The examination of signals and cues within narratives could shed light on practices that promote transparency and build trust between entrepreneurs and investors. By encouraging more transparent communication practices, such research could contribute to a more accountable and trustworthy ICO environment (Bratspies, 2018).

Guidance for Future ICO Research and Practice: By laying the groundwork for an in-depth understanding of signals and cues within ICO narratives, such research can serve as a foundation for future studies in the field (Ceballos et. Al., 2017). It can inspire further research on specific narrative elements, communication strategies, and their impact on investor behaviour (Chen and Chen, 2020). Moreover, the insights gained from research into signals and cues can serve as a guide for future entrepreneurs and researchers in navigating the complexities of crowdfunded ICOs in the cryptocurrency sector (Czaja and Röder, 2021).

1.2.1. Overview of the Research Problem

The theoretical challenge in crowdfunding projects like ICOs, as recorded in research studies, is ***how projects can communicate their value proposition and risk to crowdfunders***. Communication between project teams and crowdfunders takes place in the form of online narratives, that are mainly qualitative information in the form of conversations to discuss the cryptocurrency value. Crowdfunders are a different type of investor, since they do not possess the necessary skills for evaluating specialised statistical and econometric information. Hence, they rely more on these narratives in order to make decisions regarding investments in any type of currency, thus studies targeting crowdfunding

investments have focused more on the analysis of these narratives and the way they influence the investment decisions of crowdfunders. Studies in crowdfunding projects have used academically produced dictionaries and applied them to crowd narratives from social media to explore which cues act as signals and what project investments are perceived positively or negatively. Crowdfunders in other types of crowdfunding projects use designated platforms and discuss their concerns in different social media. However, ICOs do not use crowdfunding platforms and their narratives tend to concentrate on the specific social media that the project teams use. Previous studies have investigated the occurrence of significant signals and cues in project narratives but have not correlated them with corresponding ones in the narratives of crowdfunders. Previous studies have also focused on other types of crowdfunding projects conducted through specialised platforms and social media but have not done so in the context of ICO projects where most communications happen on YouTube and not via platforms. Prior studies have also not tailored the dictionaries of signals and cues to fit ICO projects.

The practical challenge that ICOs face is to overcome the crowdfunders' fears from incurring losses since there is a crisis of trust with digital currencies. In the absence of regulatory trust (regulatory assurances that provide confidence to the public) it has been found, that in 2017, 78% of ICOs were fraudulent and 7% failed to deliver (Bratspies, 2018). It is estimated that since 2011 and by late 2017, 980'000 coins worth up to $15 billion have been stolen. Given the high failure rates of ICOs and stolen cryptocurrencies, trust, value-delivery and the belief in ICO projects is difficult to achieve, and therefore the product and the projects that belong to the rest of 15% do not have many chances of sponsorship.

To address this practical problem, academic studies in the ICO domain, or rather the currently sparse literature, focuses on analysing the content of whitepapers and certain discussion forums dedicated to digital currencies, such as Reddit, Bitcointalk, etc. However, ICO project crowds prefer to use the digital spaces where project teams release video and whitepapers information, to communicate impressions and decisions, The reason why a different study is required to understand ICO narratives comes from the findings from studies in User-Generated Content (UGC) – (Albrecht et al., 2019; Chanson et al., 2018; Chanson et al., 2020). These studies discuss that different social media platforms provide different structures, affecting the types of narrative expressions and therefore result in different uses of signals / cues. In addition, this previous research has not yet tapped into the YouTube narratives because they are much more difficult to harness data from than from other social media.

The ***theoretical challenge*** *and* ***research problem*** is how to achieve optimal coordination of the narrative signals and cues to achieve the project objective. Studies in other crowdfunding projects have looked into how projects communicate to the crowdfunder their value propositions. Borrowing

from this literature, ICO projects could coordinate their communication of their cryptocurrency value proposition, the potential for growth and its future value rewards by directly talking to crowdfunders.

However, the rising levels of investment in ICOs (Amsden and Schweizer, 2018) show a possibility that crowdfunders believe in the principle of the product and want to invest in cryptocurrencies. In their effort to find the right ICO to invest, crowdfunders need ways to identify questionable ones from the actual business opportunities. The research problem therefore is to locate the optimal way to coordinate crowdfunding projects through narratives.

The area of coordination through narratives falls into the realm of signals and cues within the narratives in Marketer Generated Content (project teams), but also User Generated Content (crowdfunders) as well as the relationship between both.

The use of signals and cues in crowdfunded projects is an area of research that has received attention from scholars in recent years **(Ahmad et al. 2021; Block et al. 2020; Chen and Chen 2020; Giudici and Adhami 2019).** The goal of this research is to identify the signals and cues that are most effective in attracting funding and support from potential backers in crowdfunding campaigns.

One example of this type of work is a study by Ethan R. Mollick, which was published in the Journal of Business Venturing in 2014. In this study, Mollick analysed the role of signals in crowdfunding campaigns, such as social proof, endorsements, and professional credentials. He found that these signals were important in predicting the success of crowdfunding campaigns, but that the specific signals that were most effective varied depending on the type of project and the platform being used **(Mollick, 2014).**

Another study on this topic was conducted by Venkat Kuppuswamy and Barry Bayus (2018), and was published in the Journal of Business Venturing. In this study, the authors examined the impact of visual cues in crowdfunding campaigns, such as the use of videos and images. They found that visual cues were an important factor in attracting funding, and that campaigns that included videos were more likely to be successful than those that did not (**Kuppuswamy and Bayus, 2018**).

The research in signals and cues in narratives is heavily skewed towards the project generated content and only regards the reactions about it from the crowdfunders **(Ahlers et al., 2015; Burtch et al., 2013; Allison et al., 2015)**. Firms should consistently convey numerous signals that communicate their numerous attributes, and these messages ought to conflict as little as is feasible (Li et al., 2022). Further research needs to develop to see the relationship between both sides of the narrative.

In summary, theoretical and practical challenges in crowdfunding projects, specifically in ICOs, involve effective communication of value proposition and risks to potential investors. Crowdfunders rely on online narratives to make investment decisions, making analysis of these narratives crucial. ICOs face a crisis of trust, with high rates of fraud and theft, and studies have focused on analysing whitepapers

and discussion forums. The challenge is to achieve optimal coordination of narrative signals and cues to achieve project objectives, with studies showing the importance of different social media platforms and the types of narrative expressions used. Previous research has identified effective signals and cues in crowdfunding campaigns, including social proof, endorsements, professional credentials, and visual cues, but these vary depending on the type of project and platform used. Overall, the use of signals and cues in crowdfunded projects is an important area of research that can help entrepreneurs and other project leaders to identify the most effective strategies for attracting funding and support. By understanding the signals and cues that are most appealing to potential backers, project leaders can increase their chances of success in crowdfunding campaigns.

1.2.2. Significance and contribution of the study

This is at a point in time where business transactions migrate into the digital space. The complex problem of coordinating business activities including projects via the digital space is now a priority in most organizations and industries. The significance of this study is to be found in both its practical as well as theoretical contributions.

1.2.3. Theoretical Contribution

This study contributes to the field of the coordination of innovation project management through narratives using signalling theory and reveals the relevance and prevalence of certain cues that are used by both project teams and crowdfunders, thus signalling project value and risk. Other studies correlate cues in crowdfunder narratives with funding levels and do not reveal which cues are actually shared by both project teams and crowdfunders and prevail in their joined communication therefore encouraging the investment desire of the crowd.

What sets this study apart from other studies is that it does not only look at Marketer Generated Content (MGC), but also investigates User Generated Content (UGC) as well as the relationship between both. It is necessary to understand both sides and their interaction to acquire a better understanding of what makes ICOs successful, but is currently still very much under researched, due to a focus on other types of signals and other types of media, but not on YouTube. The importance of the YouTube video platform is to be found in the fact that it is the world's 2nd most visited website (Statista, 2021), yet no relevant academic studies have been undertaken.

The Computer Aided Text Analysis identified the following dictionaries, containing the signals/ cues for this study that were echoed by the crowd in the official ICO project narratives. Innovativeness Dictionary – (McKenny et al., 2018), Proactiveness Dictionary (McKenny et al., 2018), Long Term Focus Dictionary (McKenny et al., 2018), Long Time Horizon Dictionary (DesJardine and Bansal, 2019), Short Time Horizon Dictionary (DesJardine and Bansal, 2019), Self-Direction Dictionary

(Neiman et al., 2016), Positive Words Dictionary (Loughran-McDonald Master Dictionary, 2010), Tone – Positivity Dictionary (Henry, E., 2008).

Further, the Computer Aided Text Analysis identified the following dictionaries with the least amount of signal/ cue matches that had to be eliminated: Risk Taking Dictionary (McKenny et al., 2018), Profitability Dictionary (McKenny et al., 2018), Security Dictionary (Neiman et al., 2016), Stimulation Dictionary (Neiman et al., 2016), Negative Words Dictionary (Loughran-McDonald Master Dictionary, 2010), Tone – Negativity Dictionary (Henry, E., 2008).

The Statistical Analysis found that negative signals/ cues play no important role as far as the investigated ICOs go. However, this study did find a prevalence of the use of positive signals/ cues that managed to make their way from the whitepapers through the video transcripts all the way into the comment sections. A significant amount of relevant signals/ cues were identified in the following dictionaries: Positive Words Dictionary (Loughran-McDonald Master Dictionary, 2010), Tone – Positivity Dictionary (Henry, E., 2008).

Further, right now there is no indication that the use of these successful signals and cues happened on purpose.

1.2.4. Practical Contribution

This research offers practical contribution to the teams of Initial Coin Offerings projects to more effectively communicate their value proposition in an effort to secure more funding. It could also help potential investors in the private and institutional realms to gauge ICO project outlook and private investor reactions.

With the findings of this study, project teams could prepare better whitepapers and video texts that could attract more funding from crowdfunders. Crowdfunders could gauge whether to invest into an ICO project or not. Influencers would be able to gauge and use the right signals/ cues to attract more followers and thus attain more reach through their social media channels. Institutional and other investors with an appetite for high-risk projects could get an instant ‘temperature read’ about the ICO or even an entire ICO-related asset class with this method. They would be able to assess public interest in these projects and factor this into their risk calculations.

1.2.5. Research question and objectives

There have been studies in other types of crowdfunding projects to address miscommunication of project value to crowds which have been partially successful in explaining the narrative strategies of other projects (see literature review). While there have been suggestions that narratives are an effective tool for influencing the beliefs of crowdfunders (Allison et al. 2017), the actual narrative cues are still unclear. As a result, there is no complete picture of why individuals choose to support or

sponsor a particular crowdfunding project. There is understanding of the construction of narratives to appeal to a potentially huge array of audiences instead of a finite number of stakeholders, and how they portray the goals of projects (Manning and Bejarano, 2017). The tales of Crowdfunding are stimulating contexts for the study of narratives. Crowdfunding campaigns are embedded temporally. They are generally initiated while projects find themselves "in-the-making" (Manning and Bejarano, 2017).

Specifically, in the realm of ICOs, no similar investigations into signals/ cues have been undertaken and hence there is a lack of theoretical knowledge regarding this important problem.

Therefore, the aim of the study is to address this lack of knowledge. In this way, the research can help to improve the success of ICO projects, through improved coordination of their narrative strategies. The study aims to contribute with the creation of correct dictionaries of signals and cues that are most used within the communication between successful ICO projects with the crowdfunders.

Research Question: Which are academically recognized dictionaries that contain the signals and cues, within ICO specific whitepapers, YouTube videos and crowd comments, used by successfully crowdfunded ICO projects to secure funding?

Objectives:

1. **Identify academically recognized dictionaries that include the narrative signals/cues being used by successfully funded ICO projects.**
2. **Identify if the crowd echoes the signals/ cues in official project narratives and when not.**
    a. **Identify the academically recognized dictionaries that contain the most echoed signals/cues.**
    b. **Eliminate the dictionaries with the least amount of matches since this will prove them to be of little use.**

3. **Identify if and when positive-tone signals and cues travel from the white papers through to the videos and then to the comments of the crowd.**

4. **Contribute to the literature of coordination of innovation projects / crowdfunding ICOs with a theoretical framework which shows the use of signals and cues.**

5. **Contribute to the studies of innovation projects / crowdfunding ICOs and specifically, to the methodologies they use. The contribution is the results of the experimental and testing techniques from this study.**

Identify when and if positive tone manages to travel from the white papers through the videos to the comments of the crowd.

1.3. Organization of the Thesis = Brief Preview of the Chapters

1.3.1. Chapter 2: Literature related to the topic of signals and cues in crowdfunding projects

The Literature Review analyses the definitions and themes of signals and cues as well as discussing how signalling theory applies to crowdfunding / ICO projects. The beginning is set out with Spence (1973, 1974, 2022) and continued by a total of 60 articles on narrative/ storytelling analysis. Jesson et al.'s (2001) approach to literature analysis was employed. An exploration of ICO specific signal/cue academic literature follows. Further, the role and distinctions of sentiment as well as a distinction between user generated content and marketer generated content followed.

Coordinating projects through the use of signals and cues has become increasingly important in recent years, particularly in the context of crowdfunded projects. Signals and cues can be defined as any indicators that convey information about the project, its progress, or its potential for success. These signals and cues can come in many forms, including professional credentials, endorsements, visual cues, and social proof, and they can be used to attract funding, build momentum, and coordinate the efforts of project team members.

One of the key benefits of using signals and cues to coordinate projects is that they can help to build trust and confidence among stakeholders. For example, a project leader who has relevant professional credentials, such as a degree in a related field or experience in a similar project, may be more likely to attract the support of potential backers. Similarly, endorsements from trusted third parties, such as industry experts or successful entrepreneurs, can help to build credibility and generate enthusiasm for the project.

Visual cues are another powerful tool for coordinating projects, particularly in the context of crowdfunding campaigns. Campaigns that include videos or images are often more successful than those that rely solely on text-based descriptions, as visual cues can help to bring the project to life and create an emotional connection with potential backers. In addition, visual cues can be used to showcase the progress of the project, such as through the use of charts, graphs, or timelines, which can help to build momentum and inspire confidence in the project's potential for success.

Social proof is another important signal that can be used to coordinate projects, particularly in the context of social media and online communities. Social proof refers to the concept that people are more likely to take an action if they see that others have already taken it. In the context of crowdfunding campaigns, this can mean highlighting the number of backers who have already pledged their support, as well as any positive reviews or testimonials that have been received.

Coordinating projects through signals and cues requires careful planning and execution, as well as an understanding of the target audience and the specific context of the project. For example, signals and cues that are effective in one industry or platform may not be as effective in another, and different

types of projects may require different strategies for coordinating team members and attracting funding.

Despite these challenges, the use of signals and cues in project coordination has become increasingly important in the modern business landscape, particularly as more and more projects are launched through crowdfunding and other online platforms. By using signals and cues to build trust, generate enthusiasm, and coordinate the efforts of project team members, project leaders can increase their chances of success and achieve their goals in a more efficient and effective manner.

This chapter provides the types of signals and cues dictionaries to be tested in the sample case ICOs and the types of correlations that need to be confirmed to adjust the dictionaries to ICO narratives.

1.3.2. Chapter 3: Research Methods

The Philosophy of this study is based on Critical Realism, and the study design is multiple, exploratory case studies (Gustafsson, 2017) performing Computer Aided Text Analysis (CATA), Chi-Square-Tests and Least Significant Difference (LSD) statistical analysis to test hypotheses relating signals and cues (belonging to specialized dictionaries) between Marketer Generated Content (from project team) and User Generated Content (crowdfunders). The hypotheses are generated from the literature review above, and the dictionaries of signals and cues are formulated through a trial of experimental cases before they are tested to a sample of 20 successful ICO projects. Textual narrative data was harvested from whitepapers and YouTube videos (Marketer Generated Content (from project team)) and crowdfunders' comments reacting to this information (User Generated Content) as well as YouTube videos by independent influencers (User Generated Content) and the crowdfunders' comments under these videos as well (User Generated Content).

1.3.3. Chapter 4: Results

A significant amount of relevant signals/ cues were identified in the following dictionaries: Positive Words Dictionary, Tone – Positivity Dictionary. The following dictionaries contain the signals/ cues for this study that were echoed by the crowd in the official ICO project narratives. Innovativeness Dictionary – Proactiveness Dictionary, Long Term Focus Dictionary, Long Time Horizon Dictionary - Short Time Horizon Dictionary, Self-Direction Dictionary, Positive Words Dictionary, Tone – Positivity Dictionary.

The study confirms positive tone correlations between signals/ cues in both the project (MCG) and crowdfunders; (UCG) narratives (e.g. specific whitepapers, Youtube videos and crowd comments) using the above dictionaries.

The eliminated dictionaries were the Risk Taking Dictionary, Profitability Dictionary, Security Dictionary, Stimulation Dictionary, Negative Words Dictionary and the Tone – Negativity Dictionary

1.3.4. Chapter 5: Discussion

With the exception of two hypotheses, all others were proven and the hypotheses testing confirmed the correct dictionaries. The results add to all three gaps in the literature review and also add to the field with the direction of which dictionaries to use in order to investigate ICO project coordination of stakeholder communication and also practitioners which types to signals and cues to use in their coordination with crowdfunders.

1.3.5. Scope and limitations of the study - Brief Overview of what this study does

The ICO project process covers two stages: the coin issuing stage and the coin listing stage. This study focuses on the first stage (called the *crowd sale stage*) because it is similar to other crowdfunding type of projects (Zetzsche et al., 2018). The lifecycle phases described in section 1.1.2.2 belongs to the issuing stage (Figure 1). Therefore, the study does not cover what happens after the issuing of the cryptocurrency during the listing stage between the project and the crowdfunders. The focus of this study is to understand what makes the ICO project successful in communicating with the crowdfunder stakeholder in order to fundraise and market the potential cryptocurrency. This study does not investigate what happens after the project. This is beyond of the scope of this study and should be addressed with another study.

The analysis includes narratives of successful ICO projects. These are ICOs that achieved to fundraise the targeted amount specified in their whitepaper / project plan at the specified time. This means that their narrative campaign was successful and that they achieved to establish enough trust with the crowdfunders to get backup to finish the project, therefore passed into Phase (4). Therefore, it is beyond of the scope of this study to investigate the signals and cues of unsuccessful ICOS.

A potential limitation but also potential strength of this study is the fact that the volume of data required an experimental round of testing dictionaries in three trial case studies. The limitation is that the dictionaries founded by other academic studies in signalling theory in crowdfunding projects were not tailored to fit the narratives of ICOs. This limitation however has led to one of the contributions of this study.

The use of LSD to test frequencies of correlation between emotional and other dictionaries in ICO narratives proved a successful strategy, however there would be a limitation in terms of performing an inductive analysis to understand the context of these correlations in more depth and explain why they happen. However, this method of analysis satisfies the **purpose of this study to identify** the signals and cues used most frequently by both project teams and crowdfunders in the MGC and UGC media of successful ICOs. Understanding the contextual factors to explain their occurrence should be another subsequent follow up study.

1.4. Introduction: Summary

The background of the study is a radical innovation called cryptocurrencies. Cryptocurrencies are a topic of increasing debate, because they represent a truly radical advancement in the manner of value exchange within a business context. It is possible that cryptocurrencies could evolve into a highly disruptive innovation that would offer a fundamentally alternative way to invest, by bypassing the existing centralised system of economic and monetary control that has dominated markets until the present time.

It becomes imperative to examine the question of how cryptocurrencies are actually created. In order to shed light on this issue, this study analyses the coordination of specialised projects known as an "Initial Coin Offering" (ICO), which are the vehicle in the fundraising and the marketing of cryptocurrency at its initial, coin issuing stage of creation.

ICO projects are multistakeholder, multidimensional[2], radical innovation projects with four lifecycle phases and they are coordinated through constantly communicating the project plan (whitepaper) and the potential value and use of the cryptocurrency. They are a type of projects specialized in crowdfunding for cryptocurrencies. Their coordination is done by organizing information between whitepapers and YouTube videos (Marketer Generated Content (from project team)) and crowdfunders' comments reacting to this information (User Generated Content). This important information is carried through specific signals and cues within their respective narratives. Previous studies have investigated the occurrence of significant signals and cues in project narratives but have not correlated them with corresponding ones in the narratives of crowdfunders. Previous studies have also focused on other types of crowdfunding projects conducted through specialised platforms and social media but have not done so in the context of ICO projects where most communications happen on YouTube and not via platforms. Prior studies have also not tailored the dictionaries of signals and cues to fit ICO projects.

The aim of this study therefore is to identify the correct dictionaries that contain the signals and cues, used within successful crowdfunded ICO narratives, as found within Marketer Generated Content (project teams), but also within User Generated Content (crowdfunders' comments) (Research Question) and the objectives are to identify already validated dictionaries that suit ICOs, test and confirm the hypotheses posted by the literature on crowdfunding projects using signalling theory and adjust the dictionaries to the ICO projects.

The method employs a sample of 20 a successfully completed ICOs and by a first phase of three experimental cases to identify the dictionaries, the hypotheses are tested in the sample using these dictionaries and derives to the adjustment of a new set of dictionaries which can be used by theoretical studies for further research and by practitioners to coordinate their ICO communication.

This contribution adds to both the corpus of the crowdfunding project literature but mainly to the still emerging domain of studies in ICO radical innovation projects.

2. Chapter 2: Literature Review

This part of the thesis looks specifically at the literature on narrative strategies and interrogates the studies in crowdfunded projects, which look specifically at the narrative strategies in terms of use of signals/ cues and the response of crowdfunders in terms of support to the project.

Definitions

Cues are specific snippets within the narratives that signal the reliability and risk of the project and aim to subconsciously convince crowdfunders and reach funding goals.

Within a market, signals are actions or attributes of individuals which, on purpose or by coincident, change beliefs of or transfer information to, other market participants (Spence, 1974).

Signalling theory (Spence, 1973, 1974, 2002) explains why signals are sent out and how they impact processes and decision-making.

Signals are words or phrases that convey certain meanings or characteristics, such as trustworthiness, expertise, or innovation. Cues are indicators that suggest a certain outcome or behaviour, such as intention to purchase or likelihood of success. Researchers use signal and cue dictionaries to identify and quantify these signals and cues in large datasets, which allows them to test hypotheses, make predictions, or draw conclusions about the phenomenon they are studying.

2.1. What is ICO project coordination?

Initial Coin Offerings (ICOs) have tokens issued to investors in exchange for funding (Sapkauskiene and Pakėnaitė, 2021; Cong and Liao, 2021; Ali and Vlaslov, 2017). The process involves several phases, including the creation of a white paper, token design and issuance, marketing and investor outreach, the token sale, and listing on exchanges (Burns and Moro, 2018; Lahajnar and Rožanec, 2018). Figure 1 gives an overview of the main phases.

The lifecycle process of an ICO project involves these four phases: Phase (1) the preparation of the technology blueprint and the creation of a whitepaper that outlines the details of the project plan, including its goals, objectives, and the distribution of tokens. In Phase (2) this white paper/project plan is distributed to potential investors, who can then decide whether to invest in the project. Phase (3) typically lasts for a specified period of time, during which investors can purchase tokens. Phase (4) is closure or continuation. If the target amount of funds is raised within the specified time, the project will go ahead as planned. If the target is not reached, the funds are returned to investors.

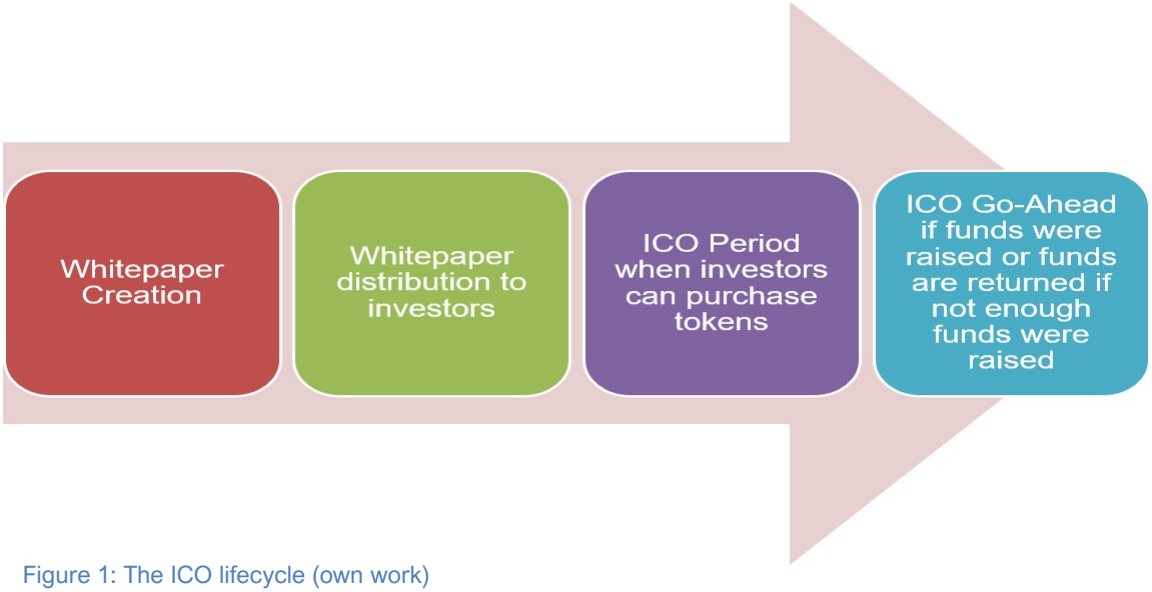

Figure 1: The ICO lifecycle (own work)

The first phase of an ICO involves the creation of a whitepaper that outlines the details of the project. The whitepaper typically includes a description of the project, its goals and objectives, technical details, and the distribution of tokens. The whitepaper is a critical component of the ICO process, as it provides potential investors with the information, they need to make an informed decision about investing in the project. The whitepaper must be well-written and transparent, providing a clear explanation of the project and its objectives (Block et al., 2021; Ayarci and Birkan, 2020).

In Phase (2) a round of significant stakeholder communication begins. Once the whitepaper is complete, it is distributed to potential investors – the crowdfunders'. This can be typically done through social media, email campaigns, and other marketing channels. However, ICO project teams favour YouTube videos where communication can be direct, simplified, asynchronous and be distributed at a vast volume. The goal is to reach as many potential investors as possible, in order to maximise the chances of a successful ICO. The whitepaper should be easily accessible to attract a wide investor base (Thies et al., 2021; Yadav 2017; Chen, 2019).

The ICO Phase (3) is a defined period of time during which investors can purchase tokens. The duration of the ICO period is typically 2-4 weeks, and it is usually fixed. The tokens are typically sold at a discount during the ICO period, in order to incentivize investors to purchase them. The ICO period is critical to the success of the ICO, as it is during this time that the majority of funds are raised (Ayarci and Birkan, 2020).

The token sale is the main milestone of the ICO, where crowdfunders can purchase tokens using cryptocurrencies, and the smart contract code ensures that tokens are automatically issued once the cryptocurrency is received (Ali et al., 2017; Chang et al., 2019). Smart contracts are computer programs. They execute the terms of a predetermined contract automatically. But the smart contract does so only when priorly agreed upon conditions are present and met. Smart contracts are useful when it comes to facilitating, authenticating, and enforcing the ongoing negotiation or execution of a

contract (Szabo, 2018). After the token sale, tokens are listed on cryptocurrency exchanges, providing liquidity to the tokens and helping establish their value (Ali et al., 2017).

Phase (4) is closure or continuation. If the target amount of funds is raised within the specified time, the project will go ahead as planned. The target amount is the minimum amount of funds required for the project to be launched successfully. If the target is not reached, the funds are returned to the crowdfunders'. The target amount is typically determined by the project team and is based on the estimated cost of developing and launching the project (Ayarci and Birkan, 2020, Yadav, 2017).

From the above description, ICO projects are coordinated in particular ways. Effective planning in ICOs therefore requires a comprehensive understanding of the cryptocurrency market, a flexible approach to changing market conditions, and a focus on security to mitigate risk. However, coordinating the ICO involves communication with a large range of stakeholders based on a decentralised and transparent governance model (Zutshi, 2021). A framework for coordinating ICO projects should take into account the specific demands of communicating to a crowd of stakeholders. This is a significant departure from traditional fundraising methods, such as initial public offerings (IPOs), where the ownership and control of the company information is centralised, and the decision-making process is hierarchical.

However, for ICO teams to achieve such a model of coordination they have to interact directly with crowdfunders to circumvent typical modes of funding, such as institutional investors in stock markets and banks, in an effort to avoid regulatory restrictions (Domingo et al., 2020). Successfully completed ICOs are often launched on markets where they are publicly traded, after they have raised their funding.

It is an established practice of traditional investors to resort to technical or fundamental analysis when estimating its potential (Daskalakis and Georgitseas, 2020). However, when it comes to new ICO projects, no historical data is available to do so. All potential crowdfunders have is the whitepaper with value estimations and what the narratives between project teams and potential crowdfunders' communicate. Therefore, crowdfunders' only means of opportunity identification is the communication they get from the ICO project team in the form of a white paper and eventual feedback streams (e.g. Youtube, Instagram, Twitter etc.) (Ayarcı and Birkan, 2020). Their reactions to the feedback stream can reveal the levels of trust that project communication has achieved and the crowdfunders' intention to support it.

Therefore, the ICO project needs coordination of the communication of the type of value their cryptocurrency could offer, the potential for growth and its future value rewards it offers by directly talking to crowdfunders. The success of the ICO project in securing sponsorship by the crowd will determine the completion of the technology and therefore the successful attainment of sponsorship by the crowd will determine whether the actual innovation will be developed or not.

The whitepaper outlines the details of the project, including its technical aspects, market opportunity, and financial model, serving as a roadmap for the ICO (Samieifar and Baur, 2021). The project team determines the number of tokens to be issued, the token price, and the token distribution among investors, and the smart contract code for the token is created and tested (Chiari et al., 2018). Marketing efforts often involve a variety of channels, such as social media, online advertising, and events, and the project team reaches out to potential investors through a network of contacts and intermediaries (Ahsan et al., 2018).

2.2. Selection of literature and method of analysis

The procedure followed was based on the approach described by Jesson et al. (2011). They listed general steps as to how to conduct a systematic review: searching for information in a systematic way; judging the right sources and selecting them; and creating themes and synthesising them to arrive to gaps, further avenues and constructs.

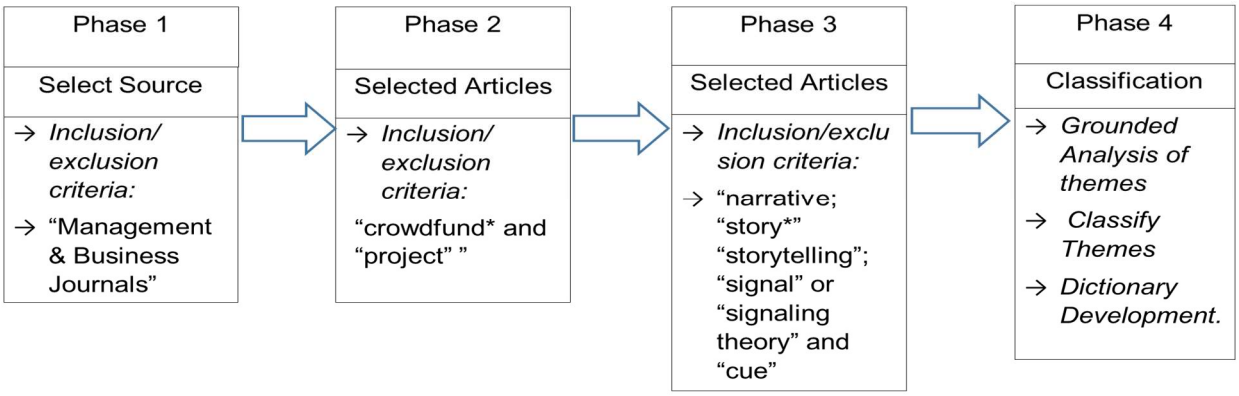

Figure 2: The procedure followed for the review (own work)

The first phase (searching for sources: journals) was to decide on the inclusion/exclusion criteria to look for and select the right sources. The review uses only peer-reviewed academic articles and not grey literature. The researcher collected articles using the Scopus database since it is the largest one and covers most academic journals that are of interest (Entrepreneurship, Business Venture, Economics, Project Management and Organizational Theory). Articles were included only if they were published in Business and Management Academic Journals.

The second phase (judging the right sources and selecting them) was to download from the database articles with the keywords "*crowdfund**" and "*project*" in title, abstract, keywords and text. Manual cleaning of the findings discarded articles not relevant to business, economics or management areas and journals and articles that did not investigate crowdfunding extensively but rather used it in passing.

The third phase was to find the articles that take narrative or storytelling approaches in two ways. Firstly, the same using exclusion/inclusion criteria using keywords such as *"narrative*"* or "*stor**" and/or "*storytel**" in the title, keyword, abstract or/and text. Secondly, using keywords "*signal*" or "*signaling theory*" and "*cue*" in the title, abstract and/or text. Again, using manual cleaning discarding irrelevant articles that haphazardly use these keywords without proper investigation. The process resulted in 60 articles.

In the fourth phase (synthesis of dictionaries), the cues are gathered and synthesised in three categories to start developing language dictionaries to use in analysis.

In short, the methodology used in the literature analysis and subsequent procedure is based on a systematic review approach, where sources were searched and selected based on specific criteria and keywords. The sources used were peer-reviewed academic articles from business and management journals and only articles relevant to business, economics, and management areas were included. The process resulted in 60 articles, which were then synthesised into three categories to develop language dictionaries for analysis. The last part of the text discusses the most important publications based on author citation ranking.

The next part describes the literature in terms of the most important publications (author citation ranking).

2.2.1. Articles in signals/cues in crowdfunding projects

There is a large body of literature in terms of peer-reviewed journal articles in crowdfunding (433) in just 9 years (2010-2019). From this body of literature, 203 directly refer to projects (in contrast to the rest that refer to permanent entrepreneurial firms), from which 60 articles use narrative/storytelling analysis, incorporating signalling theory and cue utilization in narratives. Figure 3 below presents the map of the literature that was selected.

These 60 articles are the set that are directly relevant to our focus on the crowdfunding practices in projects taking a narrative perspective in order to explain the engagement of crowdfunders and the acquisition of resources by projects. This section will display the descriptive characteristics of these articles and the next section is detailing the themes that arise from grounded thematic analysis and the gaps that are relevant to relationality research.

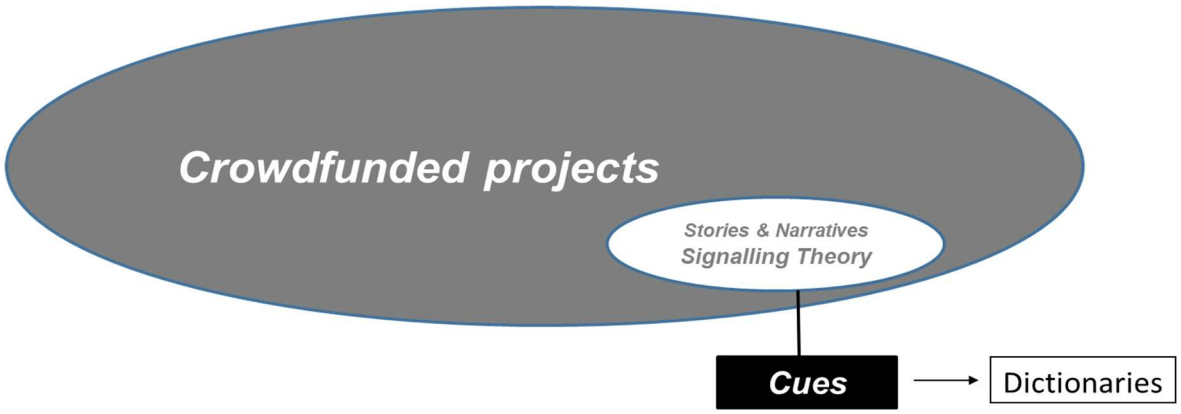

Figure 3: Mapping of the reviewed literature (own work)

The studies look into "social language" that focuses on social processes to create empathy with a targeted audience (Toma and D'Angelo, 2015) or to invoke a particular perception, feeling or reaction.

This section gives an overview of how narratives, signals and cues are defined and described in these articles.

Narratives are a representation of "accounts of events", forming a set of stories (Dalpiaz et al., 2014; Snelson, 2016) or "constituted of human understanding [as] integral to meaning-making, identity building and purposeful acting" (O'Connor 2002; Snelson, 2016; Wuillaume et al. 2019). In other definitions, narratives act as episodes or descriptions that compile a story plot, a means for putting together details about ideas and a structure for conveying them to a broader audience (Barry and Elmes, 1997; Deuten and Rip, 2000; Wuillaume et al., 2019). Narratives are used as correct depictions of past events while constructing trustworthy claims about upcoming events, credibly connecting these two dominions together (Abbott, 2008; Davis, 1999; Pennebaker, 2011; Wuillaume et al., 2019) and signal information to potential backers about the qualities of the project, and the manner in which narratives are written may either improve or diminish the signals' efficacy. Entrepreneurial narratives are regarded as composed throughout a continuum, from rather neutral to increased emotional content, in accordance with the audience's attitude structure and circumstances (Wuillaume et al., 2019).

The use of "**signals**" and "**cues**" in narratives is somewhat unclear in the literature. One definition of **signals** is "activities or attributes of individuals in a market which, by design or accident, alter beliefs of or convey information to, other individuals in the market" (Spence, 1974; Koch and Siering, 2019). Signals convey information embedded in the narratives that requires interpretation by the receiver (Connelly et al., 2010). When faced with imperfect information, signals can lessen worries of uncertainty (Connelly et al., 2010; Spence, 2002). Signalling theory (Spence, 1973, 1974, 2002) explains why signals are emitted and how they impact processes and decision making (Koch and Siering, 2019). Signalling theory research finds that funding success cannot just be understood in unrelated independent elements. Information is influenced by other bits of information as well as the

environment (Arthurs et al., 2009; Connelly et al., 2010; Gulati and Higgins, 2003; Koch and Siering, 2019). The source sending the signal is of great relevance as well (Gulati and Higgins, 2003; Koch and Siering, 2019).

Cues are not clearly defined in the crowdfunding literature and are often used with signals interchangeably. However, they seem to be narrow bits of information (a.k.a. words) that create a mental or emotional reaction in the receiver. Cues are nonverbal or verbal. External or internal events that operate as signals for an organism which, in turn, affect behaviour and learning (own definition). Zhou, Burgoon, Nunamaker and Twitchell (2004) found that linguistic cues can be derived from texts and explore the emotionality expressed or the diversity of the employed vocabulary. According to Zhang and Chen (2019), linguistic cues may stimulate the audience's interest and invigorate their motivation to act. Linguistic cues can improve results or put differently: Entrepreneurs may make increasing use of intrinsic cues, emphasizing the role of backers, while at the same time somewhat reducing the number of offered rewards. Therefore, the use of cues may be a cost-effective way for entrepreneurs to hit their intended funding goals. However, there is work on visual and verbal or other nonverbal cues as well (Anglin et al., 2018; Kaminski and Hopp, 2019) but this is rather limited and often tied to the interaction with written cues.

Crowdfunding projects use signals and cues to communicate important information to potential backers and investors. These signals and cues can help to build trust, generate interest, and attract support. Here are the types of signals and cues in crowdfunding projects as found in the literature:

- **Project Description**: The project description is a key signal in crowdfunding projects. It is the main way that project creators communicate the purpose, goals, and scope of the project to potential backers. A clear and compelling project description can attract support and build credibility (Belleflamme et al., 2014).
- **Rewards**: Rewards are incentives that project creators offer to backers in exchange for their support. Rewards can range from small tokens of appreciation, such as a thank-you note, to more substantial rewards, such as a pre-order of the product or a personal meeting with the creator. The rewards offered can be used to signal the value proposition of the project (Belleflamme et al., 2014).
- **Social Proof**: Social proof is a cue that signals the popularity and credibility of a crowdfunding project. Social proof can take many forms, including the number of backers, the amount of funding raised, and positive reviews or comments from backers. Social proof can be used to generate interest and attract new backers (Gerber et al., 2012).
- **Project Video**: The project video is a powerful signal in crowdfunding projects. It allows project creators to communicate their passion and enthusiasm for the project and to showcase key features and benefits. A high-quality project video can be used to build trust and generate interest (Belleflamme et al., 2014).

- **Project Updates**: Project updates are signals that communicate progress and milestones in the crowdfunding project. Regular updates can be used to build engagement and maintain interest among backers. Updates can include news about new features, partnerships, or funding milestones (Gerber et al., 2012).
- **Milestone Signals**: Milestone signals are signals that indicate that a project has reached a significant point in its development or has achieved a specific goal or objective. These signals can be used to track progress, communicate success, and motivate team members. For example, completing the design phase of a software development project can be a milestone signal that the project is on track (Pinto and Slevin, 1988).
- **Performance Metrics**: Performance metrics are signals that measure a project's performance in terms of time, cost, scope, or quality. These signals can be used to identify areas for improvement, track progress, and communicate with stakeholders. For example, tracking the number of defects in a software application can be a performance metric that indicates the quality of the product (Kerzner, 2017).
- **Risk Signals**: Risk signals are signals that indicate that a project is facing potential risks or issues that could impact its success. These signals can be used to identify and manage risks, communicate with stakeholders, and take appropriate actions. For example, identifying a delay in a critical path activity can be a risk signal that requires mitigation (Heldman, 2018).
- **Communication Cues**: Communication cues are cues that facilitate communication between project team members, stakeholders, and other parties involved in the project. These cues can be used to improve collaboration, resolve issues, and manage expectations. For example, using a project management software tool to share project documents and updates can be a communication cue that helps keep everyone on the same page (Lock, 2007).
- **Stakeholder Signals:** Stakeholder signals are signals that indicate the needs, expectations, or concerns of project stakeholders. These signals can be used to manage stakeholder engagement, build trust, and address issues before they become problems. For example, a stakeholder expressing concern about the project timeline can be a signal that requires attention (Cleland and Ireland, 2002).
- **Updates**: Updates are written signals that communicate progress, milestones, and news about the crowdfunding project. Regular updates can be used to build engagement and maintain interest among backers. Updates should be informative and transparent, and should include new features, partnerships, or funding milestones (Gerber et al., 2012).
- **Comments and Reviews**: Comments and reviews are written cues that signal social proof and credibility. Positive comments and reviews from backers can be used to build trust and attract new supporters. Project creators should actively respond to comments and reviews to signal responsiveness and engagement (Gerber et al., 2012).
- **FAQs:** FAQs are written signals that communicate important information about the crowdfunding project. They should address common questions and concerns that potential backers may have

and should be clear and concise. FAQs can be used to signal transparency, credibility, and responsiveness (Belleflamme et al., 2014).

2.2.1.1.ICO Signals/Cues

In ICO projects, signals and cues are used to communicate important information about the project to potential investors and stakeholders. Here are the types of signals and cues used in ICO projects according to the literature:

- **Team Members**: The team members involved in an ICO project can be a cue that signals the credibility and expertise of the project. The experience and track record of the team members can be used to build trust and confidence in the project (Kshetri, 2018; Ayarci and Birkan, 2020). The Development Team, Marketing Team, Friends and relatives, Sales Team in themselves are signals that influence ICO investment decisions (Ayarci and Birkan, 2020).
- Founders: The reputation of founders, the overall experience of founders in blockchain and the experience of founders in the sector of their ICO are signals that influence ICO investment decisions (Ayarci and Birkan, 2020)
- Bulut (2022) looked at signals such as the **prolongation of the funding period** and offering **bonuses**.
- **Social Media Presence**: The social media presence of an ICO project can be a signal that communicates the project's visibility and community support. A strong social media presence can be used to generate buzz and attract potential investors (Kshetri, 2018). The use of Twitter, LinkedIn, Slack, Reddit and the Bitcoin Forum are signals that influence ICO Investment decisions. (Ayarci and Birkan 2020).
- **Token Metrics**: Token metrics such as the total number of tokens issued, token distribution, and the price of the token can be used to signal the value proposition of the project. These metrics can be used to communicate the potential return on investment to potential investors (Kshetri, 2018).
- **Regulatory Compliance**: Compliance with regulatory requirements and guidelines can be a signal that communicates the legitimacy and legality of the ICO project. Compliance with regulations can be used to build trust and confidence in the project (Kshetri, 2018; Ayarci and Birkan, 2020).
- **Google Search Results** can act as a signal. The work of Albrecht, Lutz and Neumann (2019) found that “online search trends regarding blockchain technology and ICOs as a financial instrument is positively linked to the volume raised.”.
- Belitski and Boreiko, (2021) found that **Venture Capitalist backed ICOs** are more likely to do well and raise the funds they were looking for.

- **Market conditions** to impact signal strength (Davydiuk et al., 2018). This also includes Number of listing websites for the ICO, Score from the ICO listing website, Review from the ICO listing website, Visitor comments on the ICO listing website, Finance and economy news website, Project sector, Pump and Dump opportunity (Ayarci and Birkan2020).
- **Bitcoin** is an influential signal too. The financial state of Bitcoin has a strong influence on the profitability of ICOs (Simonov, 2019).
- The vast majority of ICO projects, that being 80%, have **no real reason to use blockchain technology** (Feng et al., 2019). Alternatively, their projects could work with existing Web 2.0 technology. According to Belitski and Boreiko (2021) ICOs that have worked with the **GitHub platform** performed better in the funding round. ICO investors are either unable to or do not check the **source cod**e of ICO projects, whenever available. Therefore, they are often not able to understand whether the whitepapers can hold what they promise, or not (Ofir and Sadeh, 2022).
- **Whitepaper**: The whitepaper is a document that provides a detailed description of the ICO project, including its purpose, goals, roadmap, and technical specifications. The whitepaper can be used to signal the legitimacy and viability of the project to potential investors (Kshetri, 2018).
  - → A whitepaper's **text length** is positively correlated with the ICO's total amount raised and its eventual success. (Samieifar and Baur, 2019). The whitepaper outlines the details of the project, including its technical aspects, market opportunity, and financial model, milestones towards issuing the crypto and in general it serves as a project/business plan for the ICO (Samieifar and Baur, 2021). The whitepaper can also describe the number of tokens to be issued, the token price, the token distribution among investors, and the smart contract code for the token (Chiari et al., 2018). Marketing efforts often involve a variety of channels, such as social media, online advertising, and events, and the project team reaches out to potential investors through a network of contacts and intermediaries (Ahsan et al., 2018).
  - → **Writing Style and Format** can serve as a signal. Zhang, Aerts, Lu, and Pan (2019) investigated the four biggest Asian tokens exchanges. They found that whitepapers with more readable disclosures are prone to yield increased returns on the first day. (Zhang, Aerts, Lu and Pan, 2019). Readability of token whitepaper and ICO first day return (Corbet et al., 2020).
  - → **Word Count or text length** of whitepapers are not connected to the amount raised during an ICO. The authors suggest that ICO investors fail to properly review whitepapers (Sapkota and Grobys, 2021). However, a review of whitepapers style of writing yielded a weak correlation with the ICO funding outcome (Ali et al., 2017).
  - → The level of **Information Disclosure** may act as a signal. Zetzsche et al. (2017) studied a databse of 1'000 ICO whitepapers and found that various ICOs offer inappropriate mechanisms of information disclosures. Most of the whitepapers do not disclose the identity of their initiators or backers/promotors. Often, contact details are not provided either. The majority of ICOs do not explain applicable laws, they do not keep client funds apart or pool

them appropriately. Also, external auditors are rarely used. Thus, Zetzsche et a l. (2017) argue that frequent ICO investments have rarely undergone a rational thought process.

Other Whitepaper related signals include Partner Companies, Roadmap, Technical features, Product Market Fit, Token distribution and Softcap/Hardcap. In this context, hard cap refers to the highest number of tokens that may be sold. Soft cap refers to the smallest amount of tokens that can be sold (Ayarci and Birkan, 2020). Zhao and Hou (2018) investigated environmental, social and governance related words in ICO whitepapers, relating them to success.Marketer Generated Content (MGC)

Marketer-generated content (MGC) refers to the promotional content created by marketers to attract investors to an initial coin offering (ICO). Here are some examples of MGC in ICOs with citations:

- White Paper: The white paper is the most important MGC in an ICO. It is a document that outlines the technical specifications, features, and potential use cases of the ICO's blockchain technology. A well-written white paper can be used to signal the credibility, potential, and innovation of the ICO to potential investors (Chen et al., 2019).
- Website: The ICO's website is another important MGC. It should be well-designed, user-friendly, and informative. The website should provide information about the team behind the ICO, the roadmap, the token sale, and the use cases. The website can be used to signal the professionalism, transparency, and vision of the ICO (Chen et al., 2019).
- Social Media: Social media platforms such as Twitter, Telegram, and Reddit are important MGC channels for ICOs. Marketers can use these platforms to engage with potential investors, share news and updates, and build a community around the ICO. Social media can be used to signal the buzz, excitement, and potential of the ICO (Li et al., 2018).
- Videos: Videos are a popular form of MGC in ICOs. They can be used to explain the technical aspects of the ICO, introduce the team, and showcase the potential use cases. Videos can be used to signal the creativity, vision, and potential of the ICO (Chen et al., 2019).
- Press Releases: Press releases are a traditional form of MGC that can be used to generate media coverage and buzz around the ICO. Marketers can use press releases to announce the launch of the ICO, share news and updates, and showcase the potential of the ICO. Press releases can be used to signal the credibility, potential, and innovation of the ICO to journalists and potential investors (Li et al., 2018).

Chanson et al. 2020 distinguish between User Generated Content (UGC) vs. Marketer Generated Content (MGC). MGC refers to any kind of content that was produced and published by the project instigators, preferably online. Examples include whitepapers, videos, marketing copy, etc. UGC is any informational exchange or details that were generated by the users for the users. Examples include exchanges on message boards, in comment sections, etc. This study concerns itself with both MGC and UGC.

Funding success is directly affected by how visible an ICO is in the media (Czaja and Röder, 2022). However, an ICOs Return on Investment decreases when many news articles are published prior to

the ICO launch. At the same time, it increases the total amount of money the ICO raises (Burns and Moro, 2018). Rhue (2018) points to evidence that social media presence increases hype but has a negative effect on ROI, hinting at the notion that some ICOs are more about creating hype and less about the actual product they are selling. Investors view an ICOs public announcements as one way communication (Chen, 2019).

Social media provides user socialization by means of peer communication. This often can help to signal a product's quality (Wang et al., 2012). Social media further provides a two-way communication channel between companies and investors, where a company can publish announcements and act in response to investors' questions (Culnan et al., 2010). Fiedler and Sandner (Frankfurt School Blockchain Center, 2017) found that well performing ICOs are more active than the average on Twitter, Facebook and LinkedIn. The count of total Twitter followers of each ICO's website has a positive impact on Return on Investment and the amount raised during the ICO process (Burns and Moro, 2018). After concluding an ICO, running a Twitter page can have an impact on its profitability (Fisch, 2019). Thies et al. (2021) found that "The effect of BTC price on funds raised is moderated by social media presence, so that ICOs with a higher social media presence are less driven by the BTC price." (Koch and Siering, 2019).

Research found that ICO management teams tend to exaggerate their claims within their whitepapers and that this approach works in their favour (Momtaz, 2021). In this context, whitepapers in and by itself are signals too. When project initiators make more technical details available in whitepapers, they can serve as quality signals for potential investors (Feng et al., 2019). Feng et al (2019) recommend marketers to make clear for what reason they use blockchain technology is important for their ICO, since that too acts as a signal. Most blockchains are open-source technology (Chen, 2019), and therefore the majority of ICOs do not patent but publish their codes (Fisch, 2019). The use of Open-Source technology in an ICO project is a signal (Chen, 2019). Fisch (2019) found that technical-ability signals affect ICO performance and are an ICO specific signal.

Feng et al. (2019) tell project initiators to have their ICOs rated on rating platforms, since these ratings act as signals to potential investors. However, Florysiak and Schandlbauer (2022) found increased information asymmetry due to self-appointed experts that publish unsolicited ICO ratings. The underlying monetary incentives are unknown, while it is hard for ICO investors to perform appropriate due diligence in a crowded market. Thies et al. (2021) found that "The higher the expert rating of an ICO, the higher the funds raised." ICO crowdfunders tend to be unable to interpret signals, leading to significant **information asymmetry**. (Chen and Chen 2020). Block et al. (2020) pointed out the **information asymmetry** between ICO project instigators and potential ICO investors that result in increased risk and agency problems. Thus, it is important for ICOs to provide signals that indicate quality to stand a chance at securing funds. At this stage however it is not yet completely clear what all the appropriate and relevant signals are (Block et al., 2020). Ahmad et al., (2021) also found

information asymmetry ICO project instigators and ICO investors which they attribute to still developing technology and an absence of extensive regulations. Giudici and Adhami (2019) found that ICO projects will be more successful in securing funding from crowdfunders when larger amounts of I**CO tokens are kept by the ICO project instigators,** when the ICO team as well as the advisory committee are comparably large in size and the managerial team can show managerial experience.

For an ICO to be a credible investment "ICO general information, the product information, the team composition, and the vision of the proposing startup, are key elements in the eyes of investors during the evaluation of investment opportunity." (Ibba et al., 2018; Koch and Siering, 2019).

Chief Executive Officers (CEOs) and Management teams can also act as signals. Momtaz (2020b) found that CEOs are less prone to fail, if they are loyal to their companies. According to Momtaz (2020c) expert ICO investors consider the quality of an ICOs management team, the project team's vision and the overall ICO profile as predictors of potential ICO success.

The quality of information within a whitepaper is able to signal significant investment information. Other signals include government sentiment pertaining to blockchain technology, ICO funding duration, the ability to trade the ICO tokens and the sentiment of the respective online community of the ICO project, as alternative signals (Yadav, 2017).

The KYC Know-Your-Customer process elicits whether a customer may perform specific transactions in the cryptocurrency space. It helps to determine the true identity of the customer (Ostern and Riedel, 2021). The prerequisite for a KYC "Know Your Customer" procedure before funds are collected, can be considered as a quality signal (Bulut, 2022). Yadav (2017) agrees and points to the importance of the KYC process, as it can lead to the success of an ICO. Moro and Wang (2019) too found a link between the KYC process and ICO success. Also, Lyandres et al. (2019) found similar evidence. In contrast however, Momtaz (2020c) found that returns on the first day of trading of ICOs decreases when it was preceded by a KYC “Know Your Customer” process (Yadav, 2017; Moro and Wang, 2019; Lyandres, et al., 2019).

Laatikainen et al. (2020) found that ICO project instigators should make decisions on "(1) what incentives the ICO offers, (2) the details of the pricing strategy, (3) the token strategy, and (4) the programs to involve the crowd in value co-creation." (Laatikainen et al. 2020). ICO projects that retain a specific amount of tokens from being issued to their investors after the ICO period has been completed, show improved performance across an array of different factors (Davydiuk et al., 2018). An increased positive tone in whitepapers is likely to lead to an increased first-day return of the ICO (Zhang et al., 2022).

2.2.1.2.User - Generated Content (UGC)

User-generated content (UGC) refers to the content created by users, such as investors, on social media platforms, forums, and review sites, in response to an initial coin offering (ICO). Here are some examples of UGC in ICOs with citations:

- Reviews and Ratings: Investors can leave reviews and ratings on ICO review sites such as ICO Bench, ICO Rating, and ICO Drops. Positive reviews and high ratings can increase the credibility and visibility of the ICO, while negative reviews and low ratings can harm the reputation and discourage potential investors (Li et al., 2018).
- Social Media Posts: Investors can share their thoughts, opinions, and experiences on social media platforms such as Twitter, Telegram, and Reddit. Social media posts can provide valuable feedback to the ICO team and influence the perception of the ICO among potential investors (Li et al., 2018).
- Blog Posts and Articles: Some investors may write blog posts or articles about the ICO on their personal blogs or on cryptocurrency news sites. These posts and articles can provide in-depth analysis, insights, and opinions about the ICO, and can influence the perception of the ICO among the broader cryptocurrency community (Zhang et al., 2019).
- Videos and Podcasts: Some investors may create videos or podcasts to discuss the ICO and share their opinions and experiences. These videos and podcasts can reach a wider audience and provide a more personal and engaging perspective on the ICO (Zhang et al., 2019).
- Community Engagement: Some investors may actively engage with the ICO team and the broader cryptocurrency community on social media platforms, forums, and chat groups. They may answer questions, provide feedback, and promote the ICO. Community engagement can build trust and loyalty among investors and create a positive reputation for the ICO (Li et al., 2018).

Paradoxically, blogging is less important in the ICO sphere than in traditional finance (Chanson et al., 2020). However, online discussion forums have a proven impact, as far as User Generated Content goes. The magnitude of online discussions in forums has a direct impact on the amount of capital raised by a venture in an ICO (Chanson et al., 2020). Chanson et al. (2018) showed that "The effect of a firm’s reach on social media prior to their ICO on ICO under-pricing is mediated by the amount of UGC (User Generated Content) on discussion forums." Chanson et al. (2018) have also proven that "the higher the amount of User Generated Content on discussion forums mentioning a company before its ICO, the higher the level of underpricing."

2.2.1.3.Market sentiment

Sentiment has been proven to be impactful, both in general as well as in regard to User Generated Content. Thies et al. (2021) pointed out that positive sentiment tweets (Albrecht et al. 2019) and

increased twitter activity (Benedetti and Kostovetsky 2018) results in an increased ICO market capitalization.

External third-party information has influence over the potential success of an ICO (Burns and Moro, 2018). Ofir and Sadeh (2022) found that the ratings of analysts from unofficial rating websites can predict the possible success of an ICO. Paradoxically, data used on these websites is often not reliable. Booth and Smith (1986) talked about the "Certificate Hypothesis" as an extension to signalling theory and describes a situation in which potential investors also include 3rd party information to come to their investment decision (Kleinert et al., 2018).

2.2.1.4.Emotive Language: Positive and Negative Sentiment

According to Baker and Wurgler (2006), emotive language refers to the use of words or phrases that evoke emotions in the reader or listener. In the context of market sentiment, emotive language can be used to convey positive or negative feelings about a particular market or investment. Positive market sentiment is typically expressed using emotive language that conveys confidence, enthusiasm, and optimism. For example, phrases such as "booming market," "promising investment," and "bright future" can evoke positive emotions in investors and encourage them to invest in a particular market or asset. On the other hand, negative market sentiment is typically expressed using emotive language that conveys fear, uncertainty, and doubt. For example, phrases such as "bearish market," "dismal performance," and "potential risk" can evoke negative emotions in investors and discourage them from investing in a particular market or asset. Emotive language can have a significant impact on market sentiment and investor behaviour. Research has shown that positive language can increase investor confidence and lead to higher market valuations, while negative language can decrease investor confidence and lead to lower market valuations (Baker and Wurgler, 2006). Therefore, it is important for investors and market analysts to be aware of the emotive language used in market commentary and to interpret it in the context of the broader market trends and fundamentals.

Albrecht, Lutz and Neumann (2019) showed that “A continuous increase in the fraction of emotive language” in “tweets with the approach of the ICO end date is positively linked to the volume raised.” (Albrecht, Lutz and Neumann, 2019). They stated that above average search volume, positive sentiment and the heightened use of emotive language on Twitter are linked to a high capitalization (Albrecht, Lutz and Neumann, 2019).

Sapkota and Grobys (2021) argue that ICO investors tend to act irrationally, since "they (i) are biased towards negative sentiment, (ii) do not take into account the risk assessments, and do not even consider (iii) whether a whitepaper is conducted in an understandable manner or (iv) if it violates copyrights." (Sapkota and Grobys, 2021). Sapkota and Grobys (2021) researched that the more negative the sentiment is in whitepapers, the more ICO funding can be expected. Positive sentiment however did not show any impact. Sapkota and Grobys (2021) also found the Harvard Psychological

Sentiment Dictionary to offer useful insights into ICO success. Their investigation showed that "negative sentiment is associated with higher amount of raised funding, whereas positive sentiment does not have any significant impact" (Sapkota and Grobys, 2021). They identified that the main emotion in whitepapers is ‘fear’. When breaking down this emotion into its components, they found that investors’ behaviour is for the most part driven by words such as "‘risk’, ‘problem’, ‘change’, and ‘regulation’, among others".

2.2.1.5.Use of Dictionaries with signals and cues in crowdfunding projects

Signal and cue dictionaries are tools used in academic research to analyse text data, such as social media posts, online reviews, or project descriptions. They are essentially lists of words or phrases that researchers use to identify specific signals or cues in the data that may be relevant to their research question. Signal and cue dictionaries tend to be created through a process of content analysis, where researchers review the literature and relevant texts to identify the most relevant words and phrases for their research question. They may also use machine learning algorithms to automatically identify and categorize signals and cues in the data. Once the dictionaries are created, researchers can use them to code and analyze the text data and derive insights that inform their research findings. Overall, signal and cue dictionaries are important tools in content analysis and are widely used in various fields of research, including marketing, social sciences, and computer science.

Overall, studies in crowdfunding projects suggest that the use of signal/cue dictionaries is an important strategy for academia to investigate how project creators communicate the value of their projects and build credibility with potential backers in crowdfunding campaigns. There are several researchers who looked into the benefits of using signal/cue dictionaries in ICO projects’ research. These ICO studies suggest that the use of signal/cue dictionaries is an important method to investigate how ICO project teams communicate the value of their projects. Studies that use signal/cues dictionaries successfully explained how ICOs achieved outcomes such as social proof and social media presence (Mollick 2014), transparency, credibility and appeal (Kuppuswamy and Bayus 2018), technological innovation and a clear and concise value proposition (Zaremba and Zurada 2019), clear and concise language, and endorsements (Cici, Jain and Yue 2019) and attract attention, build trust to team expertise (Xu, Liu and Zhang 2019), and signal quality (Xu, Huang and Zhang 2021).

2.2.1.6.Use of Platforms (for example YouTube) for ICO MGC and UGC narratives

Given the decentralized nature of ICOs, developers have to create a strong and active virtual community to support projects (Ibba, Pinna and Tonelli, 2018). The most common usage is Twitter and Facebook (96% and 89%); while 85% of the ICO issuers have a telegram account, 73% use YouTube, the least popular social media outlets are Github and Reddit (56% and 61%). One further important way to convey the business idea is to post a video on ICOBench, alongside the white paper, and 69% of all ICOs have done so (Florysiak and Schandlbauer, 2022). YouTube is categorised as social media sharing platform (Gandomi and Haider, 2015) where 100 hours of video are uploaded to YouTube every minute (Ryan, 2014).

Ivanov and Sharman (2018) investigated reputation dynamics in the context of UGC in social media, but in contexts that feedback provided by online users was in response to online engagement efforts initiated by MGC. This is an important point, because although microblogging and shared platforms are more commonly used (e.g., Twitter) they are not usually in direct narrative towards the MGC like sharing content creation platforms (e.g. YouTube). In general, media sharing platforms such as YouTube has been found that content contribution through YouTube was driven mainly by MGC exposure and reputation (Tang and Whinston, 2012; Ivanov and Sharman, 2018).

This is in line with a study by Dehghani et al. (2016), who examined the role of brand awareness and demonstrated that YouTube usage influenced perceived brand value positively. The idea is to build trust through direct engagement and open discussion with MGC through sharing content frequently (Lou and Yuan, 2019). Commentators, who are usually influencers whose opinions have impact in the crowdfunders disposition towards this MGC content, play a significant role in this process of following the brand and relating UGC to MGC, especially from younger generation Zers (O'Neil-Hart and Blumenstein, 2016; Mediakix, 2017; Lou and Kim, 2019). It seems that YouTube a project can help crowdusers develop perceived-proximity to their peers via their interactive online communications in this platform (Zhao, Zhang and Lee, 2022). This is because the YouTube narratives seem to be more directly related to brand narratives and UGC narratives are more broad and diversified than other platforms (Ivanov and Sharman, 2018).

Qiu, Tang and Whinston (2015) confirm that YouTube is able to play a much greater role in encouraging the formation of original UGC content by playing out the multiplier effect. Smith, Fischer and Yongjian. (2012) tested variations in brand related UGC between Twitter, Facebook and YouTube. As their review shows, Twitter, Facebook, and YouTube are a representation of different types of social media, and that every site has its own distinctive architecture, culture and norms. YouTube offers a comparatively richer and longer format, making it easy to highlight information about brands (Smith, Fischer and Yongjian. 2012). YouTube presents a number of video types, such as reviews, presentations, and 'unboxing' videos, which may, in principle, showcase the brand more centrally (Cheong and Morrison, 2008). The predominant site influences in brand related UGC appear to stem

from YouTube's culture of self-promotion. Brand-related UGC on YouTube was more likely than that on Facebook or Twitter to include promotion (Smith, Fischer and Yongjian. 2012).

2.3. Descriptive Analysis of publication and citation data

As a first step, the 60 articles were fully reviewed, appraised and classified in terms of journals used, methods used, authors popularity and citation trends. Themes were coded using content analysis to find the constructs used more frequently in articles and which were more cited.

The systematic review approach was chosen for this study due to its numerous advantages. Firstly, it aids in identifying and including studies most relevant to the research topic. Secondly, it helps to exclude materials of low quality and limited relevance. Thirdly, the systematic approach enables the identification and highlighting of research gaps, aligning with the study's primary objective. Lastly, it facilitates the systematic identification of study outcomes, allowing for descriptive analysis and thematic categorization. By following this methodical approach, the study ensures a rigorous and credible analysis of the literature, minimizing bias and upholding robust research principles.

The 60 articles reviewed were spread over 37 journals. Of these, the highest-ranking journals that published more than three articles were the Journal of Business Venturing (6 articles), Entrepreneurship: Theory and Practice (4 articles), Journal of Business Research (4 articles), Small Business Economics (3 articles), and Strategic Organization (3 articles).These publications amount to 36% of total publications in the field and they all belong to business rather than management theory; however these were not the most cited journals, rather the most cited journals were Entrepreneurship: Theory and Practice (527/4 articles), Information Systems Research (285/2 articles) and Small Business Economics (126/3 articles).

Looking into the most cited authors, the most cited journals rely on one very popular citation that dominates the subject area and brings them citation traffic. For example, Ahlers, Cumming, Günther and Schweizer (2015) from Entrepreneurship: Theory and Practice with 320 citations, Burtch, Ghose and Wattal (2013) from Information Systems Research with 275 citations, Allison, Davis, Short and Webb (2015) from Journal of Business Venturing with 145 citations and Vismara (2016) from Small Business Economics with 115 citations. These publications amount to 69.96% of total citations in the field.

These journal and author citation facts show that the sources of the most popular classifications of signals/cues used and cited in the field are very limited. This is because the field of crowdfunding projects is fairly recent since 2010, and signals/cues in a narrative strategy in project crowdfunding appears as the subject of academic research in a subset of these studies. The field is in the stage where constructs have not been diversified to fit different types of projects and therefore literature is

still highly centralised with peripheral studies referring to a few most cited publications. There is a need therefore to create more diversified classifications of signals/cues according to project types and samples, for the purpose of discovering missing signals/cues that could be important for other types of projects (e.g., ICOs) that researchers are not aware of yet.

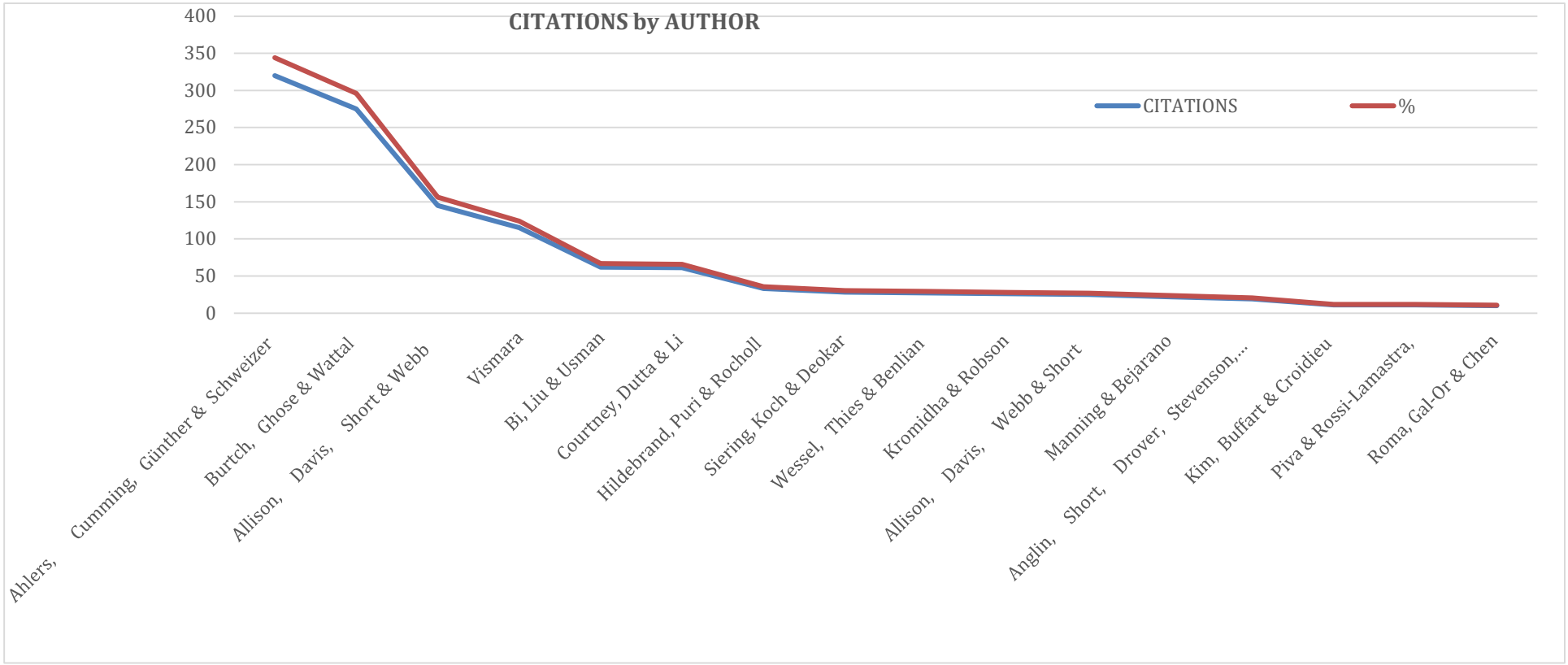

Figure 4: Most popular authors / publications

The next step therefore is to identify the cue themes that the most cited publications use to start developing the dictionaries,

2.3.1. Findings: Grounded Analysis of themes -> Types of narrative cues in the literature

Grounded analysis as per Glaser and Strauss (2017) is that one can generate theoretical constructs from what information one has, and not from testing preconceived hypotheses. Grounded analysis of literature is an excellent way to refine data from various documents through a process of constant comparison and refinement of constructs to establish relationships between the categories and sub-categories in the data. Using a process of initial open coding and then through axial coding the constructs derived from texts are reduced to a final set of themes when attaining theoretical saturation.

When there is theoretical saturation then we are sure that the themes are finalized, no new themes are possible. The themes could not be different as they are constantly compared to the right number they could be and no more themes could be derived from the documents reviewed. Further expansion of the themes to more is not possible.

In this study this type of rigorous analysis of the literature led to the set of signal themes and the identification of the gaps. These were important for the development of the right hypotheses.

This section presents first the classification of the themes found in the 60 articles. Second, it zooms into a critique of these themes to discover the weaknesses and gaps in theory. The first part (overview) was developed by reading the full articles and then categorizing the signals/cues in themes by cross-referencing and placing them in the same categories according to similarity. The process produced 6 themes (Table 1).

THEMES	types of signals/cues
A	Individual characteristics of crowdfunders or entrepreneurs' [education, experience, emotion, motivation, social identity and capital and network]
B	Individual behaviour of crowdfunders or entrepreneurs [conversion, investor decision-making, perception of or reaction to risk, project characteristics, entrepreneur etc.]
C	Project characteristics and other information in signals [KPIs, capital [including social], duration, product characteristics, project classifications] RISK [fraud-space/time separation alternative information sources]
D	Signal characteristics [informativeness, exposure time, intent, narrative or stories style, Quality in signals [frequency of command or word of mouth]]
E	Diversity of and interaction between signals or/and cues
F	Cue characteristics

Table 1: The classification of signals/cues found in the 60 articles.

The next step is to find which of these themes are the most cited and used in most publications. The table below shows that the most frequent themes are C and D and their combination which dominate 59% of citations, followed by the combination of BF themes with 11% and diversity of and interaction between signals or/and cues with 5%.

According to the measures in Table 2, the popular (cited) narrative strategies involve signals and cues about the characteristics of the project and the people involved in it (e.g., founder, project team, other sponsors). **Project characteristics** are information regarding the project assets [KPIs, capital [including social] or the project as an organisation, such as duration, product characteristics, project classifications] including information about risk [fraud-space/time separation alternative information sources]. The popular combinations of signals/cues are those that are focusing on the **individual characteristics and behaviour of crowdfunders or project entrepreneurs** [entrepreneurial vision, conversion, investor decision-making, perception of or reaction to risk, entrepreneur decision-making]. Information about project or entrepreneurs' characteristics is communicated through cues. Finally, a smaller but distinct sum of articles use the construct of claims as a risk and reliability cue.

In some articles (10), signals/cues related to project and individual characteristics (themes A, B, C) are measured based on their specific characteristics [such as informativeness, exposure time, intent, narrative or stories style, quality in [frequency of command or word of mouth].

There is a division between the types of information tone communicated through signals/cues: financial (including risk, reward and time) vs. emotional, social or affective dimensions of information conveyed in signals and cues. Studies lean towards the effectiveness of these signals and cues to influence the perception and social behaviour of crowdfunders and eventually their choice.

The themes within signals/cues show a division between technical or structural characteristics they convey to the crowdfunders. Structural characteristics involve the structure and use of language, pitch, tone and style that conforms to the type of audience of crowdfunders, appealing to their motivation.

Row Labels	Frequency	Sum of CITATIONS*	PERCENTAGE	
C	7	457	34.75285171	
C, D	5	320	24.33460076	59.08745
B, F	2	148	11.25475285	
D	10	107	8.136882129	
E	3	66	5.019011407	
B, C	3	38	2.88973384	
A, B, C	1	28	2.129277567	
A, F	4	27	2.053231939	
D. E, F	1	27	2.053231939	
A, C, D	3	26	1.977186312	
A	3	26	1.977186312	96.57795
B	2	10	0.760456274	
D, E, F	2	6	0.456273764	
B, C, F	2	6	0.456273764	
C, E, F	1	6	0.456273764	
D, F	1	3	0.228136882	
A, B	1	3	0.228136882	
A, D	2	3	0.228136882	
A. F	1	2	0.152091255	
C, E	1	2	0.152091255	
A, E	1	1	0.076045627	
F	1	1	0.076045627	
D, E	1	1	0.076045627	
B, E	1	1	0.076045627	
A, C	1	0	0	
Total	**60**	**1315**		

Table 2: The most cited and used themes in the crowdfunding articles (* source of citation data: Scopus).

The above classifications are useful in the construction of the dictionaries used in this study. The above analysis also reveals three gaps that are related to the objectives and methods of the study.

METHOD	articles
CONCEPTUAL [review, model development]	7
DEDUCTIVE/TESTING [hypotheses, experiments, simulations, economic evaluation]	39
INDUCTIVE/EXPLORATORY [classifications, narrative or text analysis]	10
MIXED [triangulation of data, action research]	4

Table 3: Breakdown of methods used in the reviewed articles.

The final observation from the review is that most research into signalling in crowdfunding projects prefers confirmatory testing trying to confirm which of the above aforementioned signals/cues lead to high funding levels. The use of dictionaries in most studies depends on already confirmed sets and no attempt of amendment of the dictionaries to fit the type of project was undertaken.

Brief summary: The 60 articles reviewed were published in 37 journals, with the highest-ranking journals being Journal of Business Venturing, Entrepreneurship: Theory and Practice, Journal of Business Research, Small Business Economics, and Strategic Organization, which make up 36% of total publications in the field. The most cited authors and journals focus on one primary citation that dominates the subject area, including Ahlers, Cumming, Günther and Schweizer (2015) from Entrepreneurship: Theory and Practice, Burtch, Ghose and Wattal (2013) from Information Systems Research, Allison, Davis, Short and Webb (2015) from Journal of Business Venturing, and Vismara (2016) from Small Business Economics, accounting for 69.96% of total citations in the field. The most cited themes are project and individual characteristics, followed by the combination of individual characteristics and behaviour, and diversity of and interaction between signals or cues. The literature leans towards the effectiveness of financial and emotional signals and cues in influencing the perception and behaviour of crowdfunders.

2.4. Identify gaps in the existing literature.

2.4.1. Three gaps in the literature

The analysis of the literature highlights three significant gaps in the current understanding of narrative dynamics within Initial Coin Offerings (ICOs) and crowdfunding, paving the way for a comprehensive investigation to uncover valuable insights. These gaps, each revealing an aspect of ICO project narratives that requires deeper exploration, form the basis for three distinct research avenues:

1. Transmission of Narratives from MGC to UGC:

The first gap revolves around understanding the journey of narratives from MGC (Mainstream Media or Corporate) sources to UGC (User-Generated Content) platforms. While the impact of UGC signals and cues on funding levels is acknowledged, the mechanism by which these signals and cues effectively transmit from the narrative's originators to crowdfunding participants is still obscure. Correlation between cues and funding levels does not elucidate the intricate process of how these cues influence a successful crowdfunding outcome. Addressing this gap requires a detailed investigation into the channels, mechanisms, and factors that facilitate the successful transmission of narrative cues from MGCs to UGCs. This study would likely reveal insights into the dissemination of information, the role of intermediaries, and the way narratives resonate with the crowdfunding audience.

2. Identification of ICO-Specific Signals and Cues:

The second gap pertains to the unique signals and cues that are specific to ICOs. A primary challenge is the identification of dictionaries that encompass the relevant signals and cues employed by both

MGCs and UGCs in the context of ICOs. Unlike existing dictionaries that focus primarily on funding levels, these new dictionaries must encompass project-specific cues that aid in distinguishing ICO narratives from other venture types. Bridging this gap requires an exhaustive exploration of available dictionaries to extract ICO-specific signals and cues, offering insights into how these specialized linguistic elements contribute to shaping crowdfunding narratives.

3. Positive Tone Signals and Cues:

The third gap centers around the investigation of positive tone signals and cues within ICO narratives, an area that has thus far received minimal attention in contrast to negative tone signals. While the negative impact of certain cues has been discussed, understanding the positive cues that resonate with crowdfunding participants is equally crucial. This entails delving into the spectrum of linguistic and narrative elements that evoke positive sentiments and trust among crowdfunders. By comprehending the interplay between positive cues and participants' perceptions, this research could uncover valuable insights into effective communication strategies for ICO projects.

The investigation of these three gaps holds the potential to contribute significantly to the existing literature in several ways:

Diversified Dictionaries for ICO Research:

Addressing the first gap would lead to the creation of new dictionaries tailored to ICO projects, capturing the nuances of communication within this specific context. These dictionaries would not only enrich the understanding of ICO narratives but also provide a valuable resource for future research.

Mechanisms of Crowdfunders' Recognition and Trust:

Exploring the mechanisms through which narratives influence crowdfunders' perception of value and risk (as mentioned in the second gap) can shed light on the dynamics of trust-building and risk assessment. By deciphering how cues are interpreted and resonate with participants, this research could offer insights into the psychology behind crowdfunding decisions.

Holistic Understanding of Positive Cues:

The third gap emphasizes the importance of positive cues and signals in shaping crowdfunding narratives. Investigating these positive elements would contribute to a more comprehensive understanding of the multifaceted ways narratives influence investor sentiment and behavior.

In conclusion, the gaps highlighted in the text lay the groundwork for an insightful exploration of ICO project narratives, their transmission, their cues, and their impact on crowdfunders. Addressing these gaps would not only fill existing voids in the literature but also contribute to a more nuanced

understanding of the mechanisms underlying crowdfunding success within the cryptocurrency sector. This research endeavor holds the promise of shaping future communication strategies and enhancing the effectiveness of crowdfunding efforts.

Therefore, there will be three original contributions to the literature from this study: (1) a set of dictionaries fit for conducting research in ICO projects; (2) the exploration of the mechanisms between project narratives and crowdfunders' recognition of value and risk; and (3) the development of a new explanation of how crowdfunding narratives work in the cryptocurrency sector.

Gaps	Objectives
Gap 1: Project signals / cues need to be matched with crowd signals / cues.	Objective 1. Find dictionaries with signals / cues used in fully funded ICOs. Objective 2. Identify if the crowd echoes the signals / cues in official project narratives and when not. Objective 2a. Identify the academically recognized dictionaries that contain the most echoed signals / cues. Objective 4. Contribute to the literature of coordination of innovation projects / crowdfunding ICOs with a theoretical framework which shows the use of signals and cues.
Gap 2: Lack of ICO specific signal / cue constructs of projects.	Objective 2a. Identify the academically recognized dictionaries that contain the most echoed signals / cues. Objective 2b. Eliminate the dictionaries with the least amount of matches since this will prove them to be of little use. Objective 3. Identify when and if positive tone manages to travel from the white papers through the videos to the comments of the crowd. Objective 4. Contribute to the literature of coordination of innovation projects / crowdfunding ICOs with a theoretical framework which shows the use of signals and cues. Objective 5. Contribute to the studies of innovation projects / crowdfunding ICOs and specifically, to the methodologies they use. The contribution is the results of the experimental and testing techniques from this study.
Gap 3: ICO specific positive and negative sentiment cues.	Objective 2a. Identify the academically recognized dictionaries that contain the most echoed signals / cues. Objective 2b. Eliminate the dictionaries with the least amount of matches since this will prove them to be of little use. Objective 3. Identify when and if positive tone manages to travel from the white papers through the videos to the comments of the crowd. Objective 4. Contribute to the literature of coordination of innovation projects / crowdfunding ICOs with a theoretical framework which shows the use of signals and cues.

Figure 5: How the gaps connect to the objectives (own work)

2.4.2. Creating Hypotheses to address the three theoretical gaps and the study objectives

From the gaps and objectives stem the following hypotheses. Every Hypothesis is testing a relationship as shown in Figure 6 below.

Abbr	Data Set	
1_	1. The whitepapers.	**MGC**
2_	2. The video transcripts of the project initiator's YouTube videos.	**MGC**
3_	3. The video transcripts of other YouTubers that are looking at the chosen ICOs.	**UGC**
4_	4. The potential backer comments (crowd) under the videos of the project initiators.	**UGC**
5_	5. The potential backer comments (crowd) under the videos of other YouTubers.	**UGC**

Table 4: Abbreviations of Data Set names – both MGC and UGC (own work)

The Figures below list every relationship that will be explored by means of statistical testing. The statistical tests will be run on each arrow's path in Figure 6.

Listed below are the hypotheses used to test the significance of signals and cues on the paths depicted in the Figure 6. These hypotheses were created and tested based on how they relate to the Objectives of this study as well as to the dictionaries and the results this study set out to investigate.

H1.) 1_ - 2_ : Negative-Tone dictionary signals/cues from 1_whitepapers are not correlated to signals/cues in 2_ YouTube Video Transcripts of ICOs.

This hypothesis was created and the relationship tested due to Objective 3 and pertains to the "Construct: Negative Tone" and its associated dictionaries.

H2.) 1_ - 3_ : Negative-Tone dictionary signals/cues from 1_whitepapers are not correlated to signals/cues in 3_ YouTube Video Transcripts of independent YouTubers.

This hypothesis was created and the relationship tested due to Objective 3 and pertains to the "Construct: Negative Tone" and its associated dictionaries.

H3.) 1_ - 4_ : Dictionary signals/cues from 1_whitepapers are positively correlated to signals/cues in 4_comment sections of YouTube videos produced by the ICOs.

This hypothesis was created and the relationship tested due to Objectives 1, 2, 2a and 2b and pertains to all dictionaries.

H4.) 1_ - 5_ : Dictionary signals/cues from 1_whitepapers are positively correlated to signals/cues in 5_ comments of potential backers in the comment sections of independent YouTubers.

This hypothesis was created and the relationship tested due to Objectives 1, 2, 2a and 2b and pertains to all dictionaries.

H5.) 2_ - 4_ : Positive-tone emotional dictionary signals/cues from 2_ YouTube Video Transcripts of ICOs are positively correlated to signals/cues in 4_their comment section.

This hypothesis was created and the relationship tested due to Objective 3 and pertains to the "Construct: Positive Tone" and its associated dictionaries.

H6.) 3_ - 5_ : Positive-tone emotional dictionary signals/cues from 3_ YouTube Video Transcripts of independent YouTubers are negatively correlated to signals/cues in 5_their comment section.

This hypothesis was created and the relationship tested due to Objective 3 and pertains to the "Construct: Positive Tone" and its associated dictionaries.

H7.) 2_ - 3_ : Dictionary signals/cues from 2_YouTube Video Transcripts of ICOs are positively correlated to signals/cues in 3_video transcripts of independent YouTubers.

This hypothesis was created and the relationship tested due to Objectives 1, 2, 2a and 2b and pertains to all dictionaries.

H8.) 1_ - 4_ : Construct: Positive-Tone dictionary signals/cues from 1_whitepapers are positively correlated to signals/cues in 4_comment sections of YouTube videos produced by the ICOs.

This hypothesis was created and the relationship tested due to Objective 3 and pertains to the "Construct: Positive Tone" and its associated dictionaries.

H9.) 1_ - 5_ : Construct: Positive-Tone dictionary signals/cues from 1_whitepapers are positively correlated to signals/cues in 5_ comments of potential backers in the comment sections of independent YouTubers.

This hypothesis was created and the relationship tested due to Objective 3 and pertains to the "Construct: Positive Tone" and its associated dictionaries.

H10.) 1_ - 2_ : Dictionary signals/cues from 1_whitepapers are positively correlated to signals/cues in 2_ YouTube Video Transcripts of ICOs.

This hypothesis was created and the relationship tested due to Objectives 1, 2, 2a and 2b and pertains to all dictionaries.

H11.) 1_ - 3_ : Dictionary signals/cues from 1_whitepapers are positively correlated to signals/cues in 3_ YouTube Video Transcripts of independent YouTubers.

This hypothesis was created and the relationship tested due to Objectives 1, 2, 2a and 2b and pertains to all dictionaries.

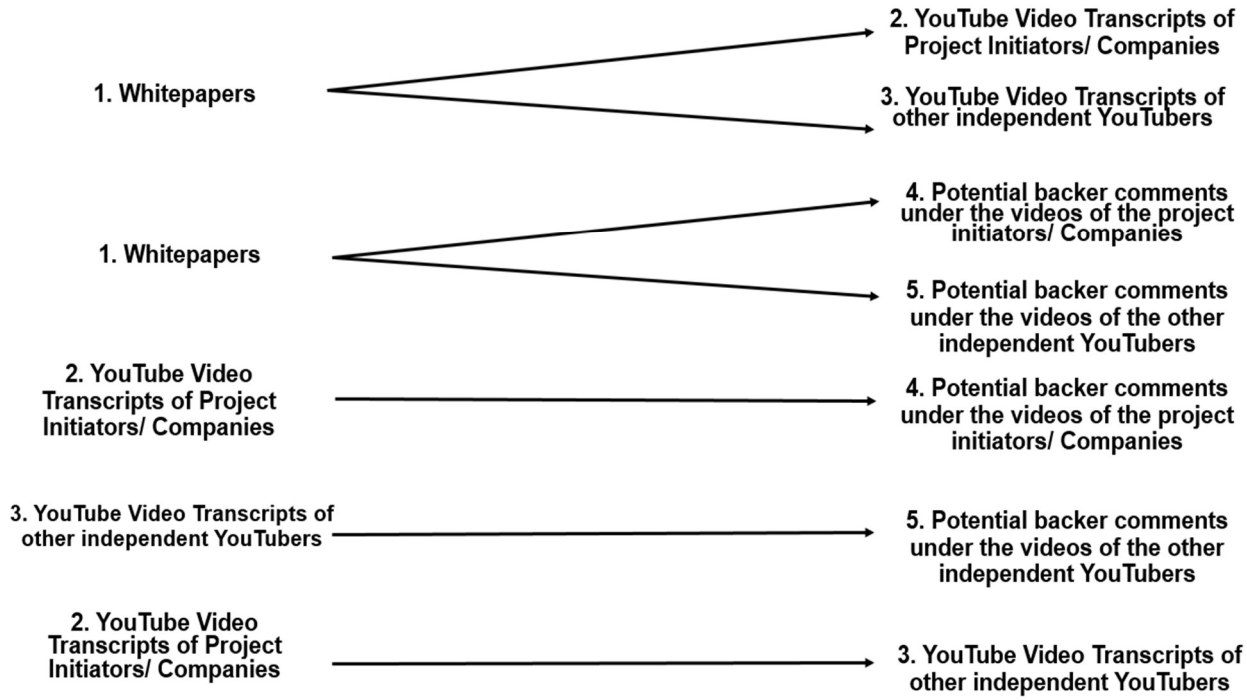

Figure 6: Model testing the presence of signals and cues in both MGC (whitepapers and project videos) and in UGC (YouTube crowd narratives). The corresponding hypotheses, as stipulated above. Address corresponding objectives, and test the dictionaries. Each arrow shows what paths are being tested in hypothesis testing.

Objective	Hypotheses	Dictionaries tested
Objective 3. Identify when and if positive tone manages to travel from the white papers through the videos to the comments of the crowd. Objective 4. Contribute to the literature of coordination of innovation projects / crowdfunding ICOs with a theoretical framework which shows the use of signals and cues. Objective 5. Contribute to the studies of innovation projects / crowdfunding ICOs and specifically, to the methodologies they use. The contribution is the results of the experimental and testing techniques from this study.	H1. 1_ - 2_	Construct: Negative Tone
Objective 3. Identify when and if positive tone manages to travel from the white papers through the videos to the comments of the crowd. Objective 4. Contribute to the literature of coordination of innovation projects / crowdfunding ICOs with a theoretical framework which shows the use of signals and cues. Objective 5. Contribute to the studies of innovation projects / crowdfunding ICOs and specifically, to the methodologies they use. The contribution is the results of the experimental and testing techniques from this study.	H2. 1_ - 3_	Construct: Negative Tone
Objective 1. Find dictionaries with signals / cues used in fully funded ICOs. Objective 2. Identify if the crowd echoes the signals / cues in official project narratives and when not. Objective 2a. Identify the academically recognized dictionaries that contain the most echoed signals / cues. Objective 2b. Eliminate the dictionaries with the least amount of matches since this will prove them to be of little use. Objective 4. Contribute to the literature of coordination of innovation projects / crowdfunding ICOs with a theoretical framework which shows the use of signals and cues. Objective 5. Contribute to the studies of innovation projects / crowdfunding ICOs and specifically, to the methodologies they use. The contribution is the results of the experimental and testing techniques from this study.	H3. 1_ - 4_	All Dictionaries bundled together
Objective 1. Find dictionaries with signals / cues used in fully funded ICOs. Objective 2. Identify if the crowd echoes the signals / cues in official project narratives and when not. Objective 2a. Identify the academically recognized dictionaries that contain the most echoed signals / cues. Objective 2b. Eliminate the dictionaries with the least amount of matches since this will prove them to be of little use.	H4. 1_ - 5_	All Dictionaries bundled together

Objective 4. Contribute to the literature of coordination of innovation projects / crowdfunding ICOs with a theoretical framework which shows the use of signals and cues. Objective 5. Contribute to the studies of innovation projects / crowdfunding ICOs and specifically, to the methodologies they use. The contribution is the results of the experimental and testing techniques from this study.		
Objective 3. Identify when and if positive tone manages to travel from the white papers through the videos to the comments of the crowd. Objective 4. Contribute to the literature of coordination of innovation projects / crowdfunding ICOs with a theoretical framework which shows the use of signals and cues. Objective 5. Contribute to the studies of innovation projects / crowdfunding ICOs and specifically, to the methodologies they use. The contribution is the results of the experimental and testing techniques from this study.	H5. 2_ - 4_	Construct: Positive Tone
Objective 3. Identify when and if positive tone manages to travel from the white papers through the videos to the comments of the crowd. Objective 4. Contribute to the literature of coordination of innovation projects / crowdfunding ICOs with a theoretical framework which shows the use of signals and cues. Objective 5. Contribute to the studies of innovation projects / crowdfunding ICOs and specifically, to the methodologies they use. The contribution is the results of the experimental and testing techniques from this study.	H6. 3_ - 5_	Construct: Positive Tone
Objective 1. Find dictionaries with signals / cues used in fully funded ICOs. Objective 2. Identify if the crowd echoes the signals / cues in official project narratives and when not. Objective 2a. Identify the academically recognized dictionaries that contain the most echoed signals / cues. Objective 2b. Eliminate the dictionaries with the least amount of matches since this will prove them to be of little use. Objective 4. Contribute to the literature of coordination of innovation projects / crowdfunding ICOs with a theoretical framework which shows the use of signals and cues. Objective 5. Contribute to the studies of innovation projects / crowdfunding ICOs and specifically, to the methodologies they use. The contribution is the results of the experimental and testing techniques from this study.	H7. 2_ - 3_	All Dictionaries bundled together

Objective 3. Identify when and if positive tone manages to travel from the white papers through the videos to the comments of the crowd. Objective 4. Contribute to the literature of coordination of innovation projects / crowdfunding ICOs with a theoretical framework which shows the use of signals and cues. Objective 5. Contribute to the studies of innovation projects / crowdfunding ICOs and specifically, to the methodologies they use. The contribution is the results of the experimental and testing techniques from this study.	H8. 1_ - 4_	Construct: Positive Tone
Objective 3. Identify when and if positive tone manages to travel from the white papers through the videos to the comments of the crowd. Objective 4. Contribute to the literature of coordination of innovation projects / crowdfunding ICOs with a theoretical framework which shows the use of signals and cues. Objective 5. Contribute to the studies of innovation projects / crowdfunding ICOs and specifically, to the methodologies they use. The contribution is the results of the experimental and testing techniques from this study.	H9. 1_ - 5_	Construct: Positive Tone
Objective 2. Identify if the crowd echoes the signals / cues in official project narratives and when not. Objective 2a. Identify the academically recognized dictionaries that contain the most echoed signals / cues. Objective 2b. Eliminate the dictionaries with the least amount of matches since this will prove them to be of little use. Objective 4. Contribute to the literature of coordination of innovation projects / crowdfunding ICOs with a theoretical framework which shows the use of signals and cues. Objective 5. Contribute to the studies of innovation projects / crowdfunding ICOs and specifically, to the methodologies they use. The contribution is the results of the experimental and testing techniques from this study.	H10. 1_ - 2_	All Dictionaries bundled together
Objective 1. Find dictionaries with signals / cues used in fully funded ICOs. Objective 2. Identify if the crowd echoes the signals / cues in official project narratives and when not. Objective 2a. Identify the academically recognized dictionaries that contain the most echoed signals / cues. Objective 2b. Eliminate the dictionaries with the least amount of matches since this will prove them to be of little use. Objective 4. Contribute to the literature of coordination of innovation projects / crowdfunding ICOs with a theoretical framework which shows the use of signals and cues.	H11. 1_ - 3_	All Dictionaries bundled together

Objective 5. Contribute to the studies of innovation projects / crowdfunding ICOs and specifically, to the methodologies they use. The contribution is the results of the experimental and testing techniques from this study.		

Figure 7: Overview of how the Hypothesis are connected to the Objectives and Dictionaries.

When tested, the confirmed hypotheses show which signals/cues are those more frequently used by ICOs and invoke a positive-tone sentiment by the crowdfunders. The confirmed hypotheses then allow for the construction of dictionaries specifically tailored for ICO project managers that can be used for drawing support from crowdfunders.

2.5. Chapter 2 Literature Review: Summary

To briefly summarise the above, the literature review looks at three things. First, the corpus of articles in ICO projects that looks into the signals and cues the project teams use, the MCG and UCG channels they use to communicate with the crowdfunders and the use of dictionaries that articles use to investigate this communication in terms of signals and cues. Second, a descriptive analysis of 60 peer-reviewed journal articles on crowdfunding projects, focusing on the use of narrative, signals, and cues in their communication practices for these articles focus on how "social language" is used to create positive reaction from crowdfunders, with narratives acting as a representation of past events and future plans. Third, three gaps in the above articles are identified and a set of MCG and UCG channels in ICOs is defined with a selection of hypotheses testing dictionaries of signals and cues are created to address each of these three gaps.

The three gaps identified in the literature review are on project signals/cues and funding success in the field of crowdfunding. The first gap is a lack of understanding of the effectiveness of specific signals/cues and crowdfunders' trust. The second gap is a lack of diversification in signal/cue specific constructs in research studies and a need for project type specific dictionaries. The third gap is a lack of understanding of positive tone signals/cues in the ICO specific context. The hypotheses created aim to address these gaps by identifying dictionaries, exploring the correlation between dictionaries that are validated for academic studies that concur in both MGC and UGC narratives.

The role of Marketer Generated Content (MGC) and User Generated Content (UGC) in ICOs is important for the hypotheses. MGC is defined as content that is created and disseminated by the project initiators, such as promotional materials and marketing collateral, while UGC is generated by the users of the platform and includes user reviews, discussions on forums, and comments in online communities.

3. Chapter 3: Methods

3.1. Critical Realism Philosophy: exploration of patterns

The study addresses theoretical gaps linked to a phenomenon that is both real in an objectivist perspective, but is constructive through the interpretations and perceptions of individuals. The cue/ signalling mechanisms are real, because they exist outside individual perception. However, their construction, use and interpretation are subjective and depend on individual perception. For this reason, our knowledge about these mechanisms and our influence over them is imperfect and difficult to identify, because their interpretation can only partially explain it. The nature of the narrative communication between the project and the crowd is complex since it is both deterministic (because people react to parameters outside their sphere of influence) and voluntarist (as it is down to the people's choice how they react) (Hassard, 2002). This is because it is affected by the context, type of project and the type of crowd. "In other words, programs work (have successful 'outcomes') only in so far as they introduce the appropriate ideas and opportunities ('mechanisms') to groups in the appropriate social and cultural conditions ('contexts'). All else in realist evaluation follows from such explanatory propositions." (Pawson and Tilley, 1997).

In order to explore the cue/ signalling mechanisms the only means is through observing the nonlinear connections between signals/ cues of **both** parties: project and crowdfunders. Empirical research so far is confirmatory and detects only linear causal relationships. Instead, there is a need to observe circular and non-linear associations between the variables of signals/cues from crowdfunders that lead to funding but does not reveal actual causalities. This perspective requires both an interpretivist and an objectivist approach in order to explore patterns in interpretivist qualitative data from narratives. This philosophical perspective is Critical Realism (CR), for three reasons.

First, critical realists point to a stratified, layered social ontology which is inclusive and structurally robust to build an explanation of a complex non-linear phenomenon (i.e., cause and effect cannot be fully predicted as is the case in for example elections,) (Dobson, 2001). The working assumption is that events are not simple, due to systems conditions and actions that associate with each other. CR ontology considers system structures, events or processes/actions as distinct layers of social reality with differing interpretations and features (Fairclough, 2005). CR allows for a scientific approach, while simultaneously frees up hypothesis generation and unencumbered thinking in an effort to include what can not necessarily be monitored or verified (Heath and Feldwick, 2008). The triple ontology of CR and its perspective on causality being contingent to the combination of both context and interpretation (Bertilsson, 2004) base the argument that causality is the activation of mechanisms, which are embedded within the context of objects/subjects of analysis, which is the perspective of this study ('contexts') [Context [C] + Mechanism [M] = Outcome (Pawson and Tilley, 1997)]. "In other words, projects work (have successful 'outcomes') only in so far as they introduce the appropriate ideas and opportunities (' signal/cue mechanisms') to groups in the appropriate social and cultural conditions

('contexts'). All else in realist evaluation follows from such explanatory propositions." (Pawson and Tilley, 1997).

The second point refers to the explanation of causality in CR. Kovacs and Spens (2005) say that causality is not the pursue for universally predictive laws. It is rather the formulation of adequate clarifications, for of particular phenomena. In other words, we do not look into cause and effect, instead, we explain patterns in the way things happen.

The third point refers to the separation of ontology ('existence and reality') and epistemology ('knowing'), which are distinguishable from each other. Researchers need to avert the 'epistemic fallacy' of mistaking the nature of reality with our understanding of reality (Fairclough, 2005). In this way, CR supports the triangulation of (1) (Deductive (process of reasoning from one or more statements to reach a logical conclusion) with (2.) inductive ('words supply evidence but not ***the*** truth'). CR ontology and epistemology perspective provide an adequate philosophy to triangulate methods of different philosophical assumptions and thus avoiding the inconsistency of pragmatism, and it provides a sound philosophy which truly supports the exploration and/or testing of patterns within interpretive data.

Narratives are qualitative data. Most studies assume that the most suitable way to analyse them is interpretivist methods. However, although narratives seem to be more akin to an interpretivist analysis, the exploration of patterns within them is not an entirely interpretivist act. Explanatory mechanisms cannot be found between non-linearly interdependent narratives by adopting a purely interpretivist approach. The interpretivist approach depends on the analysis of individual interpretations, and this limits the scrutiny of more generalized explanations. As previously mentioned, mechanisms are under the influence of context variables. Therefore, the interpretations at the individual level are distorted. These individual interpretations do not construct reality. They just show a response to what is considered or represented as reality and therefore affect or reiterate this representation. Therefore, interpretations influence (but not explain) the perception of reality and the intransitive mechanisms between the cues. Hence, individual interpretations may not work as explanations of the real mechanisms (Sayer, 2000). There is a need to include interpretivist methods but not to finish at this point but to evolve into the exploration of mechanisms between these interpretations.

The descriptive analysis of the review as it is summarized in Figure 3 copied below is that most research into signalling in crowdfunding projects prefers confirmatory testing trying to confirm which of the above aforementioned signals/cues lead to high funding levels. The use of dictionaries in most studies depends on already confirmed sets and no attempt of amendment of the dictionaries to fit the type of project was undertaken.

METHOD	articles
CONCEPTUAL [review, model development]	7
DEDUCTIVE/TESTING [hypotheses, experiments, simulations, economic evaluation]	39
INDUCTIVE/EXPLORATORY [classifications, narrative or text analysis]	10
MIXED [triangulation of data, action research]	4

Table 5 (from Chapter 2): Breakdown of methods used in the reviewed articles.

Critical Realism offers several notable advantages that make it a compelling choice for our topic instead of deductive/positivist approaches. Critical Realism has a holistic approach to grasping the interplay between structures, mechanisms, and agency. Its emphasis on identifying causal mechanisms and blending quantitative and qualitative methods contributes to a deeper understanding of complex social phenomena.

Comprehensive Perspective: Critical Realism recognizes the intricate nature of social reality, aiming to comprehend both surface-level manifestations and underlying causal mechanisms. This approach helps researchers grasp the intersections between structures and agency, leading to a more thorough understanding of phenomena. Critical Realism is more sensitive on influences on the causation that is tested or/and explored, unlike positivism. It allows to integrate quantitative and qualitative approaches. Critical Realism enables researchers to benefit from both Epistemic Relativism and Ontological Realism, resulting in a more balanced analysis avoiding reductionism or determinism present in positivism. Using Critical Realism we can uncover the agency of the crowd from the structure of their narratives. In this way, Critical Realism is well-suited for comprehending change and understanding the way innovation is coordinated.

3.2. Design and Methods

The communication of a value proposition to a crowd and its interpretation from the crowd is a complex narrative that is non-linear (it does not go one way and it involves iterative feedback loops of the narrative amongst the crowd) (Manning and Bejarano, 2016; Hassard, 2002). According to CR, the analysis of multiple cases is more appropriate to achieve a significantly confirmed set of patterns from case studies. Based on this premise in the CR approach, ***the study design is multiple exploratory case studies*** (Gustafsson, 2017) with narrative data from projects and crowdfunders, which will be analysed after the identification of limitations after several experimental cases through testing the aforementioned hypotheses grounded on the literature gaps.

Experimental Procedure Overview

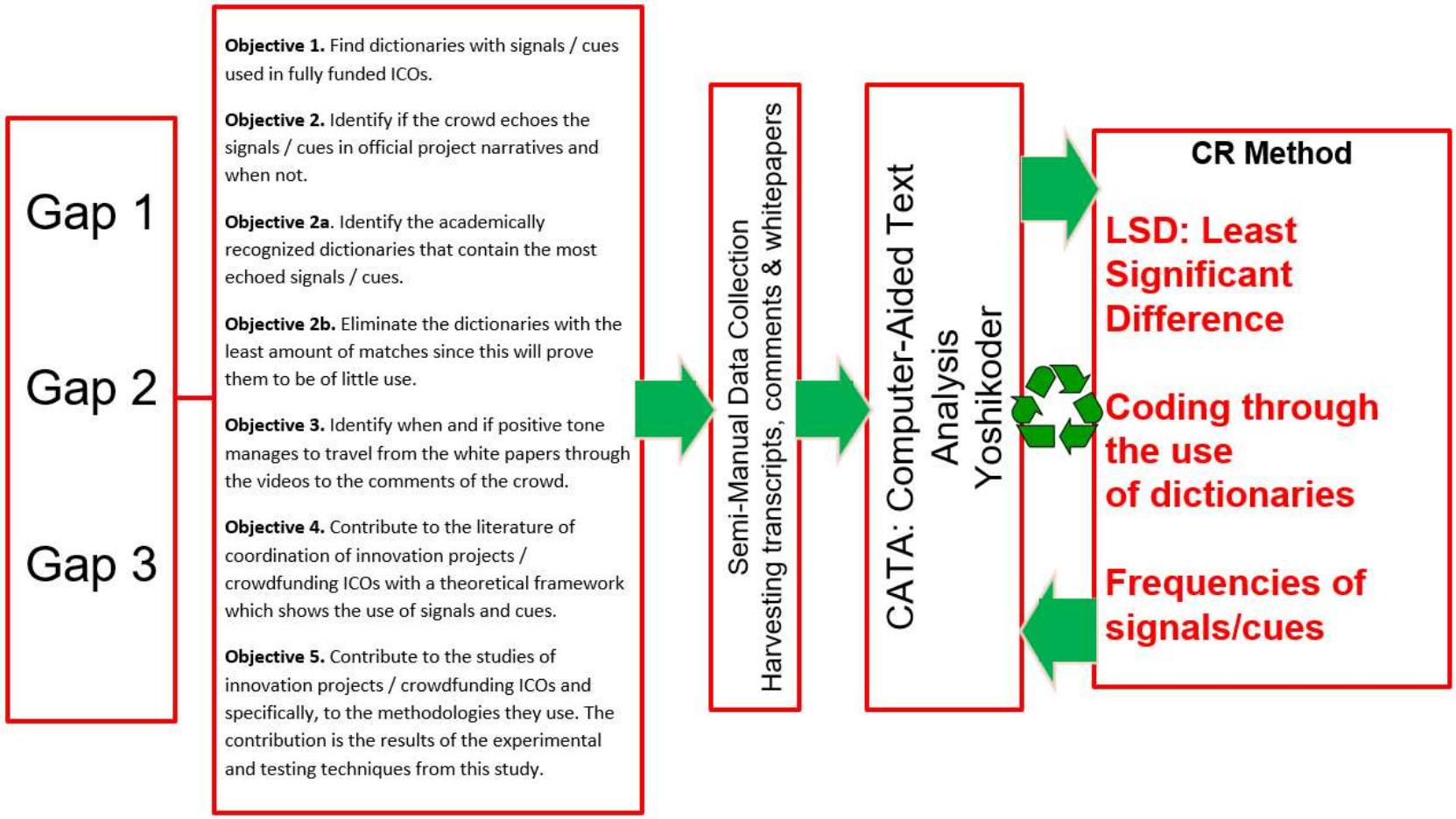

Figure 8: Final research design with data collection and analysis after the three experiments.

The procedure for data collection and analysis follows the CR recommendation of methodological triangulation. This means that qualitative data from multiple different sources have to be tested through experiment cases. The methods that exhibit little analytical value are eliminated until a clear protocol of data collection/analysis is defined. Specifically, the following sections describe the case studies selected, the data from different sources collected and the Bidao and Ethereum experiments that justify the analytical methods chosen and which data is useful. The analysis section leads to the hypothesis tests for all cases. This will lead to Results and Discussion of the contribution of the tests.

In the following section, this procedure is briefly described before the data collection and analysis methods are further looked at. The section starts with the description of the case studies, then describes data collection and analysis in the experiments and concludes with the final round of data collection analysis. The experiments helped to identify better case studies, to identify better data sources and to assemble and edit the dictionaries.

The coming sections describe the selection of case studies, the case experiments, the data collection and analysis methods tested, and the methods selected for analysing all case studies.

3.2.1. Selection of case studies (sample)

The reason why these specific ICO projects were chosen for this study was that they share certain similarities to achieve a level of reasonable homogeneity. Initial Coin Offering (ICO) projects as described in the introduction have certain characteristics in terms of their offering, the way they work and communicate and their crowdfunding stakeholders. To be selected for this study, they need to have been fully funded and must have been discussed by potential investors and or/ the project initiators on YouTube and have provided whitepapers and/or other project information to the crowdfunders. Finally, the ICO should be listed on cryptocurrency exchange platforms to avoid fraudulent cases. The ICO processes exercised on cryptocurrency exchange platforms are up to "ten times cheaper than the costs of traditional IPOs (Initial Public Offering) on the stock market" (Lahajnar and Rožanec, 2018). This obviously adds to the attractiveness of ICOs when compared to IPOs. ICOs that listed on cryptocurrency exchange platforms have proven to have reached a certain level of legitimacy on the free market. These cryptocurrency exchange platforms also serve as a barrier to entry and consideration for this study. Just because an ICO has raised money alone is not reason enough to consider it as legitimate. A public listing of this kind is an indicator that after the money was raised, the funds were at the very least used in a way that further trust even by third parties (in this case the cryptocurrency exchange platforms) was extended. (Hornuf et.al., 2022) The purpose of these listings is of course also that they could lead to potentially more funding from trading activity on these platforms (Fang et al., 2022). In the context of this specific study then, the definition for a successful ICO is not only defined by its ability to raise the full amount of money it set out to raise, but also whether it managed to be featured on cryptocurrency exchange platforms, its ability to not only generate sufficient crowd-discussions and conversations on YouTube in correspondence with its

YouTube video transcripts, the corresponding wordcount across these textual dimensions as well as the presence of an appropriate whitepaper. This ensures that only successful and widely accepted and legitimate ICOs were chosen for this study. Given the large amount of fraudulent ICOs, this approach also ensures that this study looks predominantly at legitimate ICO projects..

ICO Inclusion Criteria For This Study
Successfully raised full amount or more during the ICO phase
Discussed by potential investors and or/ the project initiators on YouTube
Sufficient Wordcount was available in the Whitepapers, YouTube video transcripts, and the YouTube comment sections so the analysis can be undertaken.
Provided whitepapers and/or other project information to the crowdfunders.
Listed on cryptocurrency exchange platforms to avoid fraudulent cases.

Table 5a: Data Inclusion Criteria for Specific ICOs for participation in this study.

Given the unregulated nature of ICOs, there is no “typical” ICO project with predictable phases and team structures. The ICOs chosen had a team of technologists who did not want institutional dependencies in their funding structures, or they were unable to find them due to the high risk of the venture. The crowd is a natural choice for funding ICO projects (Fridgen, 2018). When studying 1009 ICOs that completed their ICO phase between 2015 and March 2018, Amsden and Schweizer (2018) found that ICO CEOs with larger personal networks and ICOs with expansive team sizes are correlated with the successful completion of the ICO funding stage. Direct communication and networking with the crowd then is the main means for ICOs to function. ICOs start with communicating the offering while developing the code and then initiate a marketing campaign with direct messages to the crowd (Sapkauskiene and Pakėnaitė, 2021).

Due to the cultural differences as well as the diversity between the different ICOs regarding the time when ICO project videos were distributed online, the number of relevant videos per ICO varies and with them, the number of transcripts and comments that have been downloaded. The nature of the data and the way it is treated however is identical.

The ICO project process covers two stages: the coin issuing stage and the coin listing stage. This study focuses on the first stage (also called the *crowd sale stage*) because it is similar to other crowdfunding types of projects (Zetzsche et al., 2018). A project whitepaper is released, which illustrates outlines of the basic idea, relevant technical details, members of the team in question, the total number of issued coins and their respective prices (Samieifar and Baur, 2021). The official crowd

sale stage lasts between one to several days and it ceases when the ICO goal was achieved / exceeded or when time has eventually expired. In order to come to a successful issuance, companies are ready to willingly disclose further information and initiate to communicate on social media channels to interact and connect with crowdfunders. Some projects share their codes and technology secrets in an effort to make their work more open and transparent (Chen, 2019).

Based on these selection criteria above the following ICO projects were selected as case studies:

Zilliqa, Bitbond, Bidao, Ethereum, MenaPay, Kleros, Flow-Blockchain, Plutus, Fetch_ai, Hedera-Hashgraph, 300cubits, Polkadot, Cardano, LYXe_LUKSO, Blockstack, Ferrum-Network, Digitabits, Monarch-Token, NuCypher, Solana. These ICO projects fulfilled all the inclusion criteria for the sample.

Since data of 20 different ICOs was collected, enough data is available to shed some datasets, in case they do not find enough dictionary words that would allow for statistical significance. That is the reason why data of 20 different ICO projects has been collected in the first place, as this redundancy gives us options as this study progresses.

Project Name	**Whitepaper**	**YouTube Video Transcripts MGC**	**YouTube Video Transcripts UGC**	**Potential backer comments under the MGC videos**	**Potential backer comments under the videos of other YouTubers**
Zilliqa	11876	9826	7745	1523	1823
Bitbond	32148	27661	119309	62	7780
Bidao	3876	10363	40299	41514	89768
Ethereum	14706	38024	5210	268668	7106
MenaPay	16301	29927	7	43935	61
Kleros	7196	16610	14429	1610	103
Flow-Blockchain	13672	96547	20787	1322	5926
Plutus	4279	4329	43959	2580	45754
Fetch_ai	13569	85228	2854	2515	16
Hedera-Hashgraph	28361	19170	143093	19489	540665
300cubits	5489	811	3763	3826	4
Polkadot	20100	1516	10401	1262	7303
Cardano	17680	322039	22738	101476	101713
LYXe_LUKSO	39181	27845	53347	2654	115006

Blockstack	4031	338617	26165	27302	12167
Ferrum-Network	12118	9675	9962	221	518
Digitabits	11579	15469	12890	593	24
Monarch-Token	4812	4347	5164	1827	23762
NuCypher	6417	107216	46179	1594	4149
Solana	7652	79270	26745	1216	481

Table 5b: Overview of the ICO projects that were selected as case studies. Numbers represent word count per .txt file.

The below section – *3.2.5.3. Experiments* - outlines how during three experiment case studies (Bidao, Ethereum and Hedera Hashgraph) different data collection and analysis methods have been tested to finalise the research design with methods suitable for the ICO projects.

Details about the ICO case projects regarding timelines, teams and funding levels are to be found in the ***Appendix A***.

3.2.2. Data collection and their sources in the final iteration

The data is digital in its nature and exists already in the form of video-transcripts and conversation threads online on YouTube as well as in the form of publicly available ICO whitepapers. Textual data was used exclusively. The data was stored in the .txt file format, so that the custom-made Python 3 programmed dictionaries as well as the dictionaries that were set up in Yoshikoder can read and analyse these texts. The total volume of this textual data is almost 102MB.

More raw data was collected in order to attain enough data to encompass a total of 20 ICO projects. This raw data was then eventually stored into .txt files (whitepapers, YouTube transcripts and comments), so they would be ready to be processed by the Yoshikoder software package. The data collected are each ICO's whitepaper, the crowd's conversations and comments in the comment sections and transcripts of each YouTube video that discussed the ICO during the fund-raising period. The data is exclusively textual, their word count can be found in Table 5.

3.2.2.1. Data is organized into Five Data Sets per each ICO

Abbreviation	Data Set	
1_	1. The whitepapers.	**MGC**
2_	2. The video transcripts of the project initiator's YouTube videos.	**MGC**
3_	3. The video transcripts of other YouTubers that are looking at the chosen ICOs.	**UGC**
4_	4. The potential backer comments (crowd) under the videos of the project initiators.	**UGC**
5_	5. The potential backer comments (crowd) under the videos of other YouTubers.	**UGC**

Table 6: The types of MGC and UGC data categorised in sets (own work)

All of 20 ICOs selected for this study managed to successfully secure funding in full or beyond what they tried to raise. They all had a limited time-window to secure their funding. Differences are mainly due to the size of data collected between ICOs. Due to the diversity between the different ICOs regarding the time when ICO project videos were distributed online, the number of relevant videos per ICO varies and with them, the number of transcripts and comments that are expected to be downloaded. The nature of the data and the way the data is treated however are the same.

3.2.2.2. YouTube data collection related Mixed Methodologies in Academic Journals

Snelson (2011) investigated the trends in YouTube-related academic writing from 2006 to 2009. Snelson (2016) later examined Mixed and Qualitative Methods in the context of Social Media Research. She also investigated the study that other researchers had done specifically on YouTube.

Casselman and Heinrich's (2011) research study already looked at the beginning of the last decade into the collection of YouTube data. They used "a customized web crawler programed to archive YouTube™ data" (Casselman and Heinrich's 2011) for the purpose of data collection. They also performed an analysis of the meta-data from different web crawlers to investigate the ideas and subject of said YouTube videos. Casselman and Heinrich (2011) examined how a hallucinogenic herb called Salvia divinorum was used in YouTube videos by means of a qualitative analysis of 100 YouTube videos featuring marijuana. The resulting analysis and subsequent interpretation shed a light on trends in plant usage and related patterns of YouTube views over time.

Typical survey-based methods to uncover public opinions are at least in part being replaced by social media data mining, where specifically YouTube does play a significant role in the social sciences (Thelwall, 2017). Typically, large scale sentiment analysis methods with data from YouTube are done

by digital means, whereas there are many different methodologies that can be employed. (Alhujaili and Yafooz, 2001). Semi manual ways of data collection, for example by using a computer-mouse to copy and paste textual data are a viable alternative to difficult to produce custom programs that collect data automatically, as long as the amount of data collected can be matched with sufficient manpower.

Researchers have used social media material like Facebook posts, tweets (Twitter postings), and YouTube videos as a data source for content analysis studies. C. P. Chen (2013), for instance, classified the material of YouTube videos made by interviewees for a qualitative study on personal (self) branding. They performed a “Qualitative research in the form of in-depth interviews” (C. P. Chen, 2013).

Whether it is qualitative or quantitative, content analysis has been explained in academic literature as needing the creation of a codebook, that is used to direct the coding of information (Krippendorf, 2013; Schreier, 2012). A study of user-made films on Islam on YouTube that used content analysis made use of a codebook with pre-set categories (Mosemghvdlishvili and Jansz, 2012). Interviews with content creators of YouTube films were held after a content analysis to have a better understanding of their motives and reasons (Mosemghvdlishvili and Jansz, 2012).

Shifman (2011) explored memes in YouTube videos, undertaking a qualitative and quantitative study. Human coders watched shortlisted YouTube videos for this study.

Church (2010) looked at U.S. presidential candidates' statements on leadership in YouTube videos from the 2008 U.S. presidential election. In order to create categories from which potential leadership attributes might be coded in a future content analysis, the study started with a grounded theory analysis of the video conversation. The quantitative content analysis by human coders that followed provided frequencies of the presence of leadership attributes in the YouTube videos.

3.2.2.3. How the data was downloaded

The online conversations were downloaded from YouTube.com and the ICO websites by means of manual web scraping with the help of a personal computer. After long experiments with various automated web-scraping methods, it has become clear that manual web-scraping is far more accurate. While dedicated Google searches return all relevant results, not all results are relevant. This link here https://www.google.com/search?q=hedera+hashgraph+site%3Ayoutube.com&client=firefox-b-d&biw=1366&bih=654&source=lnt&tbs=cdr%3A1%2Ccd_min%3A7%2F5%2F2014%2Ccd_max%3A8%2F15%2F2018&tbm= (Google a, 2021) is an example Google search that finds all Hedera Hashgraph videos between the very first video about the topic up until the end of the ICO data, the 15th of August 2018. The closer inspection of this search result, found that it requires a human to

discern between relevant and irrelevant videos. Manual collection of data is expensive, time-consuming and cumbersome, but it is also the most accurate method. The author downloaded the whitepapers in PDF format and then manually transformed them into .txt files.

The tool used to semi-manually download the YouTube comments was the “Youtube™ Actual Top Comments” Google Chrome extension by “Sgtpanda”. The latest version of this software extension can be found when following the stated reference(Chrome a, 2021). To tackle the automated data request limitations of the attached Application Programming Interface (API) the URL in next reference leads to the corresponding instructions to overcome this challenge (Github, 2021). The API helps to directly access the data when downloading larger quantities of the same, as this study has done.

The tool used to semi-manually download the YouTube video transcripts was the “Youtube subtitles viewer” Google Chrome extension by “Elia Scotto”. The latest version of this software extension can be found here – URL: https://chrome.google.com/webstore/detail/youtube-subtitles-viewer/ljblecifcbmcdjbabhimddlladlkfdfg/related?hl=en (Chrome b, 2021). It is important to note however that in the meantime, YouTube has changed its website and transcript section. While the collection process of this data was a cumbersome and time intensive process, YouTube decided to make the comment section of its videos more openly accessible. The new site architecture of the YouTube site now allows manual harvesting straight from the video page, without the need of a plugin or dedicated Chrome extension. Thus, while this study still had to employ the methods described above at the time; this recent change means that it will be far easier for future researchers to harvest this kind of data.

3.2.3. Selection of Dictionaries and statistical tests on the Dictionaries

This study explores constructs and their dictionaries that were priorly established by other researchers (McKenny et al., 2018; Neiman et al., 2016; DesJardine and Bansal, 2019; Henry, 2008; Loughran-McDonald Master Dictionary, 2010). Note that this document will continue to go in continued segments into detail as to how these dictionaries were used and implemented for this study.

The following constructs were built through dictionaries that were chose due to their topical relevance, as they represent constructs that are important to ICO entrepreneurs (looking to raise capital) and ICO investors (looking for Return on Investments) alike. Constructs such as "Entrepreneurial Orientation", "Market Orientation", Personal Values", "Organizational Time Horizon", "Positive Tone" and "Negative Tone" and their chosen corresponding dictionaries fit these criteria. Why these constructs and corresponding dictionaries were specifically chosen is explained in more detail below.

The dictionaries listed below (McKenny et al., 2018; Neiman et al., 2016; DesJardine and Bansal, 2019; Henry, E., 2008; Loughran-McDonald Master Dictionary, 2010) that are being used for the analysis of the data of this study, were chosen after perusing the academic literature. All these

dictionaries were assembled and successfully validated by other researchers in their own previous studies and are recognized and widely utilised by the academic community. These dictionaries were chosen based on what relevant signals/cues this study measures. In **Appendix B**, you will find lists of the referenced dictionaries, their exact words and word count with their academic references. During the analysis, they were bundled together into constructs, as to be able to elicit the occurrence of signals/cues. They were all manually coded and integrated into Yoshikoder. Here an overview of the bundled dictionaries, that were used in academic fields as diverse as Finance, Business Communication, Organizational Behaviour and Management, to name only a few.:

To test **Entrepreneurial Orientation (construct)** related signals/cues for this study, the following three dictionaries were bundled together, programmed into the Computer Aided Text Analysis (CATA) software (Yoshikoder), which then analysed the datasets, and the resulting output was then used in the statistical calculations (more details are in the following sections):

· Innovativeness Dictionary – (McKenny et al., 2018)

· Proactiveness Dictionary (McKenny et al., 2018)

· Risk Taking Dictionary (McKenny et al., 2018)

To test **Market Orientation (construct)** related signals/cues for this study, the following two dictionaries were bundled together, programmed into the CATA software (Yoshikoder), which then analysed the datasets, and the resulting output was then used in the statistical calculations (more details are in the following sections):

· Long Term Focus Dictionary (McKenny et al., 2018)

· Profitability Dictionary (McKenny et al., 2018)

McKenny et al. (2018) designed and used these dictionaries to study the Computer Aided Text Analysis (CATA) method and its accuracy in the context of business-related constructs and dictionaries. They argued that text analysis should be used more widely in management research. To build their dictionaries, they started out with wordlists by Short et al. (2010), Zachary et al. (2011) and Uotila, et al. (2009). True to their name, these dictionaries contain words that relate to Innovativeness, Proactiveness, Risk Taking, Long Term Focus and Profitability. McKenny et al. (2018) then applied these dictionaries to relevant documents from studies undertaken by Moss et al. (2014); Short et al. (2010) and Zachary et al. (2011).

To test **Personal Values (construct)** related signals/cues for this study, the following three dictionaries were bundled together, programmed into the CATA software (Yoshikoder), which then

analysed the datasets, and the resulting output was then used in the statistical calculations (more details are in the following sections):

- Security Dictionary (Neiman et al., 2016)
- Self-Direction Dictionary (Neiman et al., 2016)
- Stimulation Dictionary (Neiman et al., 2016)

Neiman et al (2016) examined the language used by democratic and republican politicians in the United States. These authors use computational text analysis to study the words used by politicians from both parties in speeches and press releases and compare them to see if there are any significant differences. The study finds that Democratic and Republican politicians use different words and phrases, with democrats using words related to compassion and republicans using words related to security. They also found that democrats tend to use more complex language and focus on issues related to social welfare, while republicans tend to use simpler language and focus on issues related to economic growth. Neiman et al. (2016) formulated what they called "The Language of Basic Personal Values and Motivated Social Cognition", building on the work of Schwartz et al. (2010) that looked at “basic personal values,” which in turn resulted in “core political values” relating to general political orientation (Caprara et al., 2006; Schwartz, Caprara, and Vecchione, 2010). Neiman et al (2016) called this model the "Basic Values Model" that suggests 10 general values that are universal to humans and transcend culture. They defined them as "Achievement, Benevolence, Conformity, Hedonism, Power, Security, Self-Direction, Stimulation, Tradition, Universalism" and created relevant dictionaries out of these. Three of them were used in this study since they were relevant to the crowd conversations examined in the study of this PhD thesis. Namely the: Security Dictionary, Self-Direction Dictionary, Stimulation Dictionary.

To test **Organizational Time Horizon (construct)** related signals/cues for this study, the following two dictionaries were bundled together, programmed into the CATA software (Yoshikoder), which then analysed the datasets, and the resulting output was then used in the statistical calculations (more details are in the following sections):

- Short Time Horizon Dictionary (DesJardine and Bansal, 2019)
- Long Time Horizon Dictionary (DesJardine and Bansal, 2019)

Mark DesJardine and Pratima Bansal (2019) examined in a business context how negative evaluations from external sources can affect an organisation's time horizon. The authors define organisational time horizon as the length of time over which an organisation plans and makes decisions. They argue that negative evaluations from external sources can lead organisations to focus on short-term goals and reduce their time horizons. The study finds that negative evaluations can lead organisations to

prioritise immediate issues over long-term strategic planning and a decrease in investment in research and development. The authors also suggest that organisations can counteract the negative effects of external evaluations by focusing on long-term goals, building strong relationships with external stakeholders, and developing a robust system of internal evaluation.

To come to their conclusions, the authors constructed Short Term Horizon- and Long Term Horizon dictionaries in their effort to establish a textual-analysis-based measure of organisational time horizon. The signals/ cues contained in these dictionaries naturally relate to Short Time Horizon and Long Time Horizon words. They then used these dictionaries in the WordStat text analysis module (Provalis Research, 2023).

To test **Positive Tone (construct)** related signals/cues for this study, the following two dictionaries were bundled together, programmed into the CATA software (Yoshikoder), which then analysed the datasets and the resulting output was then used in the statistical calculations (more details follow below):

- Tone – Positivity Dictionary (Henry, E., 2008)
- Positive Words Dictionary (Loughran-McDonald Master Dictionary, 2010)

To test **Negative Tone (construct)** related signals/cues for this study, the following two dictionaries were bundled together, programmed into the CATA software (Yoshikoder), which then analysed the datasets and the resulting output was then used in the statistical calculations (more details follow below):

- Tone – Negativity Dictionary (Henry, E., 2008)
- Negative Words Dictionary (Loughran-McDonald Master Dictionary, 2010)

Henry (2008) found that investors do pay attention to the language used in earnings press releases, and that the tone of the language can affect their perceptions of the company and its financial performance. Specifically, the study found that press releases written in a positive tone are more likely to be associated with favourable stock market reactions, while those written in a negative tone are more likely to be associated with negative stock market reactions. Overall, the study suggests that the language used in earnings press releases can have a significant impact on investors' perceptions of a company and its financial performance. The quantitative portion of this study utilised 1,366 firm-years of yearly press releases published by companies in the computer and telecommunications sectors between the year 1998 and the year 2002 to analyse the market influence of tone and other elements of earnings news releases. They ran them through DICTION 5.0 software (Digitext, 2023) and applied frequency counts for term frequency count metrics, registering specifically positive and negative words, as defined by the breadth of the relevant literature they perused. Henry (2008) accumulated

this work in the resulting Tone – Positivity Dictionary and the Tone – Negativity Dictionary, that contain signals and cues that are fitting to their nomenclature.

Loughran and McDonald (2010) examined the use of language in 10-K filings (annual reports filed with the United States Securities and Exchange Commission by publicly traded companies) to determine if companies are using specific words or phrases to downplay or obscure the true nature of their liabilities. The authors use a dictionary-based approach to identify words and phrases that are indicative of negative financial conditions, and then use this to analyse the 10-K filings of a sample of companies. They find that companies use language in a way that obscures the true nature of their liabilities, and that this is more prevalent in firms that are in poor financial condition. To create their dictionaries that were used in this study, they manually created a list of words and phrases that are commonly associated with financial distress, such as "default," "restructuring," and "write-off." They also used a thesaurus to identify synonyms for these words. Further, they also used a financial dictionary to identify additional terms commonly used in financial statements. They then used these word lists to search the 10-K filings of a sample of companies and then analysed the frequency and context of these words. This work then led to the creation of the dictionaries used in this study and found their way into other research (Bodnaruk et al. 2015; Loughran and McDonald, 2016). These dictionaries are also available for researchers and for commercial use at the University of Notre Dame (University of Notre Dame, 2023). Fitting to their nomenclature, the Positive-Word and Negative-Word dictionaries by Loughran and McDonald (2010) contain Positive and Negative signals /cues respectively and were therefore used, as described, in this study. In addition to providing valuable insights into how companies use language to obscure their financial condition, Loughran and McDonald's (2010) manually created dictionaries of positive and negative financial language have become a trusted resource for scholars and practitioners alike. These dictionaries not only facilitate the identification of financial distress and other important signals in corporate communication, but they have also served as the foundation for subsequent research and the development of new analytical tools. Furthermore, their availability for use by other researchers and commercial entities underscores the importance of open-source data and collaboration in advancing the field of finance.

Further details of the dictionaries are to be found in the ***Appendix B***.

Example of the utilisation of Dictionaries

By comparing the methods of the 40 most recent and relevant research papers in the field of narrative crowdfunding, the author found two dictionaries that helped to test how to analyse the aforementioned online conversations, video transcripts and whitepapers. These two dictionaries are: 1.) the Profitability Dictionary and 2.) Long-Term Focus Dictionary (Zachary et al., 2011). The intention was to use these dictionaries on the .txt computer files of the whitepapers, YouTube Comments and YouTube Transcripts threads from the timeframes of the ICO funding periods. Compared to other dictionaries among these papers, the size of these particular dictionaries was convenient for testing, since they

had to be manually programmed into the Python code. That is why they were chosen. These two dictionaries were only used in the initial testing phase since they were ideal from a technical standpoint. They, however, were later not used for the actual study. They became part of the steppingstones to develop a suitable methodology.

With an eye on Long-Term Focused language and Profitability-Focused Language, these two dictionaries helped to gain insights into the language employed in the aforementioned whitepapers that were studied and in turn, the language used by potential backers in the YouTube comments section and the YouTube Transcriptions. Papers where they were successfully used under somewhat similar circumstances include Zachary et al., (2011) and Allison et al., (2015).

Using the Profitability Dictionary and Long-Term Focus Dictionary, the author wrote programs in the Python 3 programming language. These programs were fed with the whitepapers, YouTube Comments and YouTube Video Transcripts (in .txt file format) individually. The programs then counted the occurrences of these words from these dictionaries, giving us a precise breakdown and count of the relevant words used. These rows of numbers are then ready for analysis through methods of statistical analysis. By writing these Python 3 Dictionary scripts, the author learned how to calibrate these scripts, specifically for the particular needs of this study.

The chosen content analysis method is Computer Aided Text Analysis (CATA), this method measures constructs through dictionaries. These constructs typically use several dictionaries. Dictionaries are lists of specific words and Dedicated computer software uses these dictionaries, or lists of words, to look for and sum up the occurrence of these words when found in a text file.

3.2.4. Data Analysis - Justification of Choice of LSD for exploring statistical significance of signals/cues between Data-Sets

When comparing the data harvested for this research, it became clear that prior academic research papers and their studies worked with data that was structured too differently to be able to simply copy their approaches for this study.

For multiple regression, one needs data of the interval type, allowing for the degree of difference between items, but not the ratio between them. An example is temperature scales, where one could assign a rank.

The data of this study however is on a nominal level, where one differentiates based on qualitative classifications. We are working with dictionaries that have a defined category/ classification. Neither dictionaries nor words have a rank. This also goes for working with Negative and Positive Tone dictionaries. One is not better or worse than the other. From a statistical perspective, it is the lowest level of measurement. That restricts the choice of statistical tests.

While the initial idea was to use Reddit and Twitter data, this research had to abstain from it as it was not as rich as the data found on YouTube and in the whitepapers. However, none of the other previous studies and their academic papers looked specifically at YouTube data. The way they used the data after Computer Aided Text Analysis Software processing was mainly laid out in a way that the signals and cues would travel sequentially. In papers that examine crowdfunding, this would happen often within the project's webpage, from one page-section to the next, with the data traveling linearly. Thus, there was a need for a new approach. It became clear that it is sensible to statistically measure the presence of signals and cues between the datasets. This research had to start from the basics again and tested the distribution on test data initially harvested during the trial period and ran a One-Way ANOVA to look at the relationships. The One-Way ANOVA compares whether two sets of data's means are significantly different and then decided what can be learned from the data. The One-Way ANOVA is a robust method that provides an overview of the data.

After perusing various statistical methods that lend themselves to this task on the Computer Aided Text Analysis output data, the author tested and eventually chose the Least Significant Difference Test (LSD) for this purpose. It is a Post-Hoc test. A Post-Hoc Test is a test that compares means. The Post-Hoc Test shows the significant difference between the groups (sets of data).

After first checking the distribution with the Kolmogorov Smirnov Test, we are then using the One-Way-ANOVA as a middle step, because with the One-Way-ANOVA we are comparing the various groups with each other (meaning the different datasets, so whitepapers, Transcripts and Comments). Then, the Post-Hoc test compares two groups specifically (which is what we need), so for example the relationship between a whitepaper and a video-transcript. It compares the means of two groups and that is how we get to look at the relationships. With the One-Way-ANOVA alone, one can only tell whether there are differences or not. But with the Post-Hoc test we are now able to see the significant differences between the groups.

The LSD approach works on its own when we test the 1_ to 4_, '_ to 5_, 2_ to 4_ and 3_ to 5_ pairs. As the author had to make correct use of the dependent variable, he ran Chi-Square tests on the 1_ to 2_, 1_ to 3_ and 2_ to 3_ pairs.

The Chi-Square test checks whether two variables are independent of each other. Both variables must be categorical. Hence, the calculation can be undertaken with a low level of measurement. When running a Chi-Square test, two variables are being compared, independent of whether they are dependent or independent variables.

You will find a complete and detailed example of the entire statistical "Least Significant Difference Test" (LSD) procedure in Appendix C.

3.2.5.1. Protocol of statistical testing

To analyse the data this study followed a specific statistical procedure. The purpose is to find out how significant the amount of dictionary words is that trickled from the dictionaries through the datasets. The author ran (in the following order) the Kolmogorov Smirnov Test, followed by a Single Factor ANOVA, followed then by either a Least Significant Difference-Test for the 1_ to 4-, 1_ to 5_, 2_ to 4_ and 3_ to 5_ pairs, or the Chi-Square test for the 1_ to 2_, 1_ to 3_ and 2_ to 3_ pairs.

The One-Way-ANOVA is robust enough to stand up to the results of the Kolmogorov-Smirnov-Test either way, even when the data is not normally distributed. The following academic references confirm that this approach is indeed correct and prove that it is accepted practice: Blanca et al. (2017), Glass et al. (1972), Harwel et al. (1992), Lix et al. (1996), Salkind (2010) and Schmider et al. (2010).

It is important to only use data that is statistically relevant. Hence, after perusing all dictionary words found and subjecting them to the Kolmogorov-Smirnov-Test, it became clear that they had to be capped at a minimum of 6 words found, to be included in the calculations. While that reduces the available data, it reduces the statistical error-rate and produces more meaningful results and protects from outliers. Since we have data of 20 different ICOs, we have enough data and can also shed some datasets, in case they find less than 5 words. That is the reason why data of 20 different ICO projects was collected in the first place, as this redundancy gives us options.

3.2.5.2. Example of applying the Dictionaries and use of coding

The examples in this section were chosen for their brevity, which makes their explanation with examples much easier. An example is Neiman et al's (2016) Stimulation Dictionary, which is part of their "Personal Values" construct, which contains several other dictionaries. This Stimulation Dictionary is short and contains only five words, which are "challenge, enthusiasm, excitement, stimulation, thrill". Generally, though these dictionaries contain scores, often hundreds, and at times thousands of words (see **Appendix B**, where you will find the dictionaries used in this study). Typically, in studies, the words found from a specific dictionary in a specific text-file are summed up into one number (Loughran and McDonald, 2011; Duriau, Reger, and Pfarrer, 2007; Hart, 2001; Allison, et al., 2014; Jancenelle et al., 2019; Chan, et al., 2018). This study is using the same approach.

3.2.5.2.1. Software based analysis - Running the dictionaries in Python 3.10.0

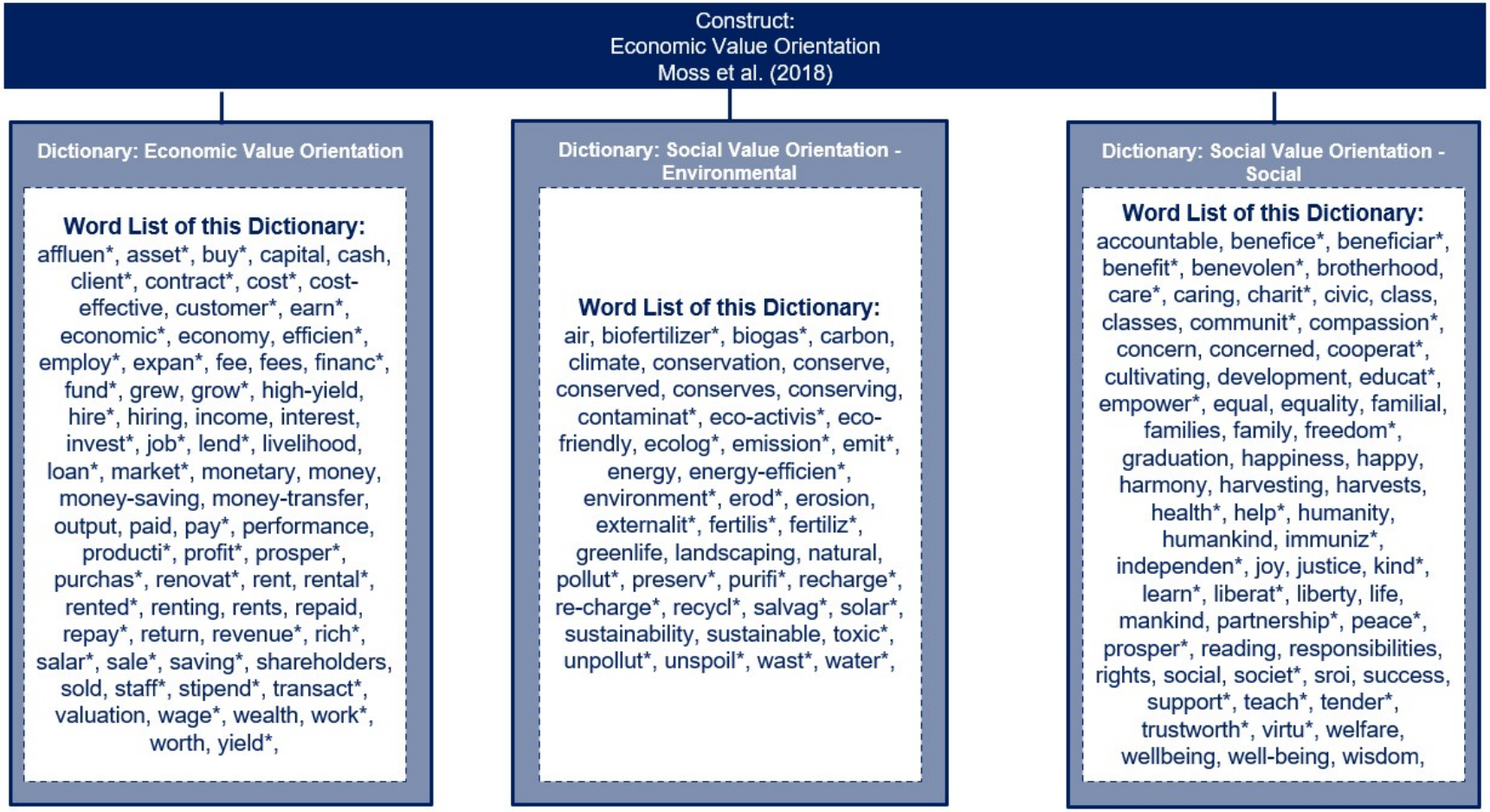

Figure 9: From Construct to the Dictionaries, to the wordlists. This figure shows a conceptual example of how constructs are bundled dictionaries and how dictionaries are made up of wordlists.

```
'undecaying', 'undeviating', 'unending', 'uninterrupted',
'uninterrupting', 'vital', 'vitality', 'vitals',
'wondering', 'forecast', 'foresee', 'anticipate',
'project', 'estimate', 'theorize']

import csv

with open("input.txt") as input_file:
    a = input_file.read().split()
with open("output.csv", "w+") as csvfile:
    for word in list_of_words:
        writer = csv.DictWriter(csvfile, fieldnames=
        ["word", "count"])
        writer.writerow({"word": word, "count": a.count
        (word)})
```

Figure 10: Python Code Excerpt

Initially, the author used his own code in the Python 3 programming language to run these dictionaries. In the picture to the left, you will find a code excerpt that shows the past and eventualy abandoned procedure. Notice a few of the dictionary words in red on top and the code beneath it:

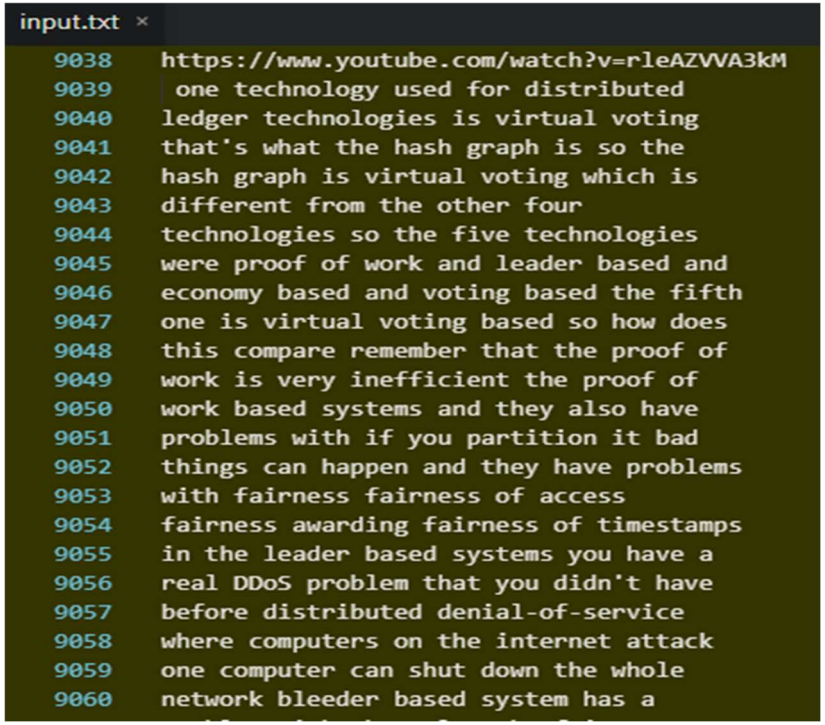

Figure 11: Glimpse into the file "input.txt" while being worked on in an Integrated Development Environment.

The dictionaries are now programmed into a Python 3 script. This Python 3 script would then read through the data-file (in the picture above called "input.txt" in the top left corner, the text is obviously much larger than this screenshot) and identifies the dictionary words (see image to the right):

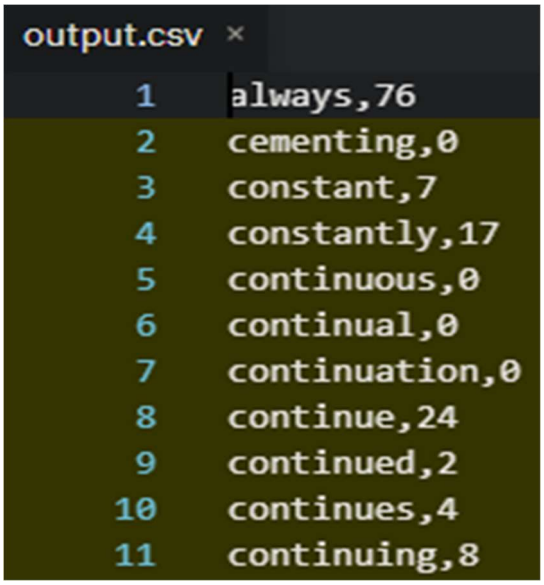

Figure 11: Output of the Python script, with the list of occurrences of dictionary words in the "input.txt" file

Upon activation, the code starts processing the text and then presents to us a list of the occurrence of these dictionary words, presented in the picture to the left is a small example. All these numbers are then added into a single final number that is used for our statistical calculations.

3.2.5.2.2. From Python 3 to Yoshikoder

After data collection, while analysing the raw text data in Python 3 scripts, the author found that the dictionary results were not as granular as hoped for. Another finding was that due to the very large amount of collected data, some of the text files were unstable. As a result, standard software, such as Microsoft Word and similar word processors were not able to return proper readings. Something as simple as a precise document-word-count became problematic. The author revisited academic research papers that were read before as well as new ones, in order to improve the approach. The author also looked at other solutions that were used under similar circumstances at other universities. After perusing, testing and experimenting with various other approaches, the author found that the results were precise if one switched from the Python 3 approach with self-written code and upgraded to use the Yoshikoder software package (Yoshikoder a, 2022), developed by a team of programmers at Harvard University that worked on similar problems in different academic contexts. Yoshikoder has been successfully used for text analysis in various studies by many other researchers (Fofiu, 2012; Chen, 2011; Ahmad, 2020; Anon, 2021; Krebs, 2015). In conclusion, the author found that switching to the Yoshikoder software package was a successful solution for precise text analysis, as it has been widely used by many researchers in various studies. In summary, the author found that switching to the Yoshikoder software package was a successful solution for precise text analysis, as it has been widely used by many researchers in various studies.

Dr. William Lowe, an expert in statistical text analysis (Hertie School, 2023), created the multilingual, cross-platform Yoshikoder software as an element of the Identity Project at Harvard's Weatherhead Center for International Affairs (Yoshikoder b, 2022). With Yoshikoder, researchers may import documents, create and use content analysis dictionaries, look at keywords in context, and carry out basic content analysis. Text documents can be used in Unicode, a widely used standard in the field of information technology, designed to ensure uniform encoding, representation, and manipulation of text in the majority of writing systems used around the world (Unicode, 2023). Yoshikoder can also handle various languages and alphabets, such as 'Big5 Chinese', a Chinese character encoding method used in, for example, Taiwan for traditional Chinese characters (IBM, 2023). Creating, viewing,

and saving keywords-in-context is possible. It can assemble word frequency tables and apply a content analysis dictionary. Dictionary files are non-proprietary and readable by humans due to Yoshikoder's native XML file format (Yoshikoder b, 2022). Yoshikoder is a multilingual, cross-platform software that provides researchers with various features such as importing documents, creating content analysis dictionaries, handling various languages and alphabets, and assembling word frequency tables, making it an essential tool for text analysis in academic research.

While Yoshikoder was initially designed by researchers that looked at its application in the academic context of International Affairs as a tool for Computer Aided Text Analysis, it can be used on any text in any field, as long as there are relevant dictionaries. Other researchers have proven this to be true and thus used Yoshikoder in various situations outside of the context of International Affairs, such as business studies, linguistics or information technology (Ahmad, 2020; Anon, 2021; Fofiu, 2012). Hence, Yoshikoder was an appropriate fit for this study. This study identified relevant dictionaries and manually coded them into Yoshikoder.

The author also used the commercial “AnyCount 2021 OCR+” software package to clarify the precise word count (Anycount 2022).

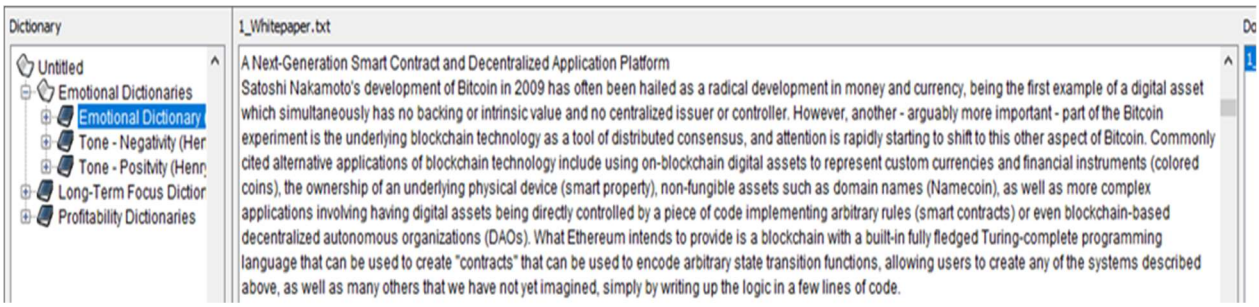

Figure 12: Partial screenshot of Yoshikoder’s graphical user interface.

With the abandonment of the author’s self-written code in Python 3, the analysis was undertaken completely by means of the Yoshikoder software package. It is licensed under the Gnu Public License (Yoshikoder b, 2022; GNU Operating System 2022) and was built specifically for the kind of research this study is undertaking. Above a partial screenshot of Yoshikoder’s graphical user interface where you will find the dictionaries on the left and the Ethereum Whitepaper to the right:

The output result looks like the following screenshot:

	Untitled>Emotional Dictionaries>Tone - Negativity (Henry, E., 2008)
1_Whitepaper.txt	48

You will notice that the result is one reading, the total number of dictionary words found. The perused papers in this field for this study, used a similar Computer Aided Text Analysis methodology and were also only using the combined numbers of signals/ cues found in a particular dictionary. Thus, this study used the same approach to stay in line with these studies.

To shape and adjust text formatting of the files and dictionaries that were fed into the Yoshikoder software package, a standard version of the text and source code editor Notepad++ was used (Notepad++ 2022), and was also released under the GNU General Public License (GNU Operating System, 2022).

3.2.5.3. Experiments

Experiments are part of the analysis of this study. Narrative analysis with large amounts of data does not have a set template. Nasheeda et al. (2019) points to "the fluidity of narrative analysis and emphasises that there is no single procedure to be followed". In short, there is no standard protocol. Different studies use different approaches depending on the nature of the data. Hence, this researcher, like so many before him, had to find his own path. Thus, experiments were conducted for this study.

3.2.5.3.1. Preparation for the experiments

The researcher had to attend Python 3 courses at Manchester Metropolitan University as well as independent Python online courses to build part of the groundwork for this study. The first attempts at coding a required tool for this research consistently failed until the first breakthroughs occurred in the summer of 2020. Eventually, after many trials of writing and amending code and consulting handbooks and online message boards, the first functioning Python 3 code emerged, ready for usage.

1st iteration Bidao trial case study

2020 August

The researcher conducted the first large experiment in August of 2020, where data was collected for the Bidao ICO project. The objective of the experiment was to identify and develop dictionaries and write relevant Python code that integrates the dictionaries in an effort to apply them on the collected textual data from Bidao.

During this experiment, several discoveries were made. First, that both Reddit and Twitter did not yield sufficient useful datasets that would lend themselves to appropriate large-scale analysis for meaningful results. Textual Reddit and Twitter data was collected by means of simply copying and pasting the text with a personal computer and saving it in .txt computer file format. When the collected text data ran through the dictionaries that were built into the Python 3 code, it became clear that more text was needed to come to any meaningful conclusions.

The second discovery was that the Python 3 script applied to textual data can work. The need for more refinement, work and effort also became clear.

The third discovery was that data from YouTube comment sections yielded much richer textual data and more engaged discussions. This discovery was a surprise. The idea to look at YouTube, a video-based platform, not a text-based platform, such as Reddit and Twitter seemed very counterintuitive at first, but after discovering an article on the sources of crowd narratives recommending YouTube narratives the trial was successful. Thanks to the advances in Artificial Intelligence that focuses on speech to text and the architecture of YouTube.com however, it became clear that the amount of textual data was massive. YouTube turned out to be a network where the crowd can talk back to and discuss the content with each other. This insight showed much promise. The ensuing challenge then became how to extract the bulk of this textual data from the website and store it in a practical and safe way that the Python 3 scripts could work with. In short, the YouTube data presented both new challenges and new risks for this project. It also required new skills like coding for file formats the Python 3 script could read.

Fourth, it turned out that the YouTube video transcripts were available but hidden on the site. They were also a source of information and discussion among the ICO community. This insight too, was a surprise at the time. Now it is obvious, but back in 2020 there were no prominent YouTube related academic ICO papers. These insights hinted to research in a new and relevant field.

The fifth discovery was the usefulness of data from whitepapers. Their content was rich and useful. The ideas behind them were streamlined and had a dedicated purpose.

Based on the first Bidao experiment, the author developed three signal/cue dictionaries – two were developed from original signals/cues regarding profitability and long-term focus. The next dictionary targeted emotional cues and was developed using the LIWC dictionary (Linguistic Inquiry and Word Count Dictionary) as an example, but the author built it from scratch. Examples came also from wordlists found online and signals/cues found in this first experiment.

In short, the Bidao experiment showed how the initial expectations about sourcing the appropriate data and the modus operandi of handling it is for further investigation.

2nd iteration Hedera-Hashgraph trial case study

2020 September

The focus shifted now to the ICO's whitepapers, YouTube Video Comments and YouTube Video Transcripts.

A semi-manual approach to data collection was developed by the researcher, based on several experiments with YouTube-focused browser plugins and textual data-harvesting sites. The files that contained the harvested data were now so large that both the code written in Python 3 and the IDE (Integrated development environment) had problems coping with the amount of data. There was too

much data for either the code or the hardware, the IDE could therefore not handle it. The problem stemmed from either a) too little Random Access Memory within the computer-hardware or b) the connection of the IDE's resource management system. Since 16 Gigabyte of Random Access Memory were installed (12 Gigabyte effectively usable by the system,), this would normally rule out the first possibility, that being option a).

To address this challenge, the next step was then to switch to a Linux-based IDE on a computer that the author has custom built specifically for this research. The individual parts were salvaged from other computers and turned into a new computer. This was necessary due to lockdowns in the UK and a shortage in computer parts for the same reason and ensuing budget restrictions. This solved the problem, and the Python 3 code was now able to process the data. The same data and the same Python 3 program was tested with the same data on other IDE's too, to make sure that the results were identical, which they were. These tests were also conducted on virtual machines. A virtual machine is a digital version of a physical computer, that is purely digital but emulates its physicality. It became clear that the improved Python 3 code worked. The new datasets were now also found to be large enough to yield significant results.

When applying the aforementioned dictionaries, this experiment helped to discover that the data was rich and could yield viable and reliable results and the IDE was a suitable environment to do this in with the improved Python 3 script.

Protocol built from two experiments The idea behind these actions was to see how and what kind of data to get and the most efficient method to collect it. Two ICOs were chosen because **Bidao** was publicly seen as a new and very promising start-up as based on its whitepaper and technical specifications. **Hedera Hashgraph** is one of the more popular ICOs that was well discussed on the internet among potential investors at the time. Due to their novelty, there was no academic literature on these specific ICOs. As indicated before, prior experimentation with web scraping and initial coding taught the author that, based on total word-count of harvested data, Reddit and Twitter are not yielding sufficient data and public conversations, but YouTube and the project whitepapers offered sufficient data volume for meaningful analysis.

3rd iteration Ethereum trial case study

October to December 2020

For the third iteration of the trial cases, the Ethereum ICO with the data in .txt file format was singled out, due to their large file sizes. The file size factor was important, because for this trial case to constitute the final experiment it was imperative to ensure that the programmed dictionaries were able to handle the largest files from the collected data. Thus, the Ethereum ICO project was the natural choice for this experiment due to its comparably voluminous file sizes.

Further testing used the Yoshikoder Software package. The Ethereum data was analysed by means of the aforementioned dictionaries, programmed identically into both the Python 3 scripts and the Yoshikoder software package. When compared to the Python 3 script, the Yoshikoder software package yielded more accurate results that were easier to work with. Henceforth, the use of the author's Python 3 scripts was upgraded to the Yoshikoder scripts.

Eventually this data was-processed and run through the dictionaries by means of Computer Aided Text Analysis (Yoshikoder).

The author looked for the correct statistical method to be used on the results of the Yoshikoder readings and explored the possibilities of Least Significant Difference (LSD) statistical testing to identify the significant presence of signals/cues in project and crowd narratives. When the result of an analysis of variance (ANOVA) is significant, it hints that at the very least one group is different from the other groups. At that stage of calculation though, it is still unclear which group differs. The ANOVA is typically followed by statistical comparison of two means. Fisher (1935) developed the first pairwise comparison technique that is known as the Least Significant Difference (LSD) Test. This procedure can only be utilized if the ANOVA F omnibus is significant. An omnibus test is an overall test for a whole group of results. The LSD Test calculates the smallest significant difference between two means, just as if they were the only means to be compared, to confirm any difference larger than the LSD as significant (Fischer, 1935; Dodge, 2008). The justification for this choice was given in section 3.2.5.

3.2.5.3.2. Lessons learned from experiments and final Research Design – summary

The lessons extracted from the trials and data collection from Reddit and Twitter did not yield enough useful data and therefore classic social media was not the proper online space from where actual crowdfunding communities gather to discuss the ICO business. Therefore, after trailing crowdfunder narratives, it was found that the main online spaces where crowdfunders discuss ICOs were found on YouTube.

When applying the dictionaries, a custom preliminary dictionary of emotional words and linked it into the custom Python script for experimentation purposes.

The results of the trial case studies gave valuable information about the direction and recalibration of the data, collection method and the type of analysis that can yield more refined and accurate results, given the "big data" nature of the case studies. Another lesson was how to harvest the data in a way that is appropriate for this study. At the time of this undertaking, extracting comments and video

transcripts was neither easy nor straightforward. That has changed for the better but at the time it was challenging, given the nature of web-scraping. After a lot of trial and error, the coding scheme written in Python 3 helped the author to learn about coding. Further, the author started to interact with other developers, particularly on public Discord servers and had to learn how to extract relevant value from these servers.

The experiments also gave a more accurate estimate of how long it would take to collect the remaining data for the other ICO projects and what challenges with the data were to be anticipated. After the experiments, the final Research Design was decided as shown in the Figure below (see bottom arrow).

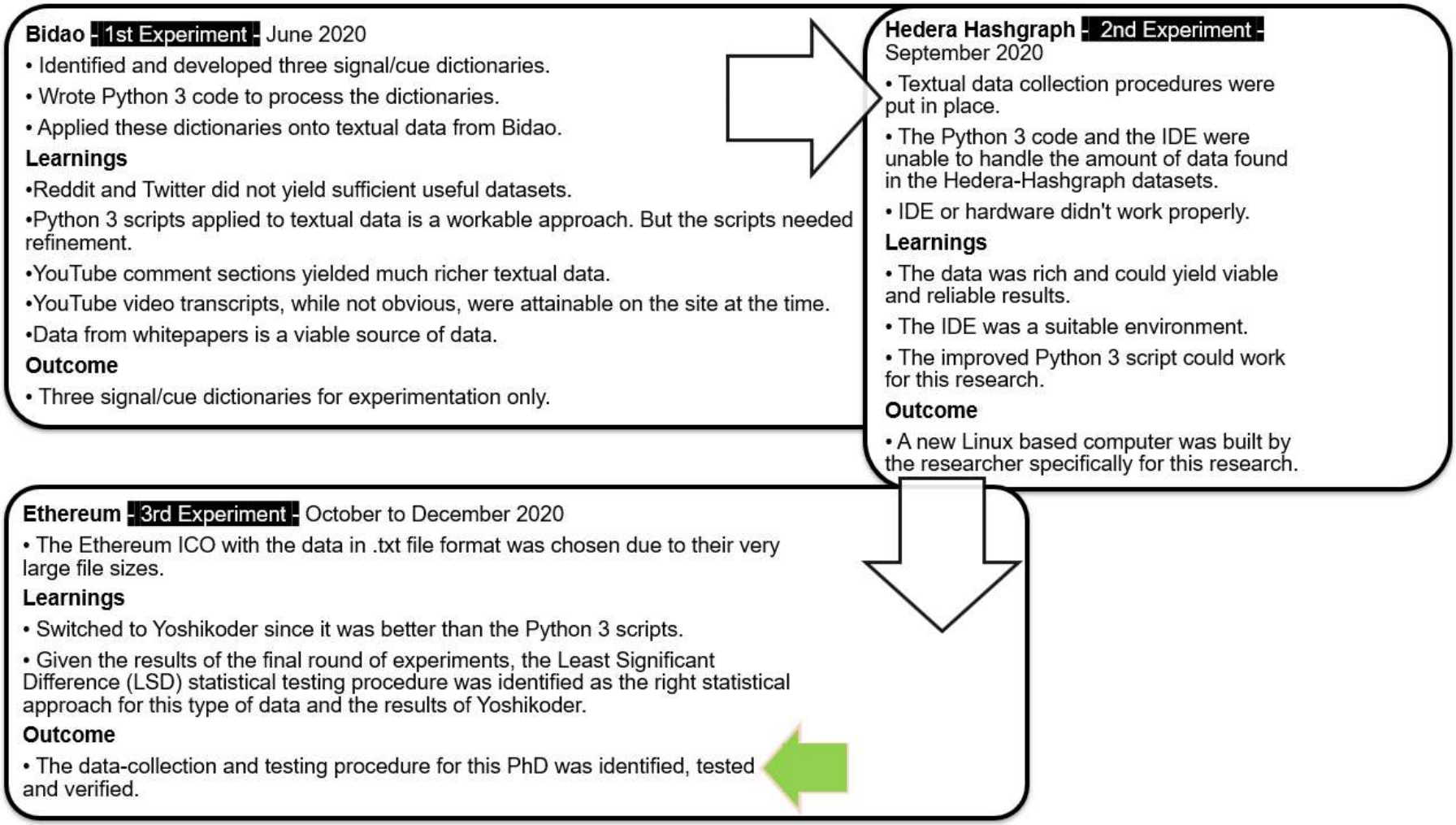

Figure 13: Overview of the Experiments

3.2.5.4. Validity and Reliability of LSD

The Least Significant Difference (LSD) test is a statistical method. Its use is to perform a comparison of the means of various groups or treatments in an experiment. Overall, to ensure the validity and reliability of the LSD test, the established statistical procedures and guidelines were followed. Microsoft Excel was identified as an appropriate statistical software and particular attention was paid to the assumptions and limitations of the test. That includes for example omitting unsuitable data from the Yoshikoder output. The researcher assured the validity and reliability of the LSD test.

Validity refers to the accuracy and truthfulness of the results obtained from the test. To ensure validity, the researcher ensured that the test was the appropriate choice for the data. The LSD test is only applicable when the assumptions of homogeneity of variances and normality are met. It was verified that these assumptions held up for the data of this research. A sufficiently large sample size was used, as chapter "4. Results" lays out when discussing for example the zero readings of Yoshikoder. For example, despite Yoshikoder weeding out data that was not suitable, the large sample size of the data collected, ensured that the validity of the test results was assured. Since the output format of Yoshikoder lent itself to using Microsoft Excel, the same software was then used for the statistical calculations. Microsoft Excel is also known to produce valid results for the LSD test. The level of significance was set appropriately to ensure that the test results are meaningful. In hypothesis testing, the significance level is the probability of rejecting the null hypothesis when it is true.

Reliability is a reference to both the consistency as well as the stability of the results acquired from the test. To ensure reliability, the researcher performed the test multiple times, since repetition of the test can increase the reliability of the results. Further, the results have been checked for consistency, meaning it was ensured that the results of the test were consistent across the different samples of the same population. To check for consistency, the results obtained from the LSD tests were compared across the different samples. The consistency of the results provided evidence that the LSD test is reliable and can be used to make meaningful inferences. The researcher ensured that the results of the tests were not affected by changes in the conditions under which the tests were performed. Finally, appropriate data cleaning techniques have been used, ensuring that the data used for the test was free of errors, outliers, or missing values.

3.2.5.5. Ethical considerations

This study was conducted with a keen eye for ethical integrity. The data used in the research was obtained from publicly available sources on the internet and was readily accessible without any restrictions or necessity for consent. Despite this, all necessary precautions have been taken to ensure that the data was used in an ethical and responsible manner. The study design and methodology were carefully evaluated. The findings of this study are based solely on publicly available information and do not infringe upon any individual's right to privacy. No risk has been taken to an

individual's or company's, reputation, financial, physical or mental wellbeing. Data have been safely stored in UWE's OneDrive system and have not been shared for commercial or other purposes. In conclusion, this study was conducted with a full commitment to ethical standards and with no ethical concerns arising from the use of publicly available data.

3.2.5.6. Limitations of the study

A potential limitation but also potential strength of this study is the fact that the volume of data required an experimental round of testing dictionaries in three trial case studies. The limitation is that the dictionaries founded by other academic studies in signalling theory in crowdfunding projects were not tailored to fit the narratives of ICOs. This limitation however has led to one of the contributions of this study.

The use of LSD to test frequencies of correlation between emotional and other dictionaries in ICO narratives proved a successful strategy, however there would be a limitation in terms of performing an inductive analysis to understand the context of these correlations in more depth and explain why they happen. However, this method of analysis satisfies the purpose of this study to identify the signals and cues used most frequently by both project teams and crowdfunders in the MGC and UGC media of successful ICOs. Understanding the contextual factors to explain their occurrence should be another subsequent follow up study.

3.3. Chapter Summary

The philosophy of Critical Realism has been selected as the framework for this research, with the objective of determining the efficacy of various methods through experimental case studies. The aim was to identify the most effective testing procedures within this specific context and to uncover the patterns of cues and signals present in project and crowdfunder narratives. This approach has been taken in order to gain a deeper understanding of the underlying mechanisms at play and to ultimately arrive at a well-supported conclusion.

This study involved a comprehensive examination of the methods employed in 40 recent research papers within the domain of narrative crowdfunding. The methodology employed in this study involved conducting a series of exploratory case studies using narrative data gathered from a selection of fully funded ICO projects and crowdfunders. These projects have been carefully chosen based on a set of established criteria, including fully completed funding, discussion on YouTube, the availability of whitepapers, and listing on cryptocurrency exchange platforms in order to minimise the potential for including fraudulent projects.

Three case studies have been performed in order to finalise the research design, with each case providing valuable insights into the methodology and contributing to the overall understanding of the ICO project process.

To carry out the analysis, in the experimental phase, software has been developed using the Python 3 programming language, which was designed to count the frequency of occurrences of the target words in the dictionaries. The chosen method of analysis was Computer Aided Text Analysis, which provides a systematic approach to measure constructs through the use of dictionaries. However, the results obtained from this approach were found to be insufficiently granular and the large volume of data resulted in instability of the text files.

As a result, the author decided to switch from self-written Python 3 programs to using Yoshikoder, a software package for text analysis developed by Harvard University. Yoshikoder offers numerous capabilities, including the import of documents, the creation and use of dictionaries, the examination of keywords, and the conduct of basic content analysis in multiple languages. The study also employed the use of AnyCount software to obtain precise word-counts.

In choosing Yoshikoder, the author deemed it to be a more appropriate solution, as it also offers greater functionality compared to the initial self-written code in Python 3. The author also utilised Notepad++ to shape and adjust text formatting to ensure consistency and clarity in the data analysis.

The present study collected and analysed data on 20 ICOs through a combination of YouTube video transcripts and comments, as well as publicly available whitepapers. The data collected was exclusively textual in nature, with a total volume of 102 MB and organised into five datasets per ICO.

The ICO project process encompasses specific stages, with this study focusing specifically on the first stage, the crowd sale stage. During this stage, the project's whitepaper is released and a formal crowd sale event takes place. The selected projects for this study include Zilliqa, Bitbond, Bidao, Ethereum, MenaPay, Kleros, Flow-Blockchain, Plutus, Fetch_ai, Hedera-Hashgraph, 300cubits, Polkadot, Cardano, LYXe_LUKSO, Blockstack, Ferrum-Network, Digitabits, Monarch-Token, NuCypher, and Solana.

To analyse the data, the study utilised the Yoshikoder software in conjunction with custom-made digital dictionaries. Data collection was accomplished through a combination of manual web scraping from YouTube and ICO websites and previous studies from the relevant academic literature on the topic. These studies have used YouTube data for various purposes, including social sciences research and content analysis.

The methodology employed in these past studies varied, incorporating both qualitative and quantitative methods and coding. The data was obtained through a combination of computer programs and semi-manual methods. This current study builds upon the previous work in the field.

The objective of this study was to investigate the utilisation of dictionaries established by prior researchers. The dictionaries were selected based on their relevance to the specific signals and cues

being evaluated in this study and were subsequently organised into constructs for analysis using the Computer Aided Text Analysis software, Yoshikoder.

The dictionaries have been integrated into the Yoshikoder software, and the resulting output was utilised in statistical calculations to draw meaningful conclusions. This approach was taken in order to build upon the work of previous researchers and to provide a systematic framework for evaluating the relevance of dictionaries in the analysis of data related to signals and cues.

4, Chapter 4: Results

This chapters has two sections. Section 4.1. provides the overall results of the Computer Aided Text Analysis and statistical tests to eliminate weak Dictionaries and confirm the Dictionaries that have passed the hypotheses testing. Table 10 presents the results of the hypotheses, along with the corresponding theoretical gaps and objectives.

Section 4.2. presents the results according to Constructs that bundle several Dictionaries together.

4.1. Results of Hypotheses testing

The hypotheses tested these 14 Dictionaries (as discussed in the selection of Dictionaries in the Methods Chapter 3) on 20 ICO projects. The dictionaries are bundled into corresponding Constructs addressing types of signals and cues in the literature. In the following Table 7 these Constructs are highlighted in grey colour and the dictionaries they contain are listed right under them with their academic references in brackets right next to them:

Construct: Entrepreneurial Orientation
1. Innovativeness Dictionary – (McKenny et al., 2018)
2. Proactiveness Dictionary (McKenny et al., 2018)
3. Risk Taking Dictionary (McKenny et al., 2018)
Construct: Market Orientation
4. Long Term Focus Dictionary (McKenny et al., 2018)
5. Profitability Dictionary (McKenny et al., 2018)
Construct: Organisational Time Horizon
6. Long Time Horizon Dictionary (DesJardine and Bansal, 2019)
7. Short Time Horizon Dictionary (DesJardine and Bansal, 2019)
Construct: Personal Values
8. Security Dictionary (Neiman et al., 2016)
9. Self-Direction Dictionary (Neiman et al., 2016)
10. Stimulation Dictionary (Neiman et al., 2016)
Construct: Negative Tone
11. Negative Words Dictionary (Loughran-McDonald Master Dictionary, 2010)
12. Tone – Negativity Dictionary (Henry, E., 2008)
Construct: Positive Tone
13. Positive Words Dictionary (Loughran-McDonald Master Dictionary, 2010)
14. Tone – Positivity Dictionary (Henry, E., 2008)

Table 7: The dictionaries used in the study and the corresponding signals/cues to which they refer.

After running the dictionaries on the data by means of Computer Aided Text Analysis with the Yoshikoder software package, the author had to remove the dictionaries that were unable to find sufficient signals / cues (i.e., they found less than 6 dictionary words). In this document they are called “zero readings”.

In Tables 8a and 8b you find an overview of the “zero readings” pertaining specifically to the 1_ Whitepapers (MGC), 2_ ICO Video Transcripts (MGC) and 3_ Independent Video Transcripts (UGC) data as they determine whether we can run the ChiSquare tests for the 1_ to 2_; 1_ to 3_ and 2_ to 3_ pairs. That being the 1_ Whitepapers (MGC) to 2_ ICO Video Transcripts (MGC); 1_ Whitepapers (MGC) to 3_ Independent Video Transcripts (UGC) and 2_ ICO Video Transcripts (MGC) to 3_ Independent Video Transcripts (UGC). This is done because the ChiSquare test is not as robust as the Least Significant Difference test when it comes to the zero readings.

The statistical error rate used was 5 and below. Again, in this document they are called “zero readings”. Note that in the following spreadsheet the zero readings of neither the 4_ ICO Video Crowd Comments (UGC) nor 5_ Independent Video Crowd Comments (UGC) datasets are counted, since the LSD-Test can handle the zero readings. 4_ ICO Video Crowd Comments (UGC) and 5_ Independent Video Crowd Comments (UGC) in particular were tested by means of the LSD-Test. This way the spreadsheet in Table 8 focuses on what matters.

Table 8a: Zero readings: This spreadsheet shows us the number of statistical error readings when the dictionaries (1st left column) were run on the datasets (top row).

	1_Zilliqa	2_Bitbond	3_Bidao	4_Ethereum	5_MenaPay	6_Kleros	7_Flow-Blockchain	8_Plutus	9_Fetch_ai	10_Hedera_Hashgraph	11_300cubits	12_Polkadot	13_Cardano	14_LYXe_LUKSO	15_Blockstack	16_Ferrum-Network	17_Digitalbits	18_Monarch_Token	19_NuCypher	20_Solana
Construct: Entrepreneurial Orientation																				
Innovativeness Dictionary - (McKenny et al., 2018)			1		1	1		1			1									
Proactiveness Dictionary (McKenny et al., 2018)			1		1	3		2		1	1	1			1			1	1	1
~~Risk Taking Dictionary (McKenny et al., 2018)~~	~~3~~	~~2~~	~~3~~	~~3~~	~~3~~	~~2~~	~~2~~	~~3~~	~~2~~	~~2~~	~~3~~	~~3~~	~~1~~	~~3~~	~~2~~	~~3~~	~~3~~	~~3~~	~~3~~	~~2~~
Construct: Market Orientation																				
Long Term Focus Dictionary (McKenny et al., 2018)			1		1	1		2	1		3	1						3		1
~~Profitability Dictionary (McKenny et al., 2018)~~	~~3~~		~~2~~	~~1~~	~~1~~	~~2~~	~~1~~	~~1~~	~~2~~	~~1~~	~~3~~	~~2~~	~~1~~	~~1~~		~~2~~	~~1~~	~~2~~		~~1~~
Construct: Organizational Time Horizon																				
Long Time Horizon Dictionary (DesJardine & Bansal, 2019)	1		1	1	1	2		2	1		2	1						3		
Short Time Horizon Dictionary (DesJardine & Bansal, 2019)			1		1	1					1	1								
Construct: Personal Values																				
~~Security Dictionary (Neiman et al., 2016)~~		~~2~~	~~1~~	~~1~~	~~1~~	~~2~~	~~1~~	~~2~~	~~1~~	~~1~~	~~3~~	~~1~~	~~1~~	~~1~~	~~1~~	~~1~~	~~1~~	~~3~~	~~1~~	
Self-Direction Dictionary (Neiman et al., 2016)				1	1	1		1			2	1			1	1		2	1	
~~Stimulation Dictionary (Neiman et al., 2016)~~	~~2~~	~~2~~	~~3~~	~~3~~	~~3~~	~~3~~	~~2~~	~~3~~	~~2~~	~~3~~	~~3~~	~~3~~	~~2~~	~~2~~	~~2~~	~~3~~	~~2~~	~~3~~	~~3~~	~~1~~
Construct: Negative Tone																				
Negative Words Dictionary (Loughran-McDonald Master Dictionary, 2010)					1	1					1									
Tone – Negativity Dictionary (Henry, E., 2008)					1	1		1			1	1								
Construct: Positive Tone																				
Positive Words Dictionary (Loughran-McDonald Master Dictionary, 2010)					1	1														
Tone – Positivity Dictionary (Henry, E., 2008)					1	1														

Table 8b (after) – Dictionaries and data used for further processing.
- Zero readings: This spreadsheet shows us the number of statistical error readings when the remaining dictionaries (1st left column) were run on the datasets (top row). There are less dictionaries on the left side (as opposed to the prior table) since those dictionaries that create too large statistical error readings have been removed. Also, datasets that create statistical error readings that are too high for further studies, have also been removed.

	1_Zilliqa	2_Bitbond	4_Ethereum	7_Flow-Blockchain	9_Fetch_ai	10_Hedera_Hashgraph	12_Polkadot	13_Cardano	14_LYXe_LUKSO	15_Blockstack	16_Ferrum-Network	17_Digitalbits	19_NuCypher	20_Solana
Construct: Entrepreneurial Orientation														
Innovativeness Dictionary - (McKenny et al., 2018)														
Proactiveness Dictionary (McKenny et al., 2018)						1	1			1			1	1
Construct: Market Orientation														
Long Term Focus Dictionary (McKenny et al., 2018)					1		1							1
Construct: Organizational Time Horizon														
Long Time Horizon Dictionary (DesJardine & Bansal, 2019)	1		1		1		1							
Short Time Horizon Dictionary (DesJardine & Bansal, 2019)							1							
Construct: Personal Values														
Self-Direction Dictionary (Neiman et al., 2016)			1				1			1	1		1	
Construct: Negative Tone														
Negative Words Dictionary (Loughran-McDonald Master Dictionary, 2010)														
Tone – Negativity Dictionary (Henry, E., 2008)							1							
Construct: Positive Tone														
Positive Words Dictionary (Loughran-McDonald Master Dictionary, 2010)														
Tone – Positivity Dictionary (Henry, E., 2008)														

Tables 8a and 8b: To the left the reader finds 4 scratched out dictionaries. This is because when the reader looks into the corresponding cells to the right of the names of these dictionaries, you also see stroked out numbers. These numbers show us the amount of zero readings. The presence of these zero readings means that these results are too insignificant for any further calculation, from a statistical point of view. The same is true for the 6 datasets highlighted in grey (to be found in the top row). The datasets highlighted in the grey columns were removed and not used for further testing since they yielded too many zero readings. Too many zero readings means that it is not possible to use these results/ readings in the following statistical evaluation. To put it into simpler language: Any readings, dictionaries and datasets where the numbers are highlighted in grey are not suitable for any further testing and are henceforth omitted from any further processing.

Each number in the above spreadsheet is the count of 0s found by Yoshikoder. Highlighted in grey colour are excessive amounts of zero readings, that are destined for omission from all following calculations, in order to get more meaningful results that can be processed by means of the ChiSquare test. When a cell is empty, it means that the results can be handled by both the following LSD and the ChiSqare test and that the statistical error rate has been applied. In short, when a cell is empty, it means that the corresponding data for this research can be used for further statistical calculations.

Based on these numbers, 4 of the 14 dictionaries were omitted from all following calculations. This means that they did not participate in any further statistical calculations since they create too many zero readings which interfere with the ChiSquare test.

Result: The below dictionaries and datasets that are not to be used in further statistical calculations

The four dictionaries that are not to be used in further statistical calculations are the Risk Taking Dictionary (McKenny et al., 2018), · Profitability Dictionary (McKenny et al., 2018),· Security Dictionary (Neiman et al., 2016) and the Stimulation Dictionary (Neiman et al., 2016).

Following the prior Computer Aided Text Analysis by means of Yoshikoder, are the correlations or lack thereof that both the Least-Significant-Difference-Tests and Chi-Square-Tests have found, when they were applied to the finalised Yoshikoder output. The results are always binary. We know whether there is or whether there is no correlation. The performed tests do not tell us how strong or weak the correlations or lack thereof are. We just know whether they are correlated or not.

14 ICOs tested	LSD-Tests				Chi-Square-Tests			
	1_ to 4_	1_ to 5_	2_ to 4_	3_ to 5_	1_ to 2_	1_ to 3_	2_ to 3_	
1_Zilliqa	Not Correlated	Not Correlated	Correlated	Not Correlated	Correlated	Correlated	Correlated	
2_Bitbond	Not Correlated	Not Correlated	Not Correlated	Correlated	Correlated	Correlated	Correlated	
4_Ethereum	Correlated	Not Correlated	Correlated	Not Correlated	Correlated	Correlated	Correlated	
7_Flow-Blockchain	Not Correlated	Not Correlated	Correlated	Not Correlated	Correlated	Correlated	Correlated	
9_Fetch_ai	Not Correlated	Not Correlated	Correlated	Not Correlated	Correlated	Correlated	Correlated	
10_Hedera_Hashgraph	Not Correlated	Correlated	Not Correlated	Correlated	Correlated	Correlated	Correlated	
12_Polkadot	Correlated	Not Correlated	Not Correlated	Not Correlated	Correlated	Correlated	Correlated	
13_Cardano	Not Correlated	Correlated	Not Correlated	Not Correlated	Correlated	Correlated	Correlated	
14_LYXe_LUKSO	Not Correlated	Correlated	Not Correlated	Correlated	Correlated	Correlated	Correlated	
15_Blockstack	Not Correlated	Not Correlated	Correlated	Not Correlated	Correlated	Correlated	Correlated	
16_Ferrum-Network	Correlated	Correlated	Correlated	Correlated	Correlated	Correlated	Correlated	
17_Digitalbits	Correlated	Correlated	Correlated	Correlated	Correlated	Correlated	Correlated	
19_NuCypher	Not Correlated	Not Correlated	Correlated	Not Correlated	Correlated	Correlated	Correlated	
20_Solana	Not Correlated	Not Correlated	Correlated	Not Correlated	Correlated	Correlated	Correlated	
	4	5	9	5	14	14	14	of 14 projects are correlated

	28.57143	35.71429	64.28571	35.71429	100	100	100	% of total of 14 projects
	1_ to 4_ Not Correlated	1_ to 5_ Not Correlated	2_ to 4_ Correlated	3_ to 5_ Not Correlated	1_ to 2_ Correlated	1_ to 3_ Correlated	2_ to 3_ Correlated	Existing Correlations

Table 9: Hypothesis Results (all bundled dictionaries). Cells highlighted in green show the percentage of cases that were found statistically significant in the tests.

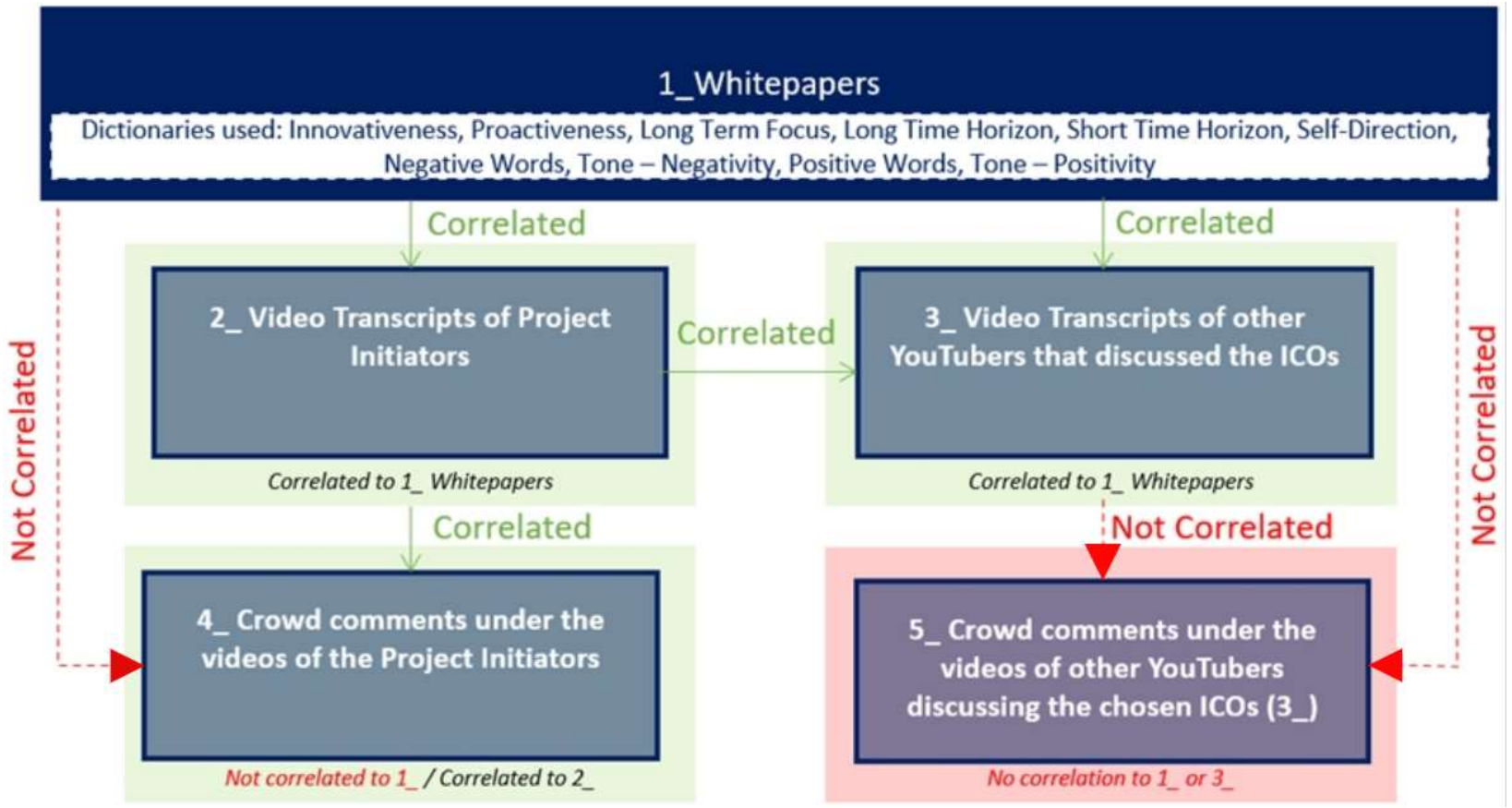

Figure 14: Hypothesis results outlined from Dictionaries applied to Whitepapers and shared with videos and comments

When the finalised Yoshikoder output was correlated by means of the Least-Significant-Difference Test and the Chi-Square-Test accordingly, no correlations were found with the 1_ Whitepapers (MGC) to 4_ ICO Video Crowd Comments (UGC), 1_ Whitepapers (MGC) to 5_ Independent Video Crowd Comments (UGC) and 3_ Independent Video Transcripts (UGC) to 5_ Independent Video Crowd Comments (UGC) pairs. The 2_ ICO Video Transcripts (MGC) to 4_ ICO Video Crowd Comments (UGC), 1_ Whitepapers (MGC) to 2_ ICO Video Transcripts (MGC), 1_ Whitepapers (MGC) to 3_ Independent Video Transcripts (UGC) and 2_ ICO Video Transcripts (MGC) to 3_ Independent Video Transcripts (UGC) pairs however were correlated. The following Figure will visualize this in a more understandable way.

The above Figure shows the results of the application of Dictionaries to MGC and UGC: when applying the Innovativeness, Proactiveness, Long-Term Focus, Long-Time Horizon, Short Time Horizon, Self-Direction, Negative Words, Tone-Negativity, Positive Words and Tone-Positivity dictionaries to the following datasets. The 1_ to 4_, 1_ to 5_ and 3_ to 5_ pairs are not correlated. The 2_ to 4_, 1_ to 2_, 1_ to 3_ and 2_ to 3_ pairs however are correlated.

When focusing on the two constructs, positive tone, and negative tone, this study found that the 1_ Whitepapers (MGC) to 4_ ICO Video Crowd Comments (UGC), 1_ Whitepapers (MGC) to 5_ Independent Video Crowd Comments (UGC) and 2_ ICO Video Transcripts (MGC) to 4_ ICO Video Crowd Comments (UGC) pairs were correlated in the context of the "Construct: Positive Tone" dictionaries when applying the Least-Significant-Difference-Test. The same test however did not find a correlation on the 3_ Independent Video Transcripts (UGC) to 5_ Independent Video Crowd Comments (UGC) pair under the same Construct with the same dictionaries.

When applying the Chi-Square-Test on the data pairs of 1_ Whitepapers (MGC) to 2_ ICO Video Transcripts (MGC), 1_ Whitepapers (MGC) to 3_ Independent Video Transcripts (UGC) and 2_ ICO Video Transcripts (MGC) to 3_ Independent Video Transcripts (UGC) pertaining to the "Construct: Negative Tone" dictionaries, no correlations were found.

Summary: Positive signals and queues from the Project Instigator's Whitepapers and Video-Transcripts were used by the crowd in the respective comment sections. Since successful ICO's were chosen exclusively, this could be a reflection of the crowd's positive stance towards the projects after reading the whitepapers and consuming the videos.

The positive signals and cues from the transcripts of other YouTubers' videos were not used by the crowd.

Ergo: To encourage positive investor sentiment, the deliberate use of positive signals and cues by project instigators in their publications is likely to be of importance when it comes to attracting ICO investments.

When testing the 1_ to 2_,1_ to 3_ and 2_ to 3_ pairs with the Negative Words Dictionary (Loughran-McDonald Master Dictionary, 2010) and the Tone – Negativity Dictionary (Henry, E., 2008), no correlations at all were found.

Summary: While negative signals and cues were present in the data, no negative signals and queues from the Project Instigator's 1_ Whitepapers travelled into the 2_ and 3_ Video-Transcripts. Also, no negative signals and cues from the 2_ Video Transcripts of Project Initiators (MGC) correlated with 3_ Video Transcripts of other YouTubers (UGC).

Ergo: Project initiators should think carefully whether to deliberately use negative signals/cues in their whitepapers and YouTube videos.

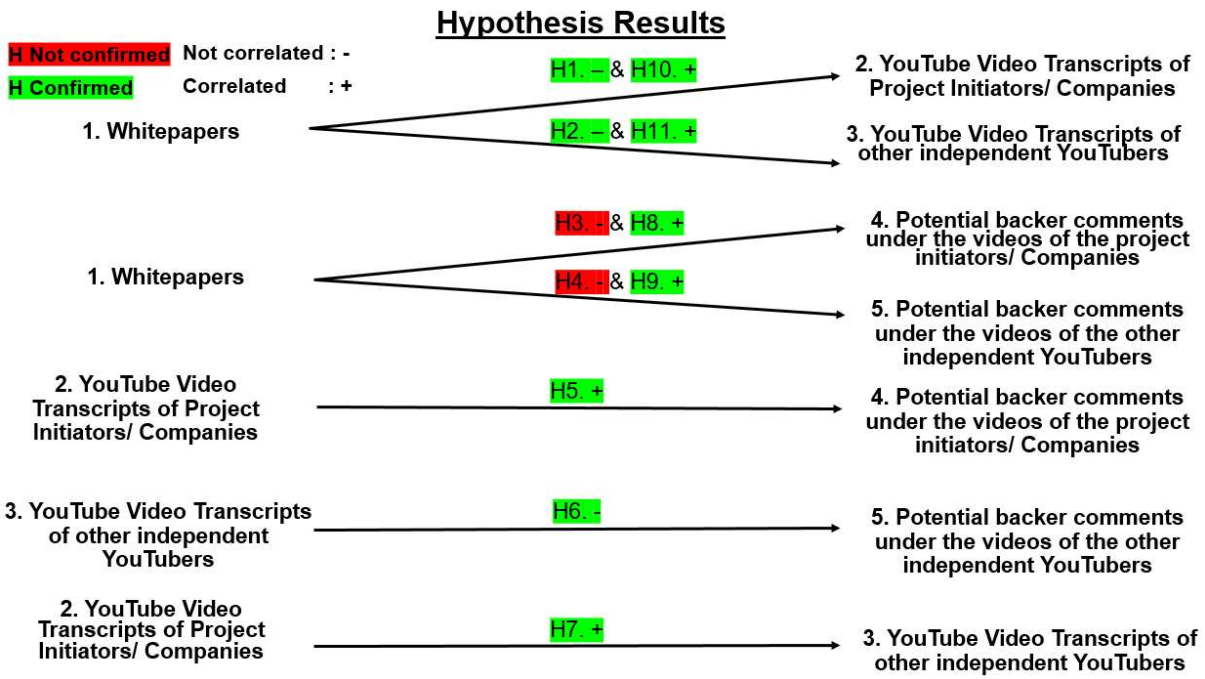

Figure 15: Overview of the Hypothesis Testing Results

To add context to this, the hypothesis testing yielded the following interesting results:

- Negative tone signals/ cues from whitepapers are not frequently found in ICO Video Transcripts.
- Neither are Negative tone signals/ cues from whitepapers frequently found in Independent Video Transcripts.
- Commenters on ICO videos either do not often read whitepapers or do not pick signals/ cues up from ICO video creators, since signals/ cues from whitepapers were not frequently found in ICO Video Crowd Comments.
- The same goes for commenters on independent videos, that do not seem to read whitepapers or do not pick signals/ cues up from independent video creators either. This study found that signals/ cues from whitepapers are not frequently found in Independent Video Crowd Comments.
- On the other hand, commenters tend to comment positively about ICO produced YouTube videos. Positive emotional signals/ cues from ICO Video Transcripts were frequently found in the corresponding ICO Video Crowd Comments.
- In addition, Positive-Tone dictionary signals/ cues from whitepapers are frequently found in Independent Video Crowd Comments.

- There isn't, however much positive talk among YouTube commenters of independently produced videos, since positive emotional signals/ cues from Independent Video Transcripts are not frequently found in their corresponding Independent Video Crowd Comments.

- Not surprisingly, independent YouTubers might be watching ICO produced YouTube videos, because signals/ cues from ICO Video Transcripts are frequently found in Independent Video Transcripts.

- Given the start-up nature of ICOs, whitepaper authors seem to be making their own videos with similar language (as opposed to outsourcing video production), since signals/ cues from whitepapers are frequently found in ICO Video Crowd Comments.

- This is also confirmed by the somewhat logical finding that dictionary signals/ cues from whitepapers are frequently found in ICO Video transcripts.

- Thus, the path of signals/cues from whitepapers to ICO Video Transcripts to ICO Video Crowd Comments seems a natural one.

- Independent YouTubers either read the whitepapers and/ or watch the ICO project YouTube videos or both, because dictionary signals/ cues from whitepapers are frequently found in the Independent Video Transcripts.

Hypothesis	MGC or UGC	Result	In other words	Dictionaries	Relates to Objective	Relates to Gap
H1.	1_Whitepapers (MGC) → 2_Video transcripts of the project initiator's YouTube videos (MGC)	Confirmed	Negative tone signals/ cues from whitepapers are not frequently found in ICO produced YouTube videos.	*Construct: Negative Tone:* Negative Words Dictionary (Loughran-McDonald Master Dictionary, 2010); Tone – Negativity Dictionary (Henry, E., 2008)	**Objective 3.** Identify when and if positive tone manages to travel from the white papers through the videos to the comments of the crowd. **Objective 4.** Contribute to the literature of coordination of innovation projects / crowdfunding ICOs with a theoretical framework which shows the use of signals and cues. **Objective 5.** Contribute to the studies of innovation projects / crowdfunding ICOs and specifically, to the methodologies they use. The contribution is the results of the experimental and testing techniques from this study.	2.) Lack of ICO specific signal / cue constructs of projects. 3.) ICO specific positive and negative sentiment cues.
H2.	1_Whitepapers (MGC) - 3_Video transcripts of other YouTubers that are looking at the exact chosen ICOs (UGC)	Confirmed	Negative tone signals/ cues from whitepapers are not frequently found in YouTube video comments that were filmed by independent YouTubers.	*Construct: Negative Tone:* Negative Words Dictionary (Loughran-McDonald Master Dictionary, 2010); Tone – Negativity Dictionary (Henry, E., 2008)	**Objective 3.** Identify when and if positive tone manages to travel from the white papers through the videos to the comments of the crowd. **Objective 4.** Contribute to the literature of coordination of innovation projects / crowdfunding ICOs with a theoretical framework which shows the use of signals and cues. **Objective 5.** Contribute to the studies of innovation projects / crowdfunding ICOs and specifically, to the methodologies they use. The contribution is the results of the experimental and testing techniques from this study.	2.) Lack of ICO specific signal / cue constructs of projects. 3.) ICO specific positive and negative sentiment cues.

H3.	1_Whitepapers (MGC) → 4_Potential backer comments (crowd) under the videos of the project initiators (UGC)	Not Confirmed	Commenters on ICO videos do not read whitepapers or do not pick up signals/ cues from ICO video creators. Signals/ cues from whitepapers are not frequently found in the comment sections of ICO produced YouTube videos.	All of the 8 bundled dictionaries	**Objective 1.** Find dictionaries with signals / cues used in fully funded ICOs. **Objective 2.** Identify if the crowd echoes the signals / cues in official project narratives and when not. **Objective 2a.** Identify the academically recognized dictionaries that contain the most echoed signals / cues. **Objective 2b.** Eliminate the dictionaries with the least amount of matches since this will prove them to be of little use. **Objective 4.** Contribute to the literature of coordination of innovation projects / crowdfunding ICOs with a theoretical framework which shows the use of signals and cues. **Objective 5.** Contribute to the studies of innovation projects / crowdfunding ICOs and specifically, to the methodologies they use. The contribution is the results of the experimental and testing techniques from this study.	1.) Project signals / cues need to be matched with crowd signals / cues. 2.) Lack of ICO specific signal / cue constructs of projects. 3.) ICO specific positive and negative sentiment cues.

H4.	1_Whitepapers (MGC) → 5_Potential backer comments (crowd) under the videos of other YouTubers (UGC)	Not Confirmed	Commenters on independent videos do not read whitepapers or do not pick signals/ cues up from independent video creators. Signals/ cues from whitepapers are not frequently found in the comment sections of independently produced YouTube videos.	All of the 8 bundled dictionaries	**Objective 1.** Find dictionaries with signals / cues used in fully funded ICOs. **Objective 2.** Identify if the crowd echoes the signals / cues in official project narratives and when not. **Objective 2a.** Identify the academically recognized dictionaries that contain the most echoed signals / cues. **Objective 2b.** Eliminate the dictionaries with the least amount of matches since this will prove them to be of little use. **Objective 4.** Contribute to the literature of coordination of innovation projects / crowdfunding ICOs with a theoretical framework which shows the use of signals and cues. **Objective 5.** Contribute to the studies of innovation projects / crowdfunding ICOs and specifically, to the methodologies they use. The contribution is the results of the experimental and testing techniques from this study.	1.) Project signals / cues need to be matched with crowd signals / cues. 2.) Lack of ICO specific signal / cue constructs of projects. 3.) ICO specific positive and negative sentiment cues.
H5.	2_Video transcripts of the project initiator's YouTube videos (MGC) → 4_Potential backer comments (crowd) under the videos of the project initiators (UGC)	Confirmed	Commenters tend to comment positively about ICO produced YouTube videos. Positive emotional signals/ cues from ICO YouTube transcripts are frequently found in their own comment sections.	*Construct: Positive Tone:* Positive Words Dictionary (Loughran-McDonald Master Dictionary, 2010); Tone – Positivity Dictionary (Henry, E., 2008)	**Objective 3.** Identify when and if positive tone manages to travel from the white papers through the videos to the comments of the crowd. **Objective 4.** Contribute to the literature of coordination of innovation projects / crowdfunding ICOs with a theoretical framework which shows the use of signals and cues. **Objective 5.** Contribute to the studies of innovation projects / crowdfunding ICOs and specifically, to the methodologies they use. The contribution is the results of the experimental and testing techniques from this study.	2.) Lack of ICO specific signal / cue constructs of projects. 3.) ICO specific positive and negative sentiment cues.

H6.	3_Video transcripts of other YouTubers that are looking at the exact chosen ICOs (UGC) → 5_Potential backer comments (crowd) under the videos of other YouTubers (UGC)	Confirmed	There isn't much positive talk among YouTube commenters of independently produced videos, since positive emotional signals/ cues from independent YouTube video transcripts are not frequently found in their own comment sections.	*Construct: Positive Tone:* Positive Words Dictionary (Loughran-McDonald Master Dictionary, 2010); Tone – Positivity Dictionary (Henry, E., 2008)	**Objective 3.** Identify when and if positive tone manages to travel from the white papers through the videos to the comments of the crowd. **Objective 4.** Contribute to the literature of coordination of innovation projects / crowdfunding ICOs with a theoretical framework which shows the use of signals and cues. **Objective 5.** Contribute to the studies of innovation projects / crowdfunding ICOs and specifically, to the methodologies they use. The contribution is the results of the experimental and testing techniques from this study.	2.) Lack of ICO specific signal / cue constructs of projects. 3.) ICO specific positive and negative sentiment cues.
H7.	2_Video transcripts of the project initiator's YouTube videos (MGC) → 3_Video transcripts of other YouTubers that are looking at the exact chosen ICOs (UGC)	Confirmed	Independent YouTubers might be watching ICO produced YouTube videos, because signals/ cues from ICO YouTube video transcripts are frequently found in YouTube video transcripts of independent YouTubers.	All of the 8 bundled dictionaries	**Objective 1.** Find dictionaries with signals / cues used in fully funded ICOs. **Objective 2.** Identify if the crowd echoes the signals / cues in official project narratives and when not. **Objective 2a.** Identify the academically recognized dictionaries that contain the most echoed signals / cues. **Objective 2b.** Eliminate the dictionaries with the least amount of matches since this will prove them to be of little use. **Objective 3.** Identify when and if positive tone manages to travel from the white papers through the videos to the comments of the crowd. **Objective 4.** Contribute to the literature of coordination of innovation projects / crowdfunding ICOs with a theoretical framework which shows the use of signals and cues. **Objective 5.** Contribute to the studies of innovation projects / crowdfunding ICOs and specifically, to the methodologies they use. The contribution is the results of the experimental and testing techniques from this study.	1.) Project signals / cues need to be matched with crowd signals / cues. 2.) Lack of ICO specific signal / cue constructs of projects. 3.) ICO specific positive and negative sentiment cues.

H8.	1_Whitepapers (MGC) → 4_Potential backer comments (crowd) under the videos of the project initiators (UGC)	Confirmed	Whitepaper authors might be making their own videos with similar language (as opposed to outsourcing production), since signals/ cues from whitepapers are frequently found in the comment sections of ICO produced YouTube videos.	*Construct: Positive Tone:* Positive Words Dictionary (Loughran-McDonald Master Dictionary, 2010); Tone – Positivity Dictionary (Henry, E., 2008)	**Objective 3.** Identify when and if positive tone manages to travel from the white papers through the videos to the comments of the crowd. **Objective 4.** Contribute to the literature of coordination of innovation projects / crowdfunding ICOs with a theoretical framework which shows the use of signals and cues. **Objective 5.** Contribute to the studies of innovation projects / crowdfunding ICOs and specifically, to the methodologies they use. The contribution is the results of the experimental and testing techniques from this study.	2.) Lack of ICO specific signal / cue constructs of projects. 3.) ICO specific positive and negative sentiment cues.
H9.	1_Whitepapers (MGC) → 5_Potential backer comments (crowd) under the videos of other YouTubers (UGC)	Confirmed	Positive-Tone dictionary signals/ cues from whitepapers are frequently found in the comment sections of independently produced YouTube videos.	*Construct: Positive Tone:* Positive Words Dictionary (Loughran-McDonald Master Dictionary, 2010); Tone – Positivity Dictionary (Henry, E., 2008)	**Objective 3.** Identify when and if positive tone manages to travel from the white papers through the videos to the comments of the crowd. **Objective 4.** Contribute to the literature of coordination of innovation projects / crowdfunding ICOs with a theoretical framework which shows the use of signals and cues. **Objective 5.** Contribute to the studies of innovation projects / crowdfunding ICOs and specifically, to the methodologies they use. The contribution is the results of the experimental and testing techniques from this study.	2.) Lack of ICO specific signal / cue constructs of projects. 3.) ICO specific positive and negative sentiment cues.

H10.	1_Whitepapers (MGC) → 2_Video transcripts of the project initiator's YouTube videos (MGC)	Confirmed	Whitepaper authors might be making their own videos, dictionary signals/ cues from whitepapers are frequently found in ICO YouTube video transcripts.	All of the 8 bundled dictionaries	**Objective 1.** Find dictionaries with signals / cues used in fully funded ICOs. **Objective 2.** Identify if the crowd echoes the signals / cues in official project narratives and when not. **Objective 2a.** Identify the academically recognized dictionaries that contain the most echoed signals / cues. **Objective 2b.** Eliminate the dictionaries with the least amount of matches since this will prove them to be of little use. **Objective 4.** Contribute to the literature of coordination of innovation projects / crowdfunding ICOs with a theoretical framework which shows the use of signals and cues. **Objective 5.** Contribute to the studies of innovation projects / crowdfunding ICOs and specifically, to the methodologies they use. The contribution is the results of the experimental and testing techniques from this study.	1.) Project signals / cues need to be matched with crowd signals / cues. 2.) Lack of ICO specific signal / cue constructs of projects. 3.) ICO specific positive and negative sentiment cues.

H11.	1_Whitepapers (MGC) → 3_Video transcripts of other YouTubers that are looking at the exact chosen ICOs (UGC)	Confirmed	Independent YouTubers either read the whitepapers or watch the ICO project YouTube videos or both, because dictionary signals/ cues from whitepapers are frequently found in the video transcripts of independent YouTubers.	All of the 8 bundled dictionaries	**Objective 1.** Find dictionaries with signals / cues used in fully funded ICOs. **Objective 2.** Identify if the crowd echoes the signals / cues in official project narratives and when not. **Objective 2a.** Identify the academically recognized dictionaries that contain the most echoed signals / cues. **Objective 2b.** Eliminate the dictionaries with the least amount of matches since this will prove them to be of little use. **Objective 4.** Contribute to the literature of coordination of innovation projects / crowdfunding ICOs with a theoretical framework which shows the use of signals and cues. **Objective 5.** Contribute to the studies of innovation projects / crowdfunding ICOs and specifically, to the methodologies they use. The contribution is the results of the experimental and testing techniques from this study.	1.) Project signals / cues need to be matched with crowd signals / cues. 2.) Lack of ICO specific signal / cue constructs of projects. 3.) ICO specific positive and negative sentiment cues.

Table 10: Hypothesis results, what they tested and how they relate to Dictionaries, Objectives and Gaps. These results were obtained through Computer Aided Text Analysis (Yoshikoder) and the statistical testing procedures.

4.2. Results according to Construct

The Figures 16-19 are Diagrams showing the results according to the Construct that bundles Dictionaries together as shown in Table 7. Here is a brief explanation of these results.

When looking at Table 9, we find that 1_ Whitepapers (MGC) to 4_ ICO Video Crowd Comments (UGC) and 1_ Whitepapers (MGC) to 5_ Independent Video Crowd Comments (UGC) are not correlated. But 1_ Whitepapers (MGC) to 2_ ICO Video Transcripts (MGC) and 2_ ICO Video Transcripts (MGC) to 4_ ICO Video Crowd Comments (UGC) are correlated.

Ergo: The majority of the crowd is unlikely to have read the whitepapers; however, we find signals/cues from the whitepapers in the project instigator's videos. We find these signals / cues both in the video transcripts of other YouTubers, which suggests that either they watched the project instigators videos and might even have read the whitepapers.

The 2_ ICO Video Transcripts (MGC) to 4_ ICO Video Crowd Comments (UGC) correlation could suggest that if 1_ Whitepapers (MGC) signals/cues were consciously and deliberately used in 2_ ICO Video Transcripts (MGC), they could potentially travel through to 4_ ICO Video Crowd Comments (UGC). Right now, however, it is very likely that none of the investigated ICO projects thought of doing so on purpose. Publishing these results could change that.

Ergo: Project initiators consciously using signals/ cues in whitepapers that they want their project to be associated with in their videos, could successfully trickle down to the crowd conversations.

The 2_ ICO Video Transcripts (MGC) to 3_ Independent Video Transcripts (UGC) correlation suggests that other YouTubers base their videos on what they watched in the 2_ videos of the original Project Initiators. They also seem to read the 1_ Whitepapers (MGC), as the 1_ Whitepapers (MGC) to 3_ Independent Video Transcripts (UGC) correlation suggests.

Ergo: Project initiators are well advised to repeat the same signals/ cues they want the crowd and other YouTube video creators to use and repeat.

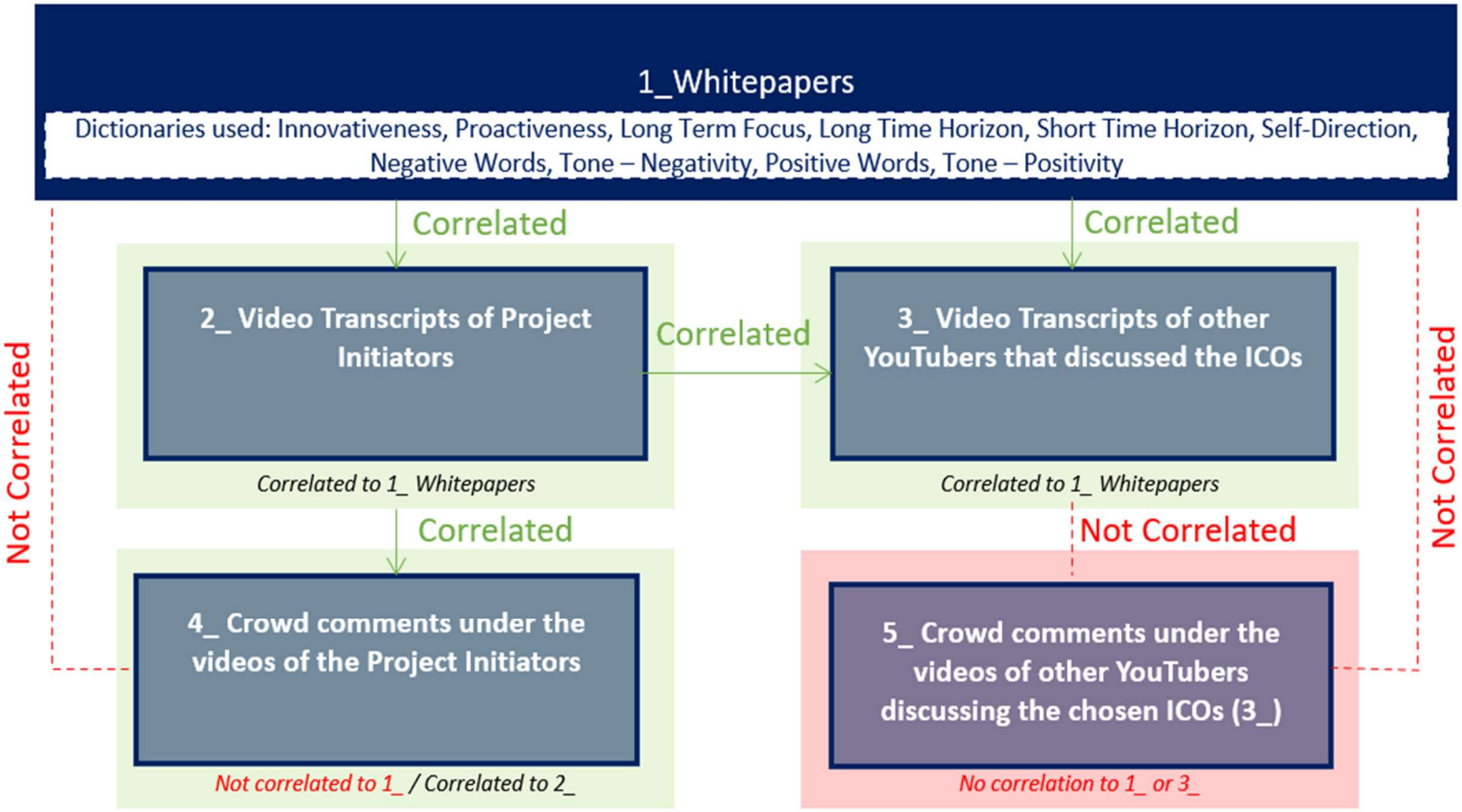

Figure 16: Hypothesis results outlined showing dictionaries relevant to whitepapers. the Dictionaries of signals and cues relevant to whitepapers, when applying the Innovativeness, Proactiveness, Long-Term Focus, Long-Time Horizon, Short Time Horizon, Self-Direction, Negative Words, Tone-Negativity, Positive Words and Tone-Positivity dictionaries to the following datasets. The 1_ to 4_, 1_ to 5_ and 3_ to 5_ pairs are not correlated. The 2_ to 4_, 1_ to 2_, 1_ to 3_ and 2_ to 3_ pairs however are correlated.

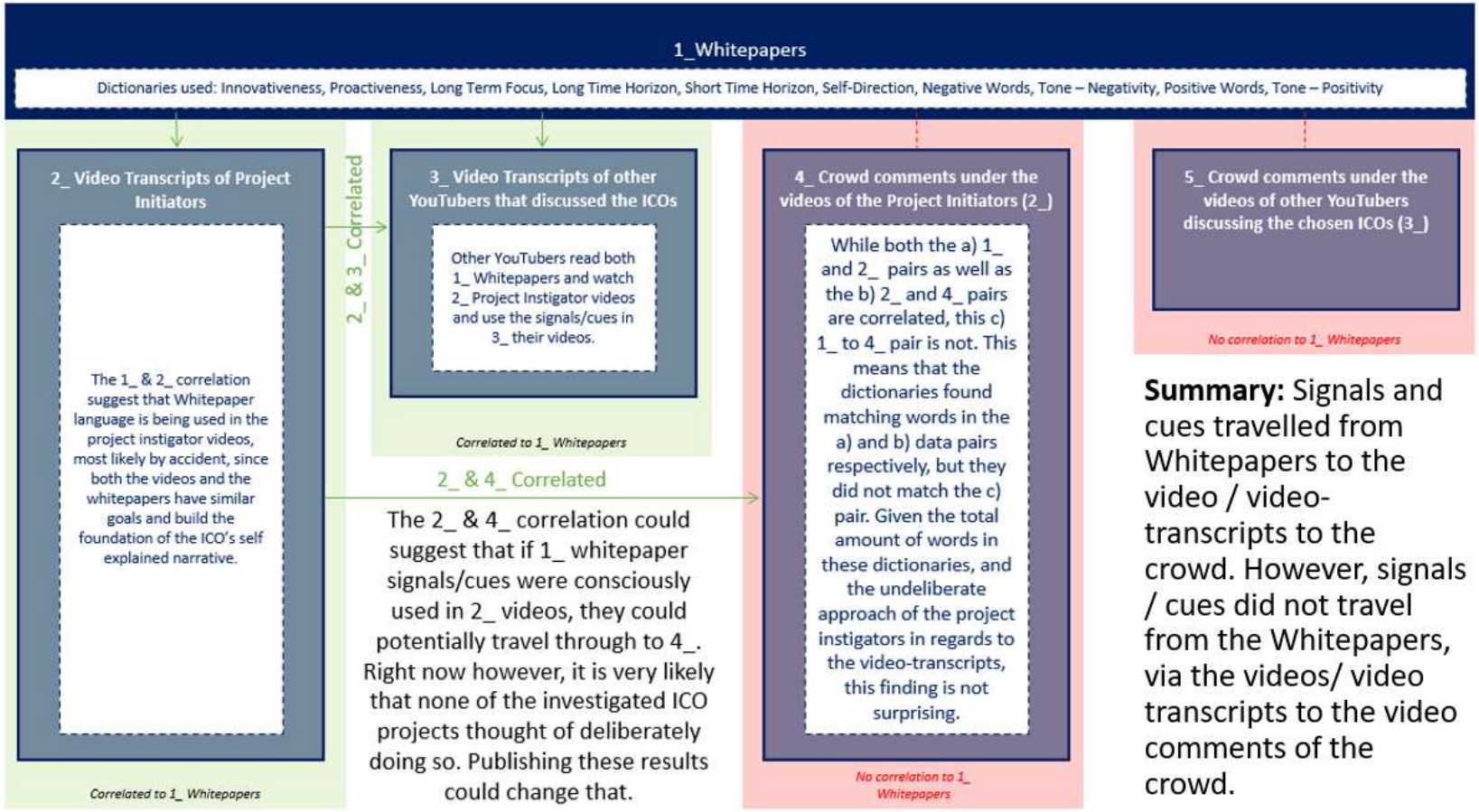

Figure 17: Hypothesis Results in diagram with explanations.

Exploring the results through the lens of Figure 19 and Table 11, Negative tone signals/ cues from 1_ Whitepapers are not frequently found in 2_ ICO Video Transcripts. Neither are Negative tone signals/ cues from 1_ Whitepapers frequently found in 5_ Independent Video Transcripts Commenters on ICO videos either do not often read whitepapers or do not pick signals/ cues up from ICO video creators, since signals/ cues from Whitepapers were not frequently found in ICO Video Crowd Comments. The same goes for 5_ commenters on independent videos, that do not seem to read 1_ whitepapers or do not pick signals/ cues up from 5_ independent video creators either. This study found that signals/ cues from 1_ Whitepapers are not frequently found in 5_ Independent Video Crowd Comments. On the upside, commenters tend to comment positively about ICO produced YouTube videos. Positive emotional signals/ cues from 2_ ICO Video Transcripts were frequently found in the corresponding 4_ ICO Video Crowd Comments. Also, Positive-Tone dictionary signals/ cues from 1_ Whitepapers are frequently found in 5_ Independent Video Crowd Comments. There isn't, however, much positive talk among 5_ YouTube commenters of independently produced videos, since positive emotional signals/ cues from 3_ Independent Video Transcripts are not frequently found in their corresponding 5_ Independent Video Crowd Comments.

Not surprisingly, independent YouTubers might be watching ICO produced YouTube videos, because signals/ cues from 2_ ICO Video Transcripts are frequently found in 3_Independent Video Transcripts. Given the start-up nature of ICOs, whitepaper authors appear to be making their own videos with similar language (as opposed to outsourcing video production), since signals/ cues from whitepapers are frequently found in ICO Video Crowd Comments; this is also confirmed by the somewhat logical finding that dictionary signals/ cues from whitepapers are frequently found in ICO Video transcripts. Thus, the path of signals/cues from whitepapers to ICO Video Transcripts to ICO Video Crowd Comments seems a natural one. Independent YouTubers either read the whitepapers and/ or watch the ICO project YouTube videos or both, because dictionary signals/ cues from whitepapers are frequently found in the Independent Video Transcripts.

Looking at Figure 19, The original "Construct: Negative Tone" that included the dictionaries 'Negative Words Dictionary (Loughran-McDonald Master Dictionary, 2010)' and 'Tone – Negativity Dictionary (Henry, E., 2008)' that tested the paths on the 1_Whitepapers (MGC) to 2_Video transcripts of the project initiator's YouTube videos (MGC), 1_Whitepapers (MGC) to 3_Video transcripts of other YouTubers that are looking at the exact chosen ICOs (UGC) and 2_Video transcripts of the project initiator's YouTube videos (MGC) to 3_Video transcripts of other YouTubers that are looking at the exact chosen ICOs (UGC) pairs found no correlations.

In Figure 15, you will find an overview in the form of a graphic representation of the outcomes of all results of the hypothesis testing. The arrows represent the paths of testing. So, for example the first arrow on top points from '1. Whitepapers' to '2. YouTube Video Transcript of Project Initiators/ Companies', indicating the path that has been tested. Just over each arrow you will find what

Hypothesis has been tested on this path. So for example H1 stands for Hypothesis 1. . Again, Hypothesis H3. and H4. were not proven and are hence highlighted in red colour. Hypothesis H1, H2, H5., H6., H7., H8., H9., H10. and H11. were proven and are hence highlighted in green colour.

Overview of the results, pertaining to the "Construct: Tone-Positivity" and the "Construct: Negative Tone".

When focusing on the two constructs, positive tone, and negative tone, this study found that the 1_ Whitepapers (MGC) to 4_ ICO Video Crowd Comments (UGC), 1_ Whitepapers (MGC) to 5_ Independent Video Crowd Comments (UGC) and 2_ ICO Video Transcripts (MGC) to 4_ ICO Video Crowd Comments (UGC) pairs were correlated in the context of the "Construct: Positive Tone" dictionaries when applying the Least-Significant-Difference-Test. The same test however did not find a correlation on the 3_ Independent Video Transcripts (UGC) to 5_ Independent Video Crowd Comments (UGC) pair under the same Construct with the same dictionaries.

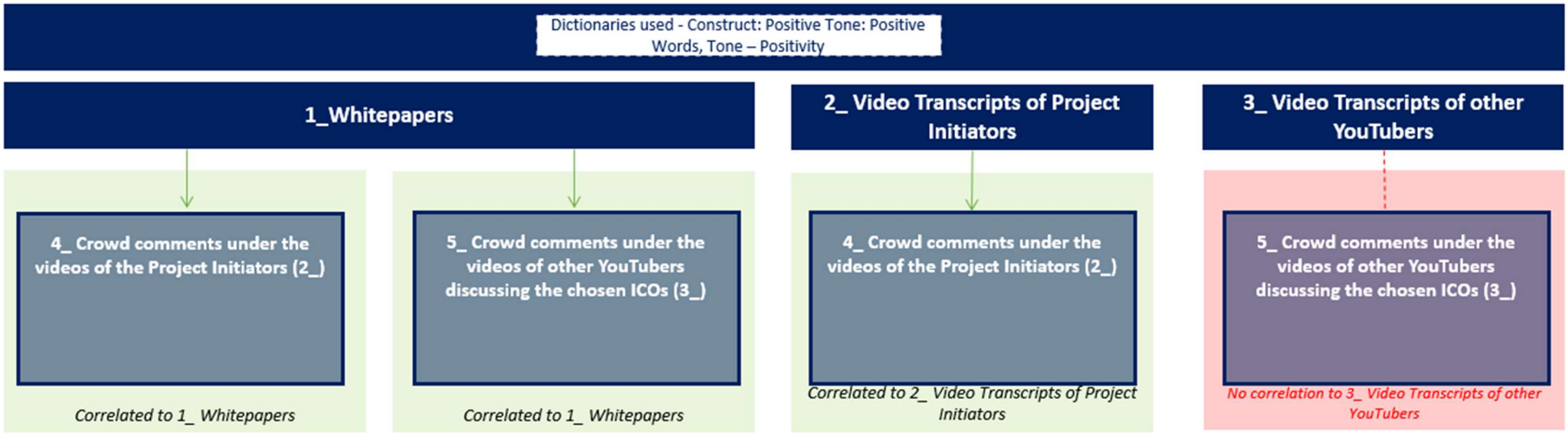

Figure 18: Hypothesis results "Construct: Positive Tone" outlined – Perspective

When applying the Chi-Square-Test on the data pairs of 1_ Whitepapers (MGC) to 2_ ICO Video Transcripts (MGC), 1_ Whitepapers (MGC) to 3_ Independent Video Transcripts (UGC) and 2_ ICO Video Transcripts (MGC) to 3_ Independent Video Transcripts (UGC) pertaining to the "Construct: Negative Tone" dictionaries, no correlations were found.

Summary: Positive signals and queues from the Project Instigator's Whitepapers and Video-Transcripts were used by the crowd in the respective comment sections. Since successful ICO's were chosen exclusively, this could be a reflection of the crowd's positive stance towards the projects after reading the whitepapers and consuming the videos.

The positive signals and cues from the transcripts of other YouTubers' videos were not used by the crowd.

Ergo: To encourage positive investor sentiment, the deliberate use of positive signals and cues by project instigators in their publications is likely to be of importance when it comes to attracting ICO investments.

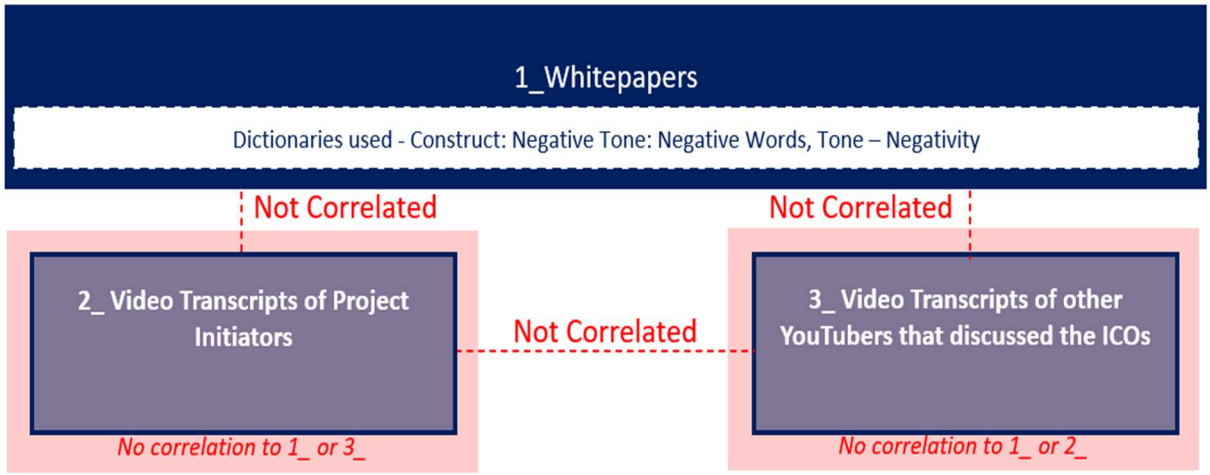

Figure 19: Hypothesis results "Construct: Negative Tone" outlined

When testing the 1_ to 2_,1_ to 3_ and 2_ to 3_ pairs with the Negative Words Dictionary (Loughran-McDonald Master Dictionary, 2010) and the Tone – Negativity Dictionary (Henry, 2008), no correlations at all were found.

Summary: While negative signals and cues were present in the data, no negative signals and queues from the Project Instigator's 1_ Whitepapers travelled into the 2_ and 3_ Video-Transcripts. Also, no negative signals and cues from the 2_ Video Transcripts of Project Initiators (MGC) correlated with 3_ Video Transcripts of other YouTubers (UGC).

Ergo: Project initiators should think carefully whether to deliberately use negative signals/cues in their whitepapers and YouTube videos.

14 ICOs tested	Construct: Positive Tone LSD-Tests				Construct: Negative Tone Chi-Square-Tests			
	1_ to 4_	1_ to 5_	2_ to 4_	3_ to 5_	1_ to 2_	1_ to 3_	2_ to 3_	
1_Zilliqa	Correlated	Correlated	Correlated	Not Correlated	Correlated	Not Correlated	Not Correlated	
2_Bitbond	Not Correlated	Not Correlated	Correlated	Not Correlated	Not Correlated	Not Correlated	Correlated	
4_Ethereum	Correlated	Not Correlated	Correlated	Not Correlated	Not Correlated	Correlated	Correlated	
7_Flow-Blockchain	Correlated	Not Correlated	Correlated	Correlated	Correlated	Correlated	Not Correlated	
9_Fetch_ai	Correlated	Correlated	Correlated	Not Correlated	Not Correlated	Not Correlated	Not Correlated	
10_Hedera_Hashgraph	Not Correlated	Correlated	Not Correlated	Correlated	Correlated	Correlated	Not Correlated	
12_Polkadot	Correlated	Correlated	Correlated	Not Correlated	Not Correlated	Not Correlated	Correlated	
13_Cardano	Correlated	Correlated	Correlated	Correlated	Not Correlated	Correlated	Correlated	
14_LYXe_LUKSO	Correlated	Correlated	Correlated	Correlated	Not Correlated	Not Correlated	Not Correlated	
15_Blockstack	Not Correlated	Not Correlated	Correlated	Not Correlated	Not Correlated	Not Correlated	Not Correlated	
16_Ferrum-Network	Correlated	Correlated	Correlated	Correlated	Not Correlated	Not Correlated	Not Correlated	
17_Digitalbits	Correlated	Correlated	Correlated	Correlated	Correlated	Not Correlated	Not Correlated	
19_NuCypher	Not Correlated	Not Correlated	Correlated	Correlated	Correlated	Correlated	Correlated	
20_Solana	Correlated	Correlated	Correlated	Not Correlated	Not Correlated	Not Correlated	Not Correlated	

	10	9	13	7	5	5	5	of 14 projects are correlated
	71.42857	64.28571	92.85714	50	35.71429	35.71429	35.71429	% of total of 14 projects
	1_ to 4_ Correlated	1_ to 5_ Correlated	2_ to 4_ Correlated	3_ to 5_ Not Correlated	1_ to 2_ Not Correlated	1_ to 3_ Not Correlated	2_ to 3_ Not Correlated	Existing Correlations

Table 11: Hypothesis Results for Construct: Positive Tone and Construct: Negative Tone

Cells highlighted in green show the percentage of cases that were found statistically significant in the test

4.3. Chapter 4: Summary

The results of the analysis as described in the Methodologies left us with 8 remaining dictionaries out of 14, whose results were used in the subsequent process of statistical analysis. The same is the case with the data from the 14 ICO projects that are left, after the LSD and the Yoshikoder readings worked through the data of the 20 ICOs. This was done, to respect the statistical error rate, ensuring the basis for a proper statistical procedure.

Then, the mentioned paths between the remaining datasets were tested statistically, as laid out by the hypotheses. Except for H3. and H4., all other hypotheses were confirmed.

It was found that positive signals and queues from the project teams whitepapers and Video-Transcripts were used by the crowdfunders' comments. The positive signals and cues from the transcripts of other YouTubers' videos were not used by the crowd.

Further, while negative signals and cues were present in the data, no negative signals and queues from the project teams' whitepapers travelled into the Video-Transcripts. Also, no negative signals and cues from the 2_ Video Transcripts of Project Initiators correlated with the video transcripts of 3_ Video Transcripts of other YouTubers.

In summary, these results mean that in the successful ICO projects, the teams' signals and cues from 8 Dictionaries are used in both MGC and UGC media and narratives, corroborating the hypotheses regarding the usefulness of certain signals and cues and not others.

5. Chapter 5: Discussion

This Chapter has two sections. Section 5.1. shows the results to each theoretical gap and study objective. Section 5.2. relates the findings to previous studies or groups of studies. The Chapter finishes with a summary of the study contributions.

The relationship between the theoretical gaps, objectives of the study and hypotheses were depicted in Figure 19. After the hypotheses testing, the results have to be linked to these objectives and theoretical gaps and the contribution to theory and practice has to be discussed.

Gap	Objective	Hypothesis	Dictionaries tested
Gap 2: Lack of ICO specific signal / cue constructs of projects. Gap 3: ICO specific positive and negative sentiment cues.	Objective 3. Identify when and if positive tone manages to travel from the white papers through the videos to the comments of the crowd. Objective 4. Contribute to the literature of coordination of innovation projects / crowdfunding ICOs with a theoretical framework which shows the use of signals and cues. Objective 5. Contribute to the studies of innovation projects / crowdfunding ICOs and specifically, to the methodologies they use. The contribution is the results of the experimental and testing techniques from this study.	H1. 1_ - 2_ Confirmed Hypothesis	Construct: Negative Tone
Gap 2: Lack of ICO specific signal / cue constructs of projects. Gap 3: ICO specific positive and negative sentiment cues.	Objective 3. Identify when and if positive tone manages to travel from the white papers through the videos to the comments of the crowd. Objective 4. Contribute to the literature of coordination of innovation projects / crowdfunding ICOs with a theoretical framework which shows the use of signals and cues. Objective 5. Contribute to the studies of innovation projects / crowdfunding ICOs and specifically, to the methodologies they use. The contribution is the results of the experimental and testing techniques from this study.	H2. 1_ - 3_ Confirmed Hypothesis	Construct: Negative Tone
Gap 1: Project signals / cues need to be matched with crowd signals / cues. Gap 2: Lack of ICO specific signal / cue constructs of projects. Gap 3: ICO specific positive and negative sentiment cues.	Objective 1. Find dictionaries with signals / cues used in fully funded ICOs. Objective 2. Identify if the crowd echoes the signals / cues in official project narratives and when not. Objective 2a. Identify the academically recognized dictionaries that contain the most echoed signals / cues. Objective 2b. Eliminate the dictionaries with the least amount of matches since this will prove them to be of little use. Objective 4. Contribute to the literature of coordination of innovation projects / crowdfunding ICOs with a theoretical framework which shows the use of signals and cues. Objective 5. Contribute to the studies of innovation projects / crowdfunding ICOs and specifically, to the methodologies they use. The contribution is the results of the experimental and testing techniques from this study.	H3. 1_ - 4_ Unconfirmed Hypothesis	All remaining Dictionaries bundled together

Gap 1: Project signals / cues need to be matched with crowd signals / cues. Gap 2: Lack of ICO specific signal / cue constructs of projects. Gap 3: ICO specific positive and negative sentiment cues.	Objective 1. Find dictionaries with signals / cues used in fully funded ICOs. Objective 2. Identify if the crowd echoes the signals / cues in official project narratives and when not. Objective 2a. Identify the academically recognized dictionaries that contain the most echoed signals / cues. Objective 2b. Eliminate the dictionaries with the least amount of matches since this will prove them to be of little use. Objective 4. Contribute to the literature of coordination of innovation projects / crowdfunding ICOs with a theoretical framework which shows the use of signals and cues. Objective 5. Contribute to the studies of innovation projects / crowdfunding ICOs and specifically, to the methodologies they use. The contribution is the results of the experimental and testing techniques from this study.	H4. 1_ - 5_ Unconfirmed Hypothesis	All remaining Dictionaries bundled together
Gap 2: Lack of ICO specific signal / cue constructs of projects. Gap 3: ICO specific positive and negative sentiment cues.	Objective 3. Identify when and if positive tone manages to travel from the white papers through the videos to the comments of the crowd. Objective 4. Contribute to the literature of coordination of innovation projects / crowdfunding ICOs with a theoretical framework which shows the use of signals and cues. Objective 5. Contribute to the studies of innovation projects / crowdfunding ICOs and specifically, to the methodologies they use. The contribution is the results of the experimental and testing techniques from this study.	H5. 2_ - 4_ Confirmed Hypothesis	Construct: Positive Tone
Gap 2: Lack of ICO specific signal / cue constructs of projects. Gap 3: ICO specific positive and negative sentiment cues.	Objective 3. Identify when and if positive tone manages to travel from the white papers through the videos to the comments of the crowd. Objective 4. Contribute to the literature of coordination of innovation projects / crowdfunding ICOs with a theoretical framework which shows the use of signals and cues. Objective 5. Contribute to the studies of innovation projects / crowdfunding ICOs and specifically, to the methodologies they use. The contribution is the results of the experimental and testing techniques from this study.	H6. 3_ - 5_ Confirmed Hypothesis	Construct: Positive Tone
Gap 1: Project signals / cues need to be matched with crowd signals / cues.	Objective 1. Find dictionaries with signals / cues used in fully funded ICOs. Objective 2. Identify if the crowd echoes the signals / cues in official project narratives and when not.	H7. 2_ - 3_ Confirmed Hypothesis	All remaining Dictionaries bundled together

Gap 3: ICO specific positive and negative sentiment cues.	Objective 2a. Identify the academically recognized dictionaries that contain the most echoed signals / cues. Objective 2b. Eliminate the dictionaries with the least amount of matches since this will prove them to be of little use. Objective 4. Contribute to the literature of coordination of innovation projects / crowdfunding ICOs with a theoretical framework which shows the use of signals and cues. Objective 5. Contribute to the studies of innovation projects / crowdfunding ICOs and specifically, to the methodologies they use. The contribution is the results of the experimental and testing techniques from this study.		
Gap 2: Lack of ICO specific signal / cue constructs of projects. Gap 3: ICO specific positive and negative sentiment cues.	Objective 3. Identify when and if positive tone manages to travel from the white papers through the videos to the comments of the crowd. Objective 4. Contribute to the literature of coordination of innovation projects / crowdfunding ICOs with a theoretical framework which shows the use of signals and cues. Objective 5. Contribute to the studies of innovation projects / crowdfunding ICOs and specifically, to the methodologies they use. The contribution is the results of the experimental and testing techniques from this study.	H8. 1_ - 4_ Confirmed Hypothesis	Construct: Positive Tone
Gap 2: Lack of ICO specific signal / cue constructs of projects. Gap 3: ICO specific positive and negative sentiment cues.	Objective 3. Identify when and if positive tone manages to travel from the white papers through the videos to the comments of the crowd. Objective 4. Contribute to the literature of coordination of innovation projects / crowdfunding ICOs with a theoretical framework which shows the use of signals and cues. Objective 5. Contribute to the studies of innovation projects / crowdfunding ICOs and specifically, to the methodologies they use. The contribution is the results of the experimental and testing techniques from this study.	H9. 1_ - 5_ Confirmed Hypothesis	Construct: Positive Tone
Gap 1: Project signals / cues need to be matched with crowd signals / cues. Gap 3: ICO specific positive and negative sentiment cues.	Objective 2. Identify if the crowd echoes the signals / cues in official project narratives and when not. Objective 2a. Identify the academically recognized dictionaries that contain the most echoed signals / cues. Objective 2b. Eliminate the dictionaries with the least amount of matches since this will prove them to be of little use.	H10. 1_ - 2_ Confirmed Hypothesis	All remaining Dictionaries bundled together

	Objective 4. Contribute to the literature of coordination of innovation projects / crowdfunding ICOs with a theoretical framework which shows the use of signals and cues. Objective 5. Contribute to the studies of innovation projects / crowdfunding ICOs and specifically, to the methodologies they use. The contribution is the results of the experimental and testing techniques from this study.		
Gap 1: Project signals / cues need to be matched with crowd signals / cues. Gap 3: ICO specific positive and negative sentiment cues.	Objective 1. Find dictionaries with signals / cues used in fully funded ICOs. Objective 2. Identify if the crowd echoes the signals / cues in official project narratives and when not. Objective 2a. Identify the academically recognized dictionaries that contain the most echoed signals / cues. Objective 2b. Eliminate the dictionaries with the least amount of matches since this will prove them to be of little use. Objective 4. Contribute to the literature of coordination of innovation projects / crowdfunding ICOs with a theoretical framework which shows the use of signals and cues. Objective 5. Contribute to the studies of innovation projects / crowdfunding ICOs and specifically, to the methodologies they use. The contribution is the results of the experimental and testing techniques from this study.	H11. 1_ - 3_ Confirmed Hypothesis	All remaining Dictionaries bundled together

Figure 20. Overview of all relationships and findings.

5.1. How findings address the research objectives and theoretical gaps

In Chapter 2 three theoretical gaps were identified in the literature regarding crowdfunding and ICO projects, and specifically regarding their coordination when communicating with the crowdfunders. The gaps relate coordination with the use of specific signals and cues in the narratives between MCG (project) and UCG (crowdfunders). Table 10 in Chapter 4 shows the tests of the hypotheses and link each hypothesis to each gap and objective, but here we are going to discuss it in more detail.

Question / Gap 1: There is a lack of understanding of the effectiveness of specific signals/cue dictionaries and crowdfunders' trust. To answer this, appropriate dictionary signals/cues of the projects need to be matched with signals/cues from the narratives of crowdfunders.

Gap 1 relates to **Objectives**:

1. Identify academically recognized dictionaries that include the narrative signals/cues being used by successfully funded ICO projects

2. Identify if the crowd echoes the signals/ cues in official project narratives and when not.

2. a) Identify the academically recognized dictionaries that contain the most echoed signals/cues.

4. Contribute to the literature of coordination of innovation projects / crowdfunding ICOs with a theoretical framework which shows the role of signals and cues in the coordination process.

Result: This question was addressed by the sampling choice. The cases chosen were successful in that they managed to convince the crowdfunders to trust them with their investment. Therefore, all the results of the tests show signals and cues that have enacted a positive tone reaction by the crowdfunders.

The crowdfunders used signals/ cues from the following dictionaries: Innovativeness Dictionary – (McKenny et al., 2018), Proactiveness Dictionary (McKenny et al., 2018), Long Term Focus Dictionary (McKenny et al., 2018), Long Time Horizon Dictionary (DesJardine and Bansal, 2019), Short Time Horizon Dictionary (DesJardine and Bansal, 2019), Self-Direction Dictionary (Neiman et al., 2016), Positive Words Dictionary (Loughran-McDonald Master Dictionary, 2010), Tone – Positivity Dictionary (Henry, E., 2008). This study did contribute to Objectives 4.

Question / Gap 2: There is a lack of signals/cues dictionaries that are: (a) project type specific (i.e., ICOs vs. other types of ventures) and (b) cover the crowdfunders' and (c) the crowd's side of the narratives instead of the levels of funding, as they do now.

Gap 2 relates to **Objectives**:

2.a) Identify the academically recognized dictionaries that contain the most echoed signals/cues.

2.b) Eliminate the dictionaries with the least amount of matches since this will prove them to be of little use.

3. Identify when and if positive and negative tone manages to travel from the white papers and videos to the comments of the crowd.

4. Contribute to the literature of coordination of innovation projects / crowdfunding ICOs with a theoretical framework which shows the use of signals and cues.

5. Contribute to the studies of innovation projects / crowdfunding ICOs and specifically, to the methodologies they use. The contribution is the results of the experimental and testing techniques from this study.

Result:

This study did contribute to Objectives 4. and 5. respectively. ICO project type specific (2a) signals/ cues constructs that cover the crowdfunder's (2b) and the crowd's side of the narratives (2c) instead of the level of funding are found within the following dictionaries: Innovativeness Dictionary – (McKenny et al., 2018), Proactiveness Dictionary (McKenny et al., 2018), Long Term Focus Dictionary (McKenny et al., 2018), Long Time Horizon Dictionary (DesJardine and Bansal, 2019), Short Time Horizon Dictionary (DesJardine and Bansal, 2019), Self-Direction Dictionary (Neiman et al., 2016), Positive Words Dictionary (Loughran-McDonald Master Dictionary, 2010), Tone – Positivity Dictionary (Henry, 2008).

Regarding Gap 1 and Gap 2, the mentioned eight dictionaries were identified first by elimination from the 14 initial dictionaries, as shown in Table 8. From the remaining 10 dictionaries, the statistical analysis eliminated the two dictionaries pertaining to the "Construct: Negative Tone" as the results portrayed in Table 11and reiterated in Figure 19. Further explanations can be found in the corresponding texts in the chapters these graphical representations are part of.

Question / Gap 3: The third gap is an understanding of the ICO specific use of positive signals/ cues.

Gap 3 relates to **Objectives**:

2.a) Identify the academically recognized dictionaries that contain the most echoed signals/cues.

2.b) Eliminate the dictionaries with the least amount of matches since this will prove them to be of little use.

3. Identify when and if positive and negative tone manages to travel from the white papers and videos to the comments of the crowd.

4. Contribute to the literature of coordination of innovation projects / crowdfunding ICOs with a theoretical framework which shows the use of signals and cues.

Result: This study did contribute to Objective 4. and also did find a prevalence of the use of positive signals/ cues. A significant amount of relevant signals/ cues were identified in the following dictionaries: Positive Words Dictionary (Loughran-McDonald Master Dictionary, 2010), Tone – Positivity Dictionary (Henry, 2008). On the other hand, there is no evidence that project instigators used these positive signals/ cues purposefully. This study also found that negative signals/ cues play no outstanding role as far as the investigated ICOs go. The study concludes that the ICO specific use of positive signals/ cues is worthwhile, while there is no evidence of any benefit of using negative signals/ cues.

Table 11 shows the raw results of the statistical testing procedures pertaining to the dictionaries in the constructs “Construct: Positive Tone” and “Construct: Negative Tone. The results are explained again in both Figure 18 and Figure 19 respectively. Further explanations can be found in the text above.

5.2. Contribution to Theory

5..2.1. Signals and Signalling theory in crowdfunding ICO project studies.

What follows are studies done in the ICO sector that looked at signals other than signals and cues in the way this study has undertaken them.

On a general level, Connelly et al. (2010) pointed out how signals convey information embedded within narratives that are required to be interpreted by the receiver. When the information is imperfect, then signals can reduce the worries of uncertainty (Connelly et al., 2010; Spence, 2002). The source sending the signal is also important (Gulati and Higgins, 2003). Specific cues can stimulate audiences into action (Zhang and Chen, 2019).

Pertaining specifically to ICOs, Davydiuk et all (2022) explored how entrepreneurs signal the quality of their ICO and their personal commitment through personal fraction ownership in their project. Chen and Chen (2020) found that ICO investors tend to not be able to fully interpret signals. That can lead to information asymmetry. Risk and Agency problems are a result of information asymmetry between ICO projects and potential ICO investors (Block et al., 2020). Ayarci and Birkan (2020) studied signals that determine ICO investors investment decisions. Florysiak and Schandlbauer (2022) on the other hand investigated whether ICO project instigators manage to signal their quality- in their white papers. Lahajnar and Rožanec (2018) put together a multi-parameter decision model for the evaluation of ICOs, where the merit of different signals is weighed. Thies et al (2021) explored the influence of different quality signals on ICOs. Momtaz (2020b) looked at CEO loyalty as a signal. Momtaz (2020a) investigated in another study the impact of potential moral hazards in signalling and how they impact different economic outcomes regarding ICO token offerings. Samieifar and Baur's (2021) study analyses 1,258 white papers, with an eye on length of the whitepaper and the amount raised. Giudici and Adhami (2019) studied the "governance signals of ICO-backed projects" such as "token rights, institutional setting, team quality". Ahmad et al. (2021) investigated the impact of information disclosure, team size, advisory board members, the use of promotional tools, etc. on ICO success.

This study contributed among these studies by looking at UGC, MGC and signals and cues, as already spelled out above, through its findings regarding Gap 3, the identification of ICO specific positive sentiment signal / cues from the Positive Words Dictionary (Loughran-McDonald Master Dictionary, 2010) and Tone – Positivity Dictionary (Henry, 2008) dictionaries in the "Construct: Positive Tone" bundle. These signals / cues in question indicate a level of trust on the side of the crowd funders. This study also addressed the lack of ICO specific signal / cue constructs through the findings of Gap 2, specifically by identifying the dictionaries found in the ICO signal / cue construct bundles found in the Construct: Entrepreneurial Orientation, Construct: Market Orientation, Construct: Organizational Time Horizon, Construct: Personal Values, and Construct: Positive Tone bundles, containing the dictionaries with their signals and cues that were echoed by the crowd.

5.2.1.1. Significance of Whitepapers.

This study used whitepapers as the basis of an ICO's persuasive efforts. Teuteberg and Tönnissen (2021) however found in their primary data that external data (such as for example ICO ratings by 'experts') are more important than self-generated material such as whitepapers.

5.2.1.2. The use of YouTube

As reported in section 2.2.5. about the use of platforms for ICO MGC and UGC narratives, this study focused on collecting narrative data from both sides from YouTube as it was assessed as the most suitable source to contain narratives that are comprehensive enough to discover useful dictionaries for their analysis.

For this reason, this study contributes to the corpus of studies in crowdfunding projects and ICOs that collect data from social media and raise the issue of collecting data with a more comprehensive and continuous discursive thread to sustain the analysis of a more continuous direct exchange between MGC and UGC. The weakness of the previous studies that looked at collecting mainly UGC data and focused on the exchanges between crowdfunders instead of focusing on the communication between these two (MCG and UGC) is identified in the review. In terms of this area this study contributes to many others (e.g. Lou and Yuan, 2019; Lou and Kim, 2019; Qiu, Tang and Whinston, 2015; Smith, Fischer and Yongjian, 2012; Cheong and Morrison, 2008).

The study also contributes to experimenting with Methods suitable for the richer data from YouTube and contributes to similar studies reported in section 3.2.3. (e.g. Snelson, 2011; Snelson, 2016; Casselman and Heinrich, 2011; Krippendorf, 2013; Thelwall, 2017).

5.2.1.3. Dictionaries relevant to ICO narratives

One of the aims of the study is to identify Dictionaries that are relevant to the ICO narratives. As described above, by a process of statistical Hypothesis testing, 8 out of 14 dictionaries proved to be useful. This is the list of Dictionaries that are relevant to the ICO narratives: By looking at the prior work of other academics and the dictionaries some of them have conceived, the author of this research set out to examine the usefulness of 14 of these dictionaries in the context set out in this study.

5.2.1.4. Two Way Communication on Social Media

This study looked at both MGC and UGC in the context of the social media and video platform YouTube.com . This approach is also academically recognized. Culnan et al. (2010) wrote already in 2010 “social media also provides a two-way communication channel between firms and investors, where a firm can post announcements and respond to investors’ questions”.

5.2.1.5. UGC studies

In regards to UGC, Sentiment has been shown to have an influence on User Generated Content as well as on society at large. Positive sentiment tweets (Albrecht et al., 2019) and more Twitter activity (Benedetti and Kostovetsky, 2018) have been linked to higher ICO market value, according to Thies et al. (2021). Albrecht et al (2019) look at emotive language, search volume and sentiment within the Twitter online service. They look at sentiment in tweets. Among their results is the finding that positive sentiment is linked to high ICO market capitalization. The findings of this study concur with this notion in regards to UGC. What this study adds to their work is a unique ICO specific insight into UGC created in YouTube comment sections. Further, Albrecht et al (2019) wanted to do more research into additional social media platforms, which this study has indeed undertaken, since YouTube was not a social media platform, they or any other researchers in the ICO field have investigated to the extent this study has.

5.2.1.6. MGC studies

As to MGC, Chen (2019) recommended ICO project instigators present their “technology advances” in whitepapers and suggested other researchers “to compare the differential roles of signals from entrepreneurs and investors to further investigate the market mechanism” which this study has done and contributed to.

The visibility of an ICO in the media can greatly impact its funding success, as noted by Czaja and Röder (2022). However, it has been found that an excessive amount of pre-ICO media coverage can actually decrease the ICO’s return on investment, while also increasing the total amount raised (Burns and Moro, 2018). Rhue (2018) suggests that social media presence can generate hype, but negatively impact ROI, indicating that some ICOs prioritize creating buzz over offering a valuable product. Investors often view ICOs’ public announcements as one-way communication (Chen, 2019). Social media, on the other hand, allows for peer communication and can signal a product’s quality (Wang et al., 2012). Additionally, it serves as a two-way communication channel between companies and investors, where firms can post announcements and respond to investors’ questions (Culnan et al., 2010). Research by Fiedler and Sandner (Frankfurt School Blockchain Center, 2017) has shown that

well-performing ICOs tend to be more active on social media platforms such as Twitter, Facebook, and LinkedIn.

It has also been found that ICO management teams tend to exaggerate their claims in whitepapers, which can work in their favor (Momtaz, 2021). In this context, whitepapers can serve as signals for potential investors, with more technical details indicating a higher quality offering (Feng et al., 2019).

Additionally, a more positive tone in whitepapers is likely to lead to higher first-day returns for the ICO (Zhang et al., 2022).

Chanson et al. (2018) studied the impact of Strategic Twitter Management and social media use on ICO under-pricing. Chen (2019) investigated how signals from different channels was used for pricing ICO tokens, whether signals change the way they work depending on the finance stages and the cost of false social media signals. Czaja and Röder (2022) found that “media presence and entrepreneurs’ self-efficacy are effective signals in the ICO market and thus can increase funding success.”.

Again, none of these studies looked at MGC on YouTube. In particular, none of these studies investigated the data that presents itself in YouTube video transcripts.

5.2.1.7. Emotions in ICO studies

Albrecht, Lutz and Neumann (2019) pointed out that “A continuous increase in the fraction of emotive language” in “tweets with the approach of the ICO end date is positively linked to the volume raised.” Sentiment has been shown to have a significant influence, both generally and with relation to user-generated content. Thies et al. (2021) noted that increasing ICO market capitalization is a result of good sentiment tweets (Albrecht et al., 2019) and increased Twitter engagement (Benedetti and Kostovetsky, 2018). Momtaz (2020b) investigated how emotions impact ICO valuations. Sapkota and Grobys (2021) studied which emotional content dominates whitepapers and the respective impact of psychological sentiment on ICO success. Simonov and Zyamalov (2019) studied the impact of mood on ICO profitability. Zhang et al (2022) looked at the impact of positive tone in whitepapers on ICOs. This study contributes in the context of the “Construct: Positive Tone” results, as well as through its non-identification of signals / cues from the “Construct: Negative Tone” dictionaries.

5.2.1.7.1. Positive Sentiment

According to Albrecht et al. (2019), a high capitalization on Twitter is associated with stronger emotional language use, positive sentiment, and search traffic that is higher.

This study found the “Construct: Positive Tone” dictionary bundle to be of significance; this is confirmed by other studies too. Albrecht et al (2019) found that “positive sentiment and the increased use of emotive language on Twitter are linked to a high capitalization”. Market sentiment, i.e., the consensus of the market in regard to the token and ICO, has proven to be very influential regarding the success of the ICO (Burns and Moro, 2018). “Whitepapers are often designed in euphemistic ways to lure investors into investing, reflecting a moral hazard problem” (Momtaz, 2020c). Consequentially, investors do not entirely trust information that was voluntarily disclosed (Blaseg, 2018). To counter this reduction in trust, the Positive Tone signals / cues from the dictionaries identified in this study should be used.

5.2.1.7.2.. Negative Emotions

Investors in initial coin offerings, according to Sapkota and Grobys (2021), frequently make illogical decisions since "they (i) are biased towards negative sentiment, (ii) do not take into account the risk assessments, and do not even consider (iii) whether a whitepaper is conducted in an understandable manner or (iv) if it violates copyrights.".

This study found no particular correlations as far as the dictionary bundle “Construct: Negative Tone” was concerned. That might at least partially be due to the fact that this study only looks at ICO projects that were successful in funding their projects. Other researchers have come to their own conclusions.

There is evidence that in the realm of ICOs, positive sentiment is not as important as negative sentiment and that through its use negative sentiment can even lead to more ICO funding. Sapkota and Grobys (2021) found that “negative sentiment is associated with higher amount of raised funding” while “positive sentiment does not have any significant impact.”. Their “findings suggests that ICO investors are, generally, not acting as rational investors because they (i) are biased towards negative sentiment,” (Sapkota and Grobys, 2021). They further “find that only negative sentiment is significant. Specifically, the more negative the sentiment the larger the predicted amount of raised funding, whereas positive sentiment does not have any significant effects.” (Sapkota and Grobys, 2021). In contradiction to this finding, Momtaz (2020a) wrote that “Investors react to negative CEO emotions by demanding higher discounts on firm value”. Although the study found more results on positive emotions assuming that this will dead to increase in investment, the fact that negative emptions might have a positive outcome in investment leads us to suggest a study like the current one to follow up focusing on negative sentiment dictionaries. A separate study on this is necessary because this study did not find adequate transference of negative sentiment signals and cues from MGC to UGC. Specifically, negative tone signals/ cues from whitepapers are not frequently found in ICO Video Transcripts. Neither are Negative tone signals/ cues from whitepapers frequently found in Independent Video Transcripts. An additional study should find a statistically significant transferrance

of negative sentiment signals and cues in order to provide reliable results on their effect on crowd investment,

5.3. Individual Articles to which this study contributes

5.3.1. Dictionaries

Sapkota and Grobys (2021) argued for ICO FinTech specific sentiment dictionaries. While this study has not designed a completely new ICO FinTech specific sentiment dictionary, it has moved this field further into this direction, by identifying two relevant "Construct: Positive Tone" dictionaries, namely the "Positive Words Dictionary" (Loughran-McDonald Master Dictionary, 2010) and the "Tone – Positivity" Dictionary (Henry, 2008)". The signals / cues from these identified dictionaries can be used to construct such a dictionary with a focus on Positive Tone.

5.3.2. Decision Making

Lahajnar and Rožanec (2018) worked out a decision model that helps to evaluate ICO projects for investment purposes. The approach and dictionary bundles identified in this research add an additional tool in this regard, as they can gage positive crowd sentiment in UGC for example.

On a general note

This work also adds to Chen and Chen's (2020) overview of the ICO literature, where they suggest further research into ICO-based fundraising, which this research has certainly done.

5.3.3. Marketer Generated Content (MGC)

MGC refers to any kind of content that was produced and published by the project instigators, preferably online. Examples include whitepapers, videos, marketing copy, etc. (Chanson et al., 2020). Right now, there is no indication that the real-life use of these successful signals and cues from the successful dictionaries identified in this study happened on purpose. If ICO Project instigators would use the signals and cues from the dictionaries identified in this study, together with a clear plan to apply them similarly in both their whitepapers and also in their videos, this could possibly result in a better reach of their message among their potential investors/ the crowd. Already, business practitioners and non-academic professional copywriters across industries share dictionaries / wordlists on the internet. It is noteworthy to point out though that these kinds of lists did not originate from academic studies such as this one, but typically through evaluating online-sales-conversion figures at best or the wisdom that has been passed down from copywriter to copywriter for generations.

5.3.4. User Generated Content (UGC)

Again, UGC is any informational exchange or details that were generated by the users for the users. Examples include exchanges on message boards, in comment sections, etc. (Chanson et al., 2020). Typically, project instigators have released the YouTube videos (that were studied in this effort) in succession. Each time a video was released (MGC), UGC was subsequently created in the form of user comments under the YouTube videos. If project instigators could test this UGC for example for their whitepaper's signals / cues of the 'Construct: Positive Tone' dictionary bundle used in this study as described in the preceding paragraph on MGC above, the project instigators could then measure how well these desired positive signals / cues are travelling from the whitepapers through the videos to the UGC; this would enable the project instigators to take appropriate actions for their next video, and so on. The prerequisite is of course that these specific signals / cues will have been used in appropriate measure in the whitepaper in the first place.

5.4. Further Study using the outcomes of this study

Many further potential study ideas come to mind.

This research solely focused on successful ICOs. Future research may also examine the signals / cues of unsuccessful ICOs. The same methodology of this study could be used for this purpose. It would then be useful to also investigate other dictionaries.

Additionally, as another project, it is reasonable to scrutinize particular signals / cues and their coordination within all the aforementioned datasets. The utilization of methods such as Fuzzy-set Qualitative Comparative Analysis (fsQCA) could be advantageous in this aspect. This study looked at dictionaries and laid a foundation. The identified dictionaries can be used as a basis to now single out specific signals/ cues.

A further research project idea is that with proficient knowledge in Machine Learning and with the present advancements in this field, including the ongoing decrease in obstacles of collecting vast amounts of online data, it may become feasible to trace the pathway of individual signals / cues throughout the datasets. In this case, signals / cues from numerous academically recognized dictionaries could be tested for their efficacy and effects.

Also, for yet another research project, it is worthwhile to investigate whether successfully crowdfunded ICOs and unsuccessfully crowdfunded ICOs can be differentiated solely based on their use of signals / cues in their whitepapers, official video transcripts and corresponding crowd comments, when investigating the data of both successful and unsuccessful ICOs.

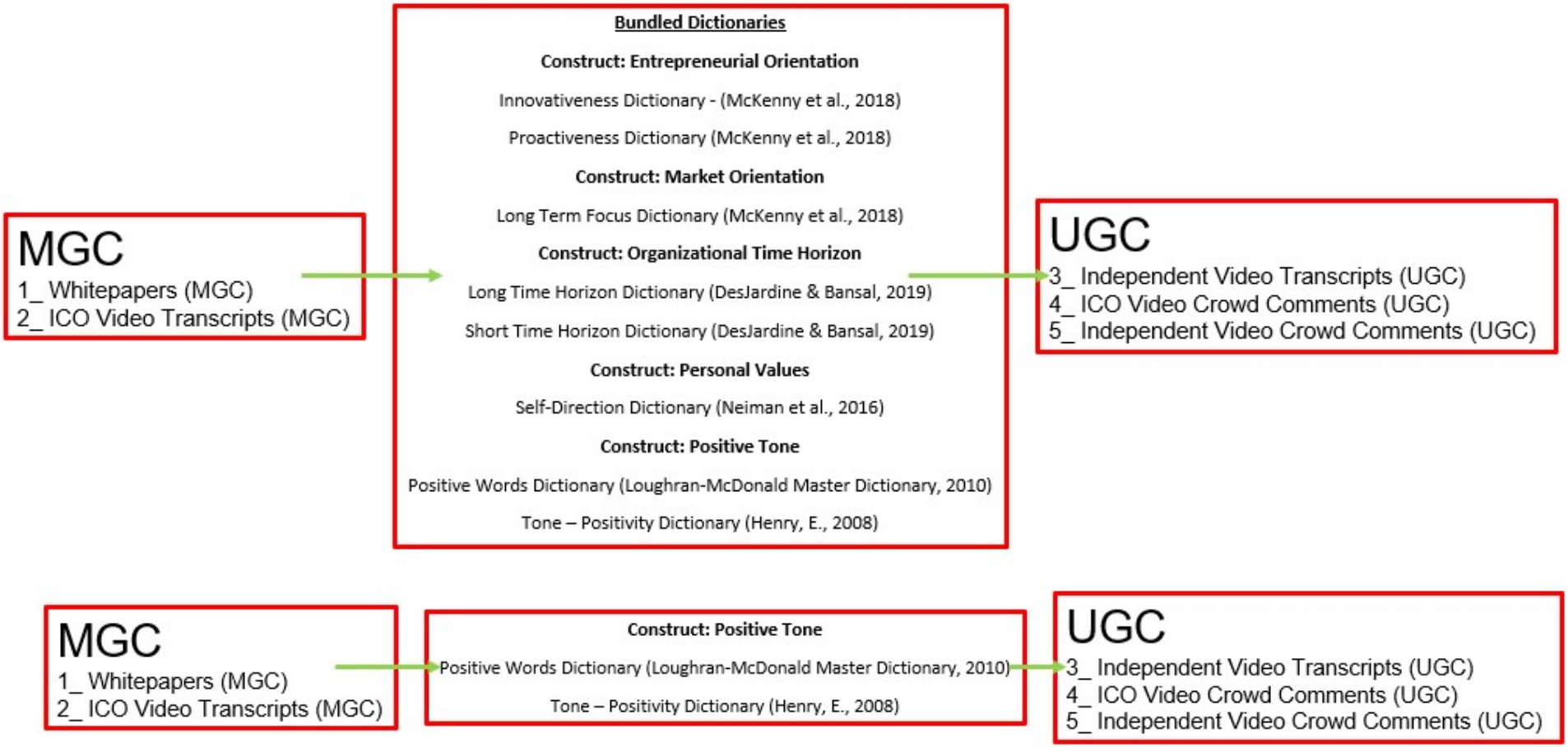

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Figure 21: Theoretical framework resulting from the study, suggesting potential empirical studies following up with the results of this study

5.5. Chapter 5: Summary

This chapter started out by summarising the main findings and their interpretation. It then related these findings to previous academic journals and how these findings contribute to the field. In particular, the academic topics of positive sentiment, negative emotions, the significance of whitepapers, two-way communication on social media, the use of YouTube and dictionaries relevant to ICO narratives in the literature were explored. This was followed by showing how this research contributes to theory.

6. Chapter 6: Conclusion

6.1. The Study

The background of the study is a radical innovation called cryptocurrencies. Cryptocurrencies are a topic of increasing debate because they represent a truly radical advancement in the manner in which value is exchanged within a business context. It is possible that cryptocurrencies could evolve into a highly disruptive innovation, offering an alternative way to invest, by bypassing the existing centralised system of economic and monetary control that has dominated markets until the present time.

It becomes imperative to examine the question of how cryptocurrencies are actually created. In order to shed light on this issue, this study analyses the coordination of specialised projects known as an "Initial Coin Offering" (ICO), which are the vehicle in the fundraising and the marketing of cryptocurrency at its initial coin issuing stage of creation.

ICO projects are multistakeholder, multidimensional[3], radical innovation projects with four lifecycle phases and they are coordinated through constantly communicating the project plan (whitepaper) and the potential value and use of the cryptocurrency. They are a type of projects specialized in crowdfunding for cryptocurrencies.

Their coordination is done by organizing information between whitepapers and YouTube videos (Marketer Generated Content (from project team)) and crowdfunders' comments reacting to this information (User Generated Content). This important information is carried through specific signals and cues within their respective narratives. Previous studies have investigated the occurrence of significant signals and cues in project narratives but has not correlated them with corresponding ones in the narratives of crowdfunders. Preceding studies have also focused on other types of crowdfunding projects conducted through specialised platforms and social media but have not done so in the context of ICO projects where most communications happen on YouTube and not via platforms. Prior studies have also not tailored the dictionaries of signals and cues to fit ICO projects.

The aim of this study therefore is to identify the correct dictionaries that contain the signals and cues, used within successfully crowdfunded ICO narratives, as found within Marketer Generated Content (project teams), but also within User Generated Content (crowdfunders' comments) and the objectives are to identify already validated dictionaries that suit ICOs, test and confirm the hypotheses posted by the literature on crowdfunding projects using signalling theory and adjust the dictionaries to the ICO projects.

To briefly summarise the above, the literature review looks at three aspects. First, the corpus of articles in ICO projects that looks into the signals and cues the project teams use, the MCG and UCG channels they use to communicate with the crowdfunders and the use of dictionaries that articles use

to investigate this communication in terms of signals and cues. Second, a descriptive analysis of 60 peer-reviewed journal articles on crowdfunding projects, focusing on the use of narratives, signals, and cues in their communication practices. These articles focus on how "social language" is used to create positive reaction from crowdfunders, with narratives acting as a representation of past events and future plans. Third, three gaps in the above articles are identified and a set of MCG and UCG channels in ICOs is defined with a selection of hypotheses testing dictionaries of signals and cues are created to address each of these three gaps.

Three gaps were identified in the reviewed literature on project signals / cues and funding success in the field of crowdfunding. The first gap is a lack of understanding of the effectiveness of specific signals/cues and crowdfunders' trust. The second gap is a lack of diversification in signal/cue specific constructs in research studies and a need for project type specific dictionaries. The third gap is a lack of understanding of positive tone signals / cues in the ICO specific context. The hypotheses created aim to address these gaps by identifying dictionaries, exploring the correlation between dictionaries that are validated for academic studies that concur in both MGC and UGC narratives.

The role of Marketer Generated Content (MGC) and User Generated Content (UGC) in ICOs is important for the hypotheses. MGC is defined as content that is created and disseminated by the project initiators, such as promotional materials and marketing collateral, while UGC is generated by the users of the platform and includes user reviews, discussions on forums, and comments in online communities.- It is a theoretical contribution of this study that the signals and cues that create trust and make ICOs succeed should be used in both MGC and UGC media to confirm that there is effect on both sides of the coordination process.

A Critical Realist design was selected with methods that were tested in experimental case studies in order to conclude which tests work better for this specific context in order to discover the patterns of cues / signals in project and crowdfunder narratives. This study collected and analysed data on 20 Initial Coin Offerings (ICOs) through YouTube video transcripts and comments, and publicly available whitepapers. The data is exclusively textual, with a total volume of 102 MB and organised into five datasets per ICO. The study used Yoshikoder software and customised digital dictionaries to analyse the data. The data was collected semi-manually by means of web scraping from YouTube and ICO websites. Previous studies from the relevant body of academic literature have used YouTube data for social sciences research and content analysis, either through automated data collection, manual data collection, or a combination of both. The studies used various methodologies, including qualitative and quantitative methods and coding. Past studies have downloaded data with automated computer programs and by semi manual means.

This study explores dictionaries established by previous researchers for use in analysing data for this study. The dictionaries were selected based on relevance to the signals / cues being measured and bundled into constructs for analysis using the Computer Aided Text Analysis (CATA) software

Yoshikoder. The dictionaries were used in the CATA software and the output was used in statistical calculations.

Software was written in Python 3 to count the occurrences of these words and provide a breakdown. The chosen method of analysis was Computer Aided Text Analysis (CATA), which measures constructs through dictionaries. The author initially used self-written Python 3 scripts to run dictionaries for text analysis but found the results were not granular enough and the large amounts of data made the text files unstable. The author switched to using Yoshikoder, a software package developed by Harvard University for text analysis. Yoshikoder allows for importing documents, creating and using dictionaries, looking at keywords in context, and conducting basic content analysis in multiple languages. The author also used the AnyCount software for precise word count. Yoshikoder is licensed under the Gnu Public License and was used in this study instead of the initial self-written code in Python 3. The author used Notepad++ to shape and adjust text formatting.

The design of the study involved multiple exploratory case studies with narrative data from projects and crowdfunders. The ICO projects selected for the study fulfilled certain criteria such as being fully funded, discussed on YouTube, providing whitepapers and are listed on cryptocurrency exchange platforms to avoid fraudulent cases. The ICO project process covers two stages, with this study focusing on the first stage, the crowd sale stage, where the project whitepaper is released, and the formal crowd sale stage lasts one to several days. The selected ICO projects are: Zilliqa, Bitbond, Bidao, Ethereum, MenaPay, Kleros, Flow-Blockchain, Plutus, Fetch_ai, Hedera-Hashgraph, 300cubits, Polkadot, Cardano, LYXe_LUKSO, Blockstack, Ferrum-Network, Digitabits, Monarch-Token, NuCypher, Solana. Experiments were performed with three case studies to finalise the research design.

The results of the Yoshikoder readings left us with 8 remaining dictionaries out of 14, whose results were used in the subsequent process of statistical analysis. The same is the case with the data from the 14 ICO projects that were left, after the Yoshikoder readings worked through the data of the aforementioned 20 ICOs. All of this was done in order to respect the statistical error rate in the reading of the results of the Yoshikoder software. This way, proper statistical procedures were being adhered to for the subsequent statistical steps of the study.

Then, the mentioned paths between the remaining datasets were tested statistically, as laid out by the stipulated hypotheses. With the exception of H3. and H4., all other hypotheses were confirmed.

It was found that positive signals and queues from the project instigator’s whitepapers and Video-Transcripts were used by the crowd in the respective comment sections. The positive signals and cues from the transcripts of other YouTubers' videos were not used by the crowd.

Further, while negative signals and cues were present in the data, no negative signals and queues from the project instigator's whitepapers travelled into the Video-Transcripts. Also, no negative signals and cues from the 2_ Video Transcripts of Project Initiators correlated with the video transcripts of 3_ Video Transcripts of other YouTubers.

6.2. The achievement of the research objectives

At the beginning, **three gaps in the literature** were identified and three objectives were defined.

A set of aim, questions and objectives are linked to the three gaps:

Research Question: Which are academically recognized dictionaries that contain the signals and cues, within ICO specific whitepapers, YouTube videos and crowd comments, used by successfully crowdfunded ICO projects to secure funding?

Objectives:

3. **Identify academically recognized dictionaries that include the narrative signals/cues being used by successfully funded ICO projects.**
4. **Identify if the crowd echoes the signals/ cues in official project narratives and when not.**
    a. **Identify the academically recognized dictionaries that contain the most echoed signals/cues.**
    b. **Eliminate the dictionaries with the least amount of matches since this will prove them to be of little use.**

3. Identify if and when positive-tone signals and cues travel from the white papers through to the videos and then to the comments of the crowd.

4. Contribute to the literature of coordination of innovation projects / crowdfunding ICOs with a theoretical framework which shows the use of signals and cues.

5. Contribute to the studies of innovation projects / crowdfunding ICOs and specifically, to the methodologies they use. The contribution is the results of the experimental and testing techniques from this study.

Identify when and if positive tone manages to travel from the white papers through the videos to the comments of the crowd.

In this section, the way these objectives were achieves in relation to aims and gaps are described based on the results of the hypotheses testing.

Gap 1:

Why did crowdfunders trust certain projects but lose trust in the process of the narration? To answer this questions, appropriate dictionary signals/cues of the projects need to be matched with signals/cues from the narratives of crowdfunders.

Objective 1. Identify academically recognised dictionaries that include the narrative signals/cues being used by successfully funded ICO projects.

Gap 2.

There is a lack of signals/cues constructs that are: (a) project type specific (i.e. ICOs vs. other types of ventures) and (b) cover the crowdfunders' and (c) the crowd's side of the narratives instead of the levels of funding, as they do now.

Objective 2. Identify if the crowd echoes the signals/ cues in official project narratives and when not.

Objective 2 a. Identify the academically recognized dictionaries that contain the most echoed signals / cues.

Findings: Gap 1 and Gap2 as well as Objectives 1, 2 and 2.a. were addressed by identifying the following dictionaries as containing the signals/ cues for this study that were echoed by the crowd from the official ICO project narratives. Innovativeness Dictionary – (McKenny et al., 2018), Proactiveness Dictionary (McKenny et al., 2018), Long Term Focus Dictionary (McKenny et al., 2018), Long Time Horizon Dictionary (DesJardine and Bansal, 2019), Short Time Horizon Dictionary (DesJardine and Bansal, 2019), Self-Direction Dictionary (Neiman et al., 2016), Positive Words Dictionary (Loughran-McDonald Master Dictionary, 2010), Tone – Positivity Dictionary (Henry, E., 2008).

Objective 2 b. Eliminate the dictionaries with the least amount of matches since this will prove them to be of little use.

Findings: The dictionaries with the least amount of signal/ cue matches that had to be eliminated were the following: Risk Taking Dictionary (McKenny et al., 2018), Profitability Dictionary (McKenny et al., 2018), Security Dictionary (Neiman et al., 2016), Stimulation Dictionary (Neiman et al., 2016), Negative Words Dictionary (Loughran-McDonald Master Dictionary, 2010), Tone – Negativity Dictionary (Henry, 2008).

Gap 3.

The third gap is an understanding of the ICO specific use of positive signals/ cues.

Objective 3. Identify when and if positive tone signals/cues manage to travel from the white papers and videos to the comments of the crowd.

Findings: This study found that negative signals/ cues play no outstanding role as far as the investigated ICOs go (see Hypothesis No. 1 and No. 2). However, this study did find a prevalence of the use of positive signals/ cues that managed to make their way from the whitepapers (1_) through the video transcripts all the way into the comment sections (4_ and 5_) (see Hypothesis No. 8 and No. 9). A significant amount of relevant signals/ cues were identified in the following dictionaries: Positive

Words Dictionary (Loughran-McDonald Master Dictionary, 2010), Tone – Positivity Dictionary (Henry, 2008).

Further, right now there is no indication as of yet that the use of these successful signals and cues happened on purpose. If ICO Project instigators would use the signals and cues from the dictionaries identified in this study, together with a clear plan to apply them similarly in both their whitepapers and also in their videos, this could result in a better reach of their message among their potential investors/ the crowd. Already, business practitioners and non-academic professional copywriters across industries share such dictionaries / wordlists freely on the internet. Note though that these lists were not found through academic studies, but typically through evaluating online-sales-conversion figures.

6.3. The contribution to the signalling theory of coordinating innovation projects through narratives

Achievement of:
Objective 4. Contribute to the literature of coordination of innovation projects / crowdfunding ICOs with a theoretical framework which shows the use of signals and cues.
Objective 5. Contribute to the studies of innovation projects / crowdfunding ICOs and specifically, to the methodologies they use. The contribution is the results of the experimental and testing techniques from this study.

Pleasd also refer to Figure 21, the theoretical framework that is constructed based on the results.

This is a point in time where business transactions migrate into the digital space. The complex problem of coordinating business activities including projects via the digital space is now a priority in most organizations and industries. The significance of this study is to be found in both its practical as well as theoretical contributions.

This study contributes to the field of the coordination of innovation project management through narratives using signalling theory as discussed in Section 5.2., giving initial results on about the two-way communication between MGC and UGC, emotions in ICO narratives and the use of YouTube. This study reveals the relevance and prevalence of certain cues that are used by both project teams and crowdfunders, thus signalling project value and risk. Other studies correlate cues in crowdfunder narratives with funding levels and do not reveal which cues are actually shared by both project teams and crowdfunders and prevail in their joined communication therefore encouraging the investment desire of the crowd.

What sets this study apart from other studies is that it does not only look at Marketer Generated Content, but also investigates User Generated Content as well as the relationship between both. It is necessary to understand both sides and their interaction to gain a better understanding of what makes ICOs successful, but is currently still very much under researched, due to a focus on other types of signals and other types of media, but not on YouTube. The importance of the YouTube video platform

is to be found in the fact that it is the world's 2nd most visited website (Statista, 2021), yet no relevant academic studies in this particular field have been undertaken.

The Computer Aided Text Analysis identified the following dictionaries, containing the signals/ cues for this study that were echoed by the crowd in the official ICO project narratives. Innovativeness Dictionary – (McKenny et al., 2018), Proactiveness Dictionary (McKenny et al., 2018), Long Term Focus Dictionary (McKenny et al., 2018), Long Time Horizon Dictionary (DesJardine and Bansal, 2019), Short Time Horizon Dictionary (DesJardine and Bansal, 2019), Self-Direction Dictionary (Neiman et al., 2016), Positive Words Dictionary (Loughran-McDonald Master Dictionary, 2010), Tone – Positivity Dictionary (Henry, 2008).

Further, the Computer Aided Text Analysis identified the following dictionaries with the least amount of signal/ cue matches that had to be eliminated were the following: Risk Taking Dictionary (McKenny et al., 2018), Profitability Dictionary (McKenny et al., 2018), Security Dictionary (Neiman et al., 2016), Stimulation Dictionary (Neiman et al., 2016), Negative Words Dictionary (Loughran-McDonald Master Dictionary, 2010), Tone – Negativity Dictionary (Henry, 2008).

The Statistical Analysis found that negative signals/ cues play no important role as far as the investigated ICOs go. However, this study did find a prevalence of the use of positive signals/ cues that managed to make their way from the whitepapers through the video transcripts all the way into the comment sections. A significant amount of relevant signals/ cues were identified in the following dictionaries: Positive Words Dictionary (Loughran-McDonald Master Dictionary, 2010), Tone – Positivity Dictionary (Henry, 2008).

There have been studies in other types of crowdfunding projects to address miscommunication of project value to crowds which have been partially successful in explaining the narrative strategies of other projects (see literature review). While there have been suggestions that narratives are an effective tool for influencing the beliefs of crowdfunders (Allison et al. 2017), the actual narrative cues are still unclear. As a result, we do not have a complete picture of why individuals choose to support or sponsor a particular crowdfunding project. We do not understand the construction of narratives to appeal to a potentially huge array of audiences instead of a finite number of stakeholders, and how they portray the goals of projects (Manning and Bejarano, 2017). The tales of Crowdfunding are stimulating contexts for the study of narratives. Crowdfunding campaigns are embedded temporally. They are generally initiated while projects find themselves "in-the-making" (Manning and Bejarano, 2017).

Specifically, in the realm of ICOs, no similar investigations into signals/ cues have been undertaken and hence there is a lack of theoretical knowledge regarding this important problem.

This research offers practical contribution to the teams of Initial Coin Offerings projects to more effectively communicate their value proposition in an effort to secure more funding. It could also help potential investors in the private and institutional realms to gauge ICO project outlook and private investor reactions.

With the findings of this study, project teams could prepare better whitepapers and video texts that could attract more funding from crowdfunders. Also, crowdfunders could gauge whether to invest into an ICO project or not. Influencers would be able to gauge and use the right signals/ cues to attract more followers and thus attain more reach through their social media channels. Institutional and other investors with an appetite for high-risk projects could get an instant 'temperature read' about the ICO or even an entire ICO-related asset class with this method. They would be able to assess public interest in these projects and factor this into their risk calculations.

6.4. Suggestions for future research:

This study looked exclusively at successful ICOs. Future studies could also explore the signals/ cues of unsuccessful ICOs to complement the area of ICO narratives. In addition, following up on section 5.4. in Discussion, the results from this study could be useful in follow up studies testing individual signals and cues within the construct Dictionaries, which means adopting a new methodology of text mining and analysis. The Figures 21 and 22 can be a bases for developing new sets of hypotheses testing individual categories of signals and cues.

Also, it makes sense to investigate very specific signals/ cues and their coordination within all aforementioned datasets. Methods such as Fuzzy-set Qualitative Comparative Analysis (fsQCA) could be of use in this regard.

With the right knowledge in machine learning and given this field's current advances, including the continued decrease of barriers of entry to collecting large amounts of data, it should become possible to track down how individual signals / cues travel through the datasets. If so, signals / cues from a multitude of academically recognized dictionaries could be tested as well for their effectiveness.

It is worth investigating whether we can find successfully crowdfunded ICOs based on positive signals / cues in their whitepapers and official video transcripts alone.

Also, it makes sense to investigate very specific signals/ cues and their coordination within all aforementioned datasets.

6.5. Contribution and Recommendations to Practice

The methodology of this study offers an alternative to gauge the potential of ICOs. Since it can be used merely with MGC and UGC, it is an additional tool that could be employed before the use of classic Technical Analysis, Fundamental Analysis and On-Chain-Analysis. That is so because these three additional methods require the project to be publicly traded in some capacity.

Further, project initiators should consciously use signals/ cues from the dictionaries that were successfully used in this study, in whitepapers that they want their project to be associated with, and in their own videos, since they have the potential to successfully trickle down to the crowd conversations.

Project initiators are well advised to repeat the same signals/ cues from the dictionaries they want the crowd and other YouTube video creators to use and repeat.

To encourage positive investor sentiment, the deliberate use of positive signals and cues by project instigators in their publications is likely to be of importance when it comes to attracting ICO investments.

Project initiators should think carefully whether to use negative signals/cues in their whitepapers and YouTube videos.

Real Life Application for ICO project Teams

This section explains what ICO project instigators can do to influence UGC and thus positively influence the crowd in its investment decisions and coordinate the crowd in order to create a desired outcome:

1.) ICO project instigators need to understand how signals travel: From the whitepapers into the video transcripts into UGC, specifically into the crowd's conversations under the YouTube videos. Also, these signals / cues should be anticipated to travel from the whitepapers and ICO project instigator produced videos into the videos / video transcripts of independent YouTuber that discuss these ICOs.

2.) Negative signals / cues should be avoided when writing the whitepaper. As a starting point, the signals / cues in the dictionaries from the "Construct: Negative Tone" should be avoided.

3.) Write whitepapers and video transcripts using positive signals / cues, particularly from the dictionaries that are found in the "Construct: Positive Tone".

4.) Produce the videos.

5.) The video transcripts of independent video creators that discuss the ICO should be understood, and the video transcript be downloaded as a .txt file for further processing by means of Computer Aided Text Analysis.

6.) Crowd discussions should be downloaded from the said videos, read, understood and checked for positive signals and cues from the “Construct: Positive Tone” dictionaries. Also, word clouds should be generated to pick up on any additional cues/ signals outside the scope of these dictionaries.

7.) Responses can then be furnished, targeting individual crowd comments or even narratives among potential crowd funders, by creating new videos that address concerns and/ or ideas. This should obviously happen in real time, during the ICO time window. The use of the desired signals / cues should always be adjusted accordingly.

Practical Implications

This research offers practical assistance to the teams of Initial Coin Offerings projects to more effectively communicate their value proposition in an effort to secure more funding. It could also help potential investors in the private and institutional realms to gauge ICO project outlook and private investor reactions.

Project initiators should consciously use signals/ cues from the in this study identified dictionaries, in their whitepapers. They should use the same signals / cues in their whitepapers that they want their project to be associated with and use them again in their videos, since they have the potential to successfully trickle down to the crowd conversations.

To encourage positive investor sentiment, the deliberate use of signals and cues from the “Construct: Positive Tone” dictionaries by project instigators in their publications should be encouraged in order to attract ICO investments.

The signals / cues from the “Construct: Positive Tone” should also be used first in the whitepapers and then used again in the project’s videos. This way, these signals / cues may travel through to independently produced YouTube videos as well as the crowd conversations in respective YouTube comment sections.

Project initiators should think carefully whether to use negative signals/cues in their whitepapers and YouTube videos.

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Appendices

Appendix A – ICO projects case studies information

Appendix B – the Dictionaries – detailed description & Constructs

Appendix C – Example of the statistical testing procedure

Appendix A

ICO projects case studies information

Note that some ICO related platforms state sometimes different ICO dates than the ones mentioned below. Often the reason is that ICO periods have been extended, while their marketing material was not updated. At other times this is because several rounds of funding followed. This study always used the final date. For normal investors that inaccuracy is not important, since the ICO phase is long past and adds no value to the investor. The dates stated below however were double checked with the information provided by the ICO projects.

Also, the initial date of the ICO process is of no value to this study, since potential project investors will ultimately use whatever limited information was out there at the time.

Zilliqa

ICO fundraising date (last day): 3rd of February 2018

Sum raised: $22'000'000 USD in ETH

Team: Xinshu Dong - CEO; Prateek Saxena - Chief Scientific Advisor; Max Kantelia – Visionary; Amrit Kumar – Crypto Lead

What this project does: Zilliqa is a blockchain platform. that is designed to scale in an open, permissionless distributed network securely. Many blockchains struggle with scalability. Zilliqa overcomes this with its "sharding" approach, that can process transactions in parallel.

Bitbond

ICO fundraising date (last day): 10th of May 2019

Sum raised: $2'600'000 USD – This sum was confirmed to me personally by the Bitbond Team. Note that more money was raised, including by other means after this date. We are looking in this study however only at the ICO/STO route they took within the specified timeframe.

Team: Radoslav Albrecht – Founder & CEO; Felix Stremmer – COO; Bartek Rogalski – CTO

What this project does: The Bitbond Token is Germany's first security token and acts as a de-facto stable coin that is pegged to the Euro. It operates as a token based bond. It is noteworthy to point out that Bitbond's ICO phase was called an STO phase. STO stands for Security Token Offering. An ICO is similar to an STO, the difference being that it was regulated und German law. The German authorities classified the Bitbond token as a security. That distinction is of legal importance, when looking for example at the "Ripple vs the SEC" legal case in the United States. This different legal terminology does however make no difference to this research.

Bidao

ICO fundraising date (last day): 30th of November 2020

Sum raised: $18'000'000 USD

Team: Bastian Aigner – CEO; Brian Condenanza – CTO; Xiaolong Zhang; Caroline Kurplers - CMO

What this project does: Bidaochain is a DeFi ecosystem and decentralized proof-of-stake Blockchain with an attached stable coin that is backed by collateral and aims to integrate with EOS, Tezos and Ethereum.

Ethereum

ICO fundraising date (last day): 30th of August 2014

Sum raised: $16'000'000 USD

Team: Vitalik Buterin - Creator/ Founder; Patrick Storchenegger – Attorney at Law; Jeffrey Wilcke – Founder & Technical Steering Group

What this project does: Ethereum is both a cryptocurrency and decentralized platform that is able to run smart contracts.

MenaPay

ICO fundraising date (last day): 16th of May 2019

Sum raised: $8'500'00 USD

Team: Tolga Odoğlu - Managing Director; Orhan Bayram - CPO; Kemal Güzel - CFO; Ilker Cikrikcili - CMO; Tuna Orbay - CTO

What this project does: MenaPay is a blockchain based non-bank payment portal that focuses regionally on the Middle East and Africa and adheres to the financial principles of Sharia law.

Kleros

ICO fundraising date (last day): 11th of February 2020

Sum raised: $18'00'000 USD

Team: Federico Ast – CEO; Clement Lesaege – CTO;

What this project does: Kleros resolves legal disputes via a jury of real people that is connected and coordinated through open source blockchain technology.

Flow-Blockchain

ICO fundraising date (last day): 2nd of October 2020

Sum raised: $2'000'000 USD

Team: Roham Gharegozlou - CEO; Dieter Shirley - CTO; Alex Shih - CFO

What this project does: Flow-Blockchain is a reserve asset used to participate in the FLOW network. This asset has a low-circulating-supply and keeps its inflation at low levels.

Plutus

ICO fundraising date (last day): 13th of October 2020

Sum raised: $1'000'000 USD

Team: Danial Daychopan – CEO; Jasper Tay – COO; Minyi Soon - CPO

What this project does: Plutus lets customers spend various cryptocurrencies from an online-banking-dashboard, similar to the ones known from regular online banking.

Fetch.ai

ICO fundraising date (last day): 25th of February 2019

Sum raised: $6'000'000 USD

Team: Humayun Sheikh – CEO; Toby Simpson – CTO; Thomas Hain - CSO

What this project does: Fetch.ai is powered by Artificial Intelligence and Machine Learning, where data is exchanged on a smart ledger that lets various types of software and devices communicate with each other.

Hedera-Hashgraph

ICO fundraising date (last day): 15th of August 2018

Sum raised: $100'000'000 USD

Team: Lemon Baird – CTO; Mance Harmon – CEO; Tom Trowbridge - President

What this project does: Instead of using blockchain technology, Hedera Hashgraph uses a mathematical approach to achieve distributed consensus among parties. This way, people who don't know and don't trust each other can securely collaborate and transact online without a middleman.

300cubits

ICO fundraising date (last day): 12th of May 2018

Sum raised: $1'588'000 USD

Team: Co-founders: Jonathan Lee; Johnson Leung; Eugene Kim

What this project does: 300cubits is a blockchain project that integrates with Ethereum and is supposed to overcome the challenges of the container shipping industry by means of a cryptocurrency called TEU.

Polkadot

ICO fundraising date (last day): 27th of October 2017

Sum raised: 300'000 Ether, at that time the equivalent was $99'000'000 USD.

Team: Founders: Dr. Gavin Wood; Robert Habermeister; Peter Czaban

What this project does: Polkadot is an Interchain-Blockchain-Protokoll, that makes it possible for different blockchains to communicate with each other and therefore become interoperable.

Cardano

ICO fundraising date (last day): 2nd of January 2018

Sum raised: $62'000'000 USD

Team: Charles Hoskinson – Founder; Jeremy Wood – Chief Strategy Officer; Aggelos Kiayias – Chief Scientist

What this project does: The Cardano blockchain is a proof-of-stake decentralized cryptocurrency. It's research is peer-reviewed and uses the Haskell programming language. It already runs projects with governments on the African continent.

LYXe_LUKSO

ICO fundraising date (last day): 26th of February 2021

Sum raised: $17'870'000 USD

Team: Fabian Vogelsteller - Chief Blockchain Architect and Founder; Marjorie Hernandez de Vogelsteller - Founder and Managing Partner; Sarah-Jane Godman-Boritzki - Co-Founder; Silke Bolms - Co-Founder

What this project does: The LUKSO blockchain works with the Ethereum network, and is targeted at the creative space. The particular focus is on NFTs in areas such as fashion, lifestyle, gaming and social media.

Blockstack

ICO fundraising date (last day): 9th of September 2019

Sum raised: $25'200'00 USD

Team: Muneeb Ali – CEO; Gina Abrams – Growth Partner; Aaron Blankstein - Engineer

What this project does: Blockstack is a blockchain based digital key for digital user identities.

Ferrum-Network

ICO fundraising date (last day): 6th of August 2019

Sum raised: $300'000 USD

Team: Naiem Yeganeh – CEO; Ian Friend – COO; Erik Powers – Financial Strategist; Dominik Swiwekot – Head of Marketing; Hodjar Homaei – Senior Engineer and Product Lead

What this project does: Ferrum-Network is a peer-to-peer network that helps different blockchains to communicate with each other.

Digitalbits

ICO fundraising date (last day): 15th of April 2019

Sum raised: $35'000'000 USD

Team: Al Burgio – Founder; Thomas Madej – Director of Technology; Rajiv Naidoo – Head of Research & Community

What this project does: DigitalBits turns digital assets into tokens. A token is a unit of value on a blockchain project.

Monarch-Token

ICO fundraising date (last day): 31st of July 2019

Sum raised: $5'500'00 USD

Team: Sneh Bhatt – CEO; Robert Beadles – President and Co-Founder; Jow St Angelo – CFO; Kyle Asman – Regulatory Compliance

What this project does: -Monarch Token offers an encrypted wallet and a silver backed token.

NuCypher

ICO fundraising date (last day): 30th of September 2020

Sum raised: $125’640’000 USD

Team: Maclane Wilkinson – CEO & Co-Founder; Michael Egorov - CTO

What this project does: NuCypher uses consensus networks to store encrypted data online.

Solana

ICO fundraising date (last day): 24 March 2020

Sum raised: $25’660’000 USD

Team: Anatoly Yavovenko – CEO; Greg Fitzgerald – CTO; Raj Gokal – COO;

What this project does: Being able to support 50–65k transactions per second at a price of about $0.00001 per transaction, Solana is able to outperform most other blockchain based technologies. Further, it's technical solution is less complicated than sharding or layer-two solutions.

Appendix B

The Dictionaries – detailed description & Constructs

Every underlined headline below highlights the name of the dictionary-bundle (construct). Every bold headline, is the name of the dictionary, that is an individual dictionary and part of the bundle.

Entrepreneurial Orientation [construct] McKenny, Aguinis, et al. (2018)

Innovativeness Dictionary - (McKenny et al., 2018) – Wordcount: 147

Dictionary: ad lib, adroit, adroitness, bright idea, clever, cleverness, conceive, concoct, concoction, concoctive, conjure up, creative, creativity, develop, developed, dream, dream up, expert, formulation, freethinker, genesis, genius, gifted, hit upon, imagination, imaginative, improvise, ingenious, ingenuity, innovate, innovated, innovates, innovating, innovation, innovations, innovative, innovativeness, introduced, introducing, introduction, introductions, invent, invented, invention, inventive, inventiveness, inventor, launch, launched, launching, master stroke, mastermind, metamorphose, metamorphosis, neoteric, neoterism, neoterize, new capabilities, new capability, new compounds, new content, new core areas, new course, new directions, new family, new features, new generation, new generations, new idea, new ideas, new line of business, new medicine, new medicines, new molecular entities, new pharmaceuticals, new platform, new process, new processes, new product, new products, new solutions, new systems, new technique, new techniques, new technologies, new technology, new therapies, new thinking, new tools, new treatments, new ways, new wrinkle, new-generation, new-product, next generation, next-generation, novation, novel, novelty, patent, patented, patents, process development, product development, product launch, product launches, proprietary, prototype, prototyping, push the envelope, R&D, radical, re-engineering, reformulated, refreshed, reinvent, re-invent, reinvented, reinventing, reinvention, reinvents, released, renewal, renewing, research, reshape, reshaped, reshapes, reshaping, resourceful, resourcefulness, restyle, restyling, revolutionary, revolutionize, revolutionized, roll out, rolled out, see things, technologically advanced, think up, trademark, transform, transformation, transformed, transforming, visualize

Proactiveness Dictionary (McKenny et al., 2018) – Wordcount: 52
http://www.catscanner.net/dictuploads/EO_MASA18_Proactive.dict

Dictionary: anticipated, anticipation, anticipation, capitalize, capitalized, capitalizes, capitalizing, exploratory, explore, foreglimpse, foreknow, foresee, foretell, formulate, formulates, formulating, foundation, impatient, industry's first, initiative, initiatives, inquire, inquiry, investigate, investigation, lead, looking ahead, move ahead, opportunistic, opportunities, opportunity, pave the way, pioneer, pioneered, pioneering, pioneers, plan, poised, positioned, positioning, positions, preparations, prepare, preparing, proactive, prospect, prospects, roadmap, scrutinization, take advantage, well-poised, well-positioned

Risk Taking Dictionary (McKenny et al., 2018) – Wordcount: 44
http://www.catscanner.net/dictuploads/EO_MASA18_Risk.dict

Dictionary: adventuresome, adventurous, audacious, bold, bold-spirited, brash, brave, chancy, courageous, danger, dangerous, dare, daredevil, daring, dauntless, dicey, fearless, gutsy, headlong, incautious, intrepid, plunge, precarious, rash, reckless, risky, temerity, venturesome, wager, hardship, hardships, no place to hide, no safe path, ambitious, ambitiousness, mega-ambitious, not for the faint-hearted, jeopardy, riskiest, risk taking, risk-taking, challenging ourselves, challenged ourselves, challenge ourselves

Personal Values [construct] Neiman et al. (2016)

Security Dictionary (Neiman et al., 2016) – Wordcount: 15
http://www.catscanner.net/dictuploads/PV_NGWSH16_Security.dict

Dictionary: armor, assurance, defend, defense, guard, protect, safeguard, safety, save from harm, secure, shelter, shield, strength, threat, watch over

Self-Direction Dictionary (Neiman et al., 2016) – Wordcount: 17
http://www.catscanner.net/dictuploads/PV_NGWSH16_SelfDir.dict

Dictionary: awareness, carrying out, choose, consider, create, decide, explore, innovation, investigate, motivation, organize, originality, purpose, seek, self-control, self-direction, self-discipline

Stimulation Dictionary (Neiman et al., 2016) – Wordcount: 5
http://www.catscanner.net/dictuploads/PV_NGWSH16_Stimulation.dict

Dictionary: challenge, enthusiasm, excitement, stimulation, thrill

Market Orientation [construct] McKenny et al. (2018)

Long Term Focus Dictionary (McKenny et al., 2018) – Wordcount: – 100
http://www.catscanner.net/dictuploads/MO_MASA18_LongTermFocus.dict

Dictionary: and beyond, anticipate, continual, continuation, durability, endured, endures, extending, extends, extensively, forecast, forecast, forecasting, forecasts, foresee, foresight, future, going forward, hardier, hardiest, hardiness, hardy, immortal, immortality, immortalize, imperishability, imperishable, incessant, incessantly, indestructible, interminable, lengthy tenure, life, lifespan, lifetimes, long life, long run, long term, longevous, maintained, multiyear, multi-year, nourish, nourished, nourishes, nourishing, nurtures, nurturing, on the horizon, path forward, perennially, perpetual, perpetually, preserved, preserves, preserving, prolong, prolonged, prolonging, prolongs, protract, protracted, protracting, protracts, recurrent, resiliency, resilient, road ahead, robustness, sempiternal, steeliness, steely, stout, stouter, stoutness, sturdier, sturdiest, sturdiness, sturdy, sustain, sustainability, sustainable, sustained, sustaining, sustains, theorize, tomorrow, tougher, toughest, toughness, unchanging, undecayed, undecaying, undeviating, unending, uninterrupting, upcoming years, vitals, years ahead, years to come

Profitability Dictionary (McKenny et al., 2018) – Wordcount: 59 -
http://www.catscanner.net/dictuploads/MO_MASA18_Profitability.dict

Dictionary: benefits, bottom line, cost effective, cost effectively, cost effectiveness, cost efficient, desirable, desired, earning, earnings, earns, EBIT, EBITDA, emolument, EPS, fecundity, fructuous, fruitful, fruitfully, fruits, gained, gainful, gaining, generative, gross margin, higher-margin, high-margin, income, incomes, lower-margin, low-margin, lucrative, lucre, moneymaking, net income, net income, net loss, net margin, operating income, operating margins, operating margins, paid dividends, pay off, profit, profit making, profitability, profitable, profitably, profited, profiting, profits, propitious, prospering, prosperous, prospers, winnings, wins, yielding, yields

Organizational Time Horizon [construct] DesJardine & Bansal (2019)

Short Time Horizon Dictionary (DesJardine & Bansal, 2019) – Wordcount: 38 -
http://www.catscanner.net/dictuploads/TimeHorizon_DB19_Short.dict

Dictionary: current, currently, daily, day, days, immediate future, instant, instantaneous, instantly, mid-year, midyear, moment, moments, momentarily, month, monthly, months, near-term, quarter, quarterly, quarters, shorter life, shorter period, shorter run, shorter term, shorter time, short life, short period, short run, short term, short time, temporary, temporarily, today, week, weekly, weeks, year

Long Time Horizon Dictionary (DesJardine & Bansal, 2019) – Wordcount: 55 - http://www.catscanner.net/dictuploads/TimeHorizon_DB19_Long.dict

Dictionary: and beyond, centuries, century, commit, commits, committed, committing, commitment, commitments, decade, decades, distant future, eternal, eternally, endless, endlessly, endlessness, forever, history, lasting, lifetime, longer life, longer period, longer run, longer term, longer time, long life, long period, long run, long term, long time, maintain, maintained, maintains, maintaining, outlook, over time, remain, remains, remained, remaining, permanent, permanently, preserve, preserved, preserves, preservation, preserving, years, life span, enduring, perpetual, perpetually, perpetuity, unending

Tone Positivity [construct] Henry, E., (2008) & Loughran-McDonald Master Dictionary, (2010.)

Tone – Positivity Dictionary (Henry, E., 2008) – Wordcount: 105 - http://www.catscanner.net/dictuploads/Tone_H08_Positivity.dict

Dictionary: above, accomplish, accomplished, accomplishes, accomplishing, accomplishment, accomplishments, achieve, achieved, achievement, achievements, achieves, achieving, beat, beating, beats, best, better, certain, certainty, definite, deliver, delivered, delivering, delivers, encouraged, encouraging, enjoy, enjoyed, enjoying, enjoys, exceed, exceeded, exceeding, exceeds, excellent, expand, expanded, expanding, expands, expansion, good, greater, greatest, grew, grow, growing, grown, grows, growth, high, higher, highest, improve, improved, improvement, improvements, improves, improving, increase, increased, increases, increasing, larger, largest, leader, leading, more, most, opportunities, opportunity, pleased, positive, positives, progress, progressing, record, reward, rewarded, rewarding, rewards, rise, risen, rises, rising, rose, solid, strength, strengthen, strengthened, strengthening, strengthens, strengths, strong, stronger, strongest, succeed, succeeded, succeeding, succeeds, success, successes, successful, up

Positive Words Dictionary (Loughran-McDonald Master Dictionary, 2010.) – Wordcount:354 Retreived in November 2021 https://sraf.nd.edu/textual-analysis/resources/#Master%20Dictionary

Dictionary: beneficial, benefit, effective, great, greater, honorable, rewards, able, abundance, abundant, acclaimed, accomplish, accomplished, accomplishes, accomplishing, accomplishment, accomplishments, achieve, achieved, achievement, achievements, achieves, achieving, adequately, advancement, advancements, advances, advancing, advantage, advantaged, advantageous, advantageously, advantages, alliance, alliances, assure, assured, assures, assuring, attain, attained, attaining, attainment, attainments, attains, attractive, attractiveness, beautiful, beautifully, beneficially, benefited, benefiting, benefitted, benefitting, best, better, bolstered, bolstering, bolsters, boom, booming, boost, boosted, breakthrough, breakthroughs, brilliant, charitable, collaborate, collaborated, collaborates, collaborating, collaboration, collaborations, collaborative, collaborator, collaborators, compliment, complimentary, complimented, complimenting, compliments, conclusive, conclusively, conducive, confident, constructive, constructively, courteous, creative, creatively, creativeness, creativity, delight, delighted, delightful, delightfully, delighting, delights, dependability, dependable, desirable, desired, despite, destined, diligent, diligently, distinction, distinctions, distinctive, distinctively, distinctiveness, dream, easier, easily, easy, efficiencies, efficiency, efficient, efficiently, empower, empowered, empowering, empowers, enable, enabled, enables, enabling, encouraged,

encouragement, encourages, encouraging, enhance, enhanced, enhancement, enhancements, enhances, enhancing, enjoy, enjoyable, enjoyably, enjoyed, enjoying, enjoyment, enjoys, enthusiasm, enthusiastic, enthusiastically, excellence, excellent, excelling, excels, exceptional, exceptionally, excited, excitement, exciting, exclusive, exclusively, exclusiveness, exclusives, exclusivity, exemplary, fantastic, favorable, favorably, favored, favoring, favorite, favorites, friendly, gain, gained, gaining, gains, good, greatest, greatly, greatness, happiest, happily, happiness, happy, highest, honor, honored, honoring, honors, ideal, impress, impressed, impresses, impressing, impressive, impressively, improve, improved, improvement, improvements, improves, improving, incredible, incredibly, influential, informative, ingenuity, innovate, innovated, innovates, innovating, innovation, innovations, innovative, innovator, innovators, insightful, inspiration, inspirational, integrity, invent, invented, inventing, invention, inventions, inventive, inventiveness, inventor, inventors, leadership, leading, loyal, lucrative, meritorious, opportunities, opportunity, optimistic, outperform, outperformed, outperforming, outperforms, perfect, perfected, perfectly, perfects, pleasant, pleasantly, pleased, pleasure, plentiful, popular, popularity, positive, positively, preeminence, preeminent, premier, premiere, prestige, prestigious, proactive, proactively, proficiency, proficient, proficiently, profitability, profitable, profitably, progress, progressed, progresses, progressing, prospered, prospering, prosperity, prosperous, prospers, rebound, rebounded, rebounding, receptive, regain, regained, regaining, resolve, revolutionize, revolutionized, revolutionizes, revolutionizing, reward, rewarded, rewarding, satisfaction, satisfactorily, satisfactory, satisfied, satisfies, satisfy, satisfying, smooth, smoothing, smoothly, smooths, solves, solving, spectacular, spectacularly, stability, stabilization, stabilizations, stabilize, stabilized, stabilizes, stabilizing, stable, strength, strengthen, strengthened, strengthening, strengthens, strengths, strong, stronger, strongest, succeed, succeeded, succeeding, succeeds, success, successes, successful, successfully, superior, surpass, surpassed, surpasses, surpassing, transparency, tremendous, tremendously, unmatched, unparalleled, unsurpassed, upturn, upturns, valuable, versatile, versatility, vibrancy, vibrant, win, winner, winners, winning, worthy, innovativeness,

Tone Negativity [construct] Henry, E., (2008) & Loughran-McDonald Master Dictionary, (2010.)

Tone – Negativity Dictionary (Henry, E., 2008) – Wordcount: 85 - http://www.catscanner.net/dictuploads/Tone_H08_Negativity.dict

below; challenge; challenged; challenges; challenging; decline; declined; declines; declining; decrease; decreased; decreases; decreasing; depressed; deteriorate; deteriorated; deteriorates; deteriorating; difficult; difficulty; disappoint; disappointed; disappointing; disappointment; disappoints; down; downturn; drop; dropped; dropping; drops; fail; failing; fails; failure; fall; fallen; falling; falls; fell; hurdle; hurdles; least; less; low; lower; lowest; negative; negatives; obstacle; obstacles; penalties; penalty; risk; risks; risky; shrink; shrinking; shrinks; shrunk; slump; slumped; slumping; slumps; smaller; smallest; threat; threats; uncertain; uncertainty; under; unfavorable; unsettled; weak; weaken; weakened; weakening; weakens; weakness; weaknesses; worse; worsen; worsening; worsens; worst;

Negative Words Dictionary (Loughran-McDonald Master Dictionary, 2010.) – Wordcount: 2355 https://sraf.nd.edu/textual-analysis/resources/#Master%20Dictionary

Dictionary: breaking, bridge, broken, closed, closing, critical, force, fugitive, late, secrecy, abandon, abandoned, abandoning, abandonment, abandonments, abandons, abdicated, abdicates, abdicating, abdication, abdications, aberrant, aberration, aberrational, aberrations, abetting, abnormal, abnormalities, abnormality, abnormally, abolish, abolished, abolishes, abolishing, abrogate, abrogated, abrogates, abrogating, abrogation, abrogations, abrupt, abruptly, abruptness, absence, absences, absenteeism, abuse, abused, abuses, abusing, abusive, abusively, abusiveness, accident, accidental, accidentally, accidents, accusation, accusations, accuse, accused, accuses, accusing, acquiesce, acquiesced, acquiesces, acquiescing, acquit, acquits, acquittal, acquittals, acquitted, acquitting, adulterate, adulterated, adulterating, adulteration, adulterations, adversarial, adversaries, adversary, adverse, adversely, adversities,

adversity, aftermath, aftermaths, against, aggravate, aggravated, aggravates, aggravating, aggravation, aggravations, alerted, alerting, alienate, alienated, alienates, alienating, alienation, alienations, allegation, allegations, allege, alleged, allegedly, alleges, alleging, annoy, annoyance, annoyances, annoyed, annoying, annoys, annul, annulled, annulling, annulment, annulments, annuls, anomalies, anomalous, anomalously, anomaly, anticompetitive, antitrust, argue, argued, arguing, argument, argumentative, arguments, arrearage, arrearages, arrears, arrest, arrested, arrests, artificially, assault, assaulted, assaulting, assaults, assertions, attrition, backdating, bad, bail, bailout, balk, balked, bankrupt, bankruptcies, bankruptcy, bankrupted, bankrupting, bankrupts, bans, barred, barrier, barriers, bottleneck, bottlenecks, boycott, boycotted, boycotting, boycotts, breach, breached, breaches, breaching, break, breakage, breakages, breakdown, breakdowns, breaks, bribe, bribed, briberies, bribery, bribes, bribing, burden, burdened, burdening, burdens, burdensome, burned, calamities, calamitous, calamity, cancel, canceled, canceling, cancellation, cancellations, cancelled, cancelling, cancels, careless, carelessly, carelessness, catastrophe, catastrophes, catastrophic, catastrophically, caution, cautionary, cautioned, cautioning, cautions, cease, ceased, ceases, ceasing, censure, censured, censures, censuring, challenge, challenged, challenges, challenging, chargeoffs, circumvent, circumvented, circumventing, circumvention, circumventions, circumvents, claiming, claims, clawback, closeout, closeouts, closings, closure, closures, coerce, coerced, coerces, coercing, coercion, coercive, collapse, collapsed, collapses, collapsing, collision, collisions, collude, colluded, colludes, colluding, collusion, collusions, collusive, complain, complained, complaining, complains, complaint, complaints, complicate, complicated, complicates, complicating, complication, complications, compulsion, concealed, concealing, concede, conceded, concedes, conceding, concern, concerned, concerns, conciliating, conciliation, conciliations, condemn, condemnation, condemnations, condemned, condemning, condemns, condone, condoned, confess, confessed, confesses, confessing, confession, confine, confined, confinement, confinements, confines, confining, confiscate, confiscated, confiscates, confiscating, confiscation, confiscations, conflict, conflicted, conflicting, conflicts, confront, confrontation, confrontational, confrontations, confronted, confronting, confronts, confuse, confused, confuses, confusing, confusingly, confusion, conspiracies, conspiracy, conspirator, conspiratorial, conspirators, conspire, conspired, conspires, conspiring, contempt, contend, contended, contending, contends, contention, contentions, contentious, contentiously, contested, contesting, contraction, contractions, contradict, contradicted, contradicting, contradiction, contradictions, contradictory, contradicts, contrary, controversial, controversies, controversy, convict, convicted, convicting, conviction, convictions, corrected, correcting, correction, corrections, corrects, corrupt, corrupted, corrupting, corruption, corruptions, corruptly, corruptness, costly, counterclaim, counterclaimed, counterclaiming, counterclaims, counterfeit, counterfeited, counterfeiter, counterfeiters, counterfeiting, counterfeits, countermeasure, countermeasures, crime, crimes, criminal, criminally, criminals, crises, crisis, critically, criticism, criticisms, criticize, criticized, criticizes, criticizing, crucial, crucially, culpability, culpable, culpably, cumbersome, curtail, curtailed, curtailing, curtailment, curtailments, curtails, cut, cutback, cutbacks, damage, damaged, damages, damaging, dampen, dampened, danger, dangerous, dangerously, dangers, deadlock, deadlocked, deadlocking, deadlocks, deadweight, deadweights, debarment, debarments, debarred, deceased, deceit, deceitful, deceitfulness, deceive, deceived, deceives, deceiving, deception, deceptions, deceptive, deceptively, decline, declined, declines, declining, deface, defaced, defacement, defamation, defamations, defamatory, defame, defamed, defames, defaming, default, defaulted, defaulting, defaults, defeat, defeated, defeating, defeats, defect, defective, defects, defend, defendant, defendants, defended, defending, defends, defensive, defer, deficiencies, deficiency, deficient, deficit, deficits, defraud, defrauded, defrauding, defrauds, defunct, degradation, degradations, degrade, degraded, degrades, degrading, delay, delayed, delaying, delays, deleterious, deliberate, deliberated, deliberately, delinquencies, delinquency, delinquent, delinquently, delinquents, delist, delisted, delisting, demise, demised, demises, demising, demolish, demolished, demolishes, demolishing, demolition, demolitions, demote, demoted, demotes, demoting, demotion, demotions, denial, denials, denied, denies, denigrate, denigrated, denigrates, denigrating, denigration, deny, denying, deplete, depleted, depletes, depleting, depletion, depletions, deprecation, depress, depressed, depresses, depressing, deprivation, deprive, deprived, deprives, depriving, derelict, dereliction, derogatory, destabilization, destabilize, destabilized, destabilizing, destroy, destroyed, destroying, destroys, destruction, destructive,

detain, detained, detention, detentions, deter, deteriorate, deteriorated, deteriorates, deteriorating, deterioration, deteriorations, deterred, deterrence, deterrences, deterrent, deterrents, deterring, deters, detract, detracted, detracting, detriment, detrimental, detrimentally, detriments, devalue, devalued, devalues, devaluing, devastate, devastated, devastating, devastation, deviate, deviated, deviates, deviating, deviation, deviations, devolve, devolved, devolves, devolving, difficult, difficulties, difficultly, difficulty, diminish, diminished, diminishes, diminishing, diminution, disadvantage, disadvantaged, disadvantageous, disadvantages, disaffiliation, disagree, disagreeable, disagreed, disagreeing, disagreement, disagreements, disagrees, disallow, disallowance, disallowances, disallowed, disallowing, disallows, disappear, disappearance, disappearances, disappeared, disappearing, disappears, disappoint, disappointed, disappointing, disappointingly, disappointment, disappointments, disappoints, disapproval, disapprovals, disapprove, disapproved, disapproves, disapproving, disassociates, disassociating, disassociation, disassociations, disaster, disasters, disastrous, disastrously, disavow, disavowal, disavowed, disavowing, disavows, disciplinary, disclaim, disclaimed, disclaimer, disclaimers, disclaiming, disclaims, disclose, disclosed, discloses, disclosing, discontinuance, discontinuances, discontinuation, discontinuations, discontinue, discontinued, discontinues, discontinuing, discourage, discouraged, discourages, discouraging, discredit, discredited, discrediting, discredits, discrepancies, discrepancy, disfavor, disfavored, disfavoring, disfavors, disgorge, disgorged, disgorgement, disgorgements, disgorges, disgorging, disgrace, disgraceful, disgracefully, dishonest, dishonestly, dishonesty, dishonor, dishonorable, dishonorably, dishonored, dishonoring, dishonors, disincentives, disinterested, disinterestedly, disinterestedness, disloyal, disloyally, disloyalty, dismal, dismally, dismiss, dismissal, dismissals, dismissed, dismisses, dismissing, disorderly, disparage, disparaged, disparagement, disparagements, disparages, disparaging, disparagingly, disparities, disparity, displace, displaced, displacement, displacements, displaces, displacing, dispose, dispossess, dispossessed, dispossesses, dispossessing, disproportion, disproportional, disproportionate, disproportionately, dispute, disputed, disputes, disputing, disqualification, disqualifications, disqualified, disqualifies, disqualify, disqualifying, disregard, disregarded, disregarding, disregards, disreputable, disrepute, disrupt, disrupted, disrupting, disruption, disruptions, disruptive, disrupts, dissatisfaction, dissatisfied, dissent, dissented, dissenter, dissenters, dissenting, dissents, dissident, dissidents, dissolution, dissolutions, distort, distorted, distorting, distortion, distortions, distorts, distract, distracted, distracting, distraction, distractions, distracts, distress, distressed, disturb, disturbance, disturbances, disturbed, disturbing, disturbs, diversion, divert, diverted, diverting, diverts, divest, divested, divesting, divestiture, divestitures, divestment, divestments, divests, divorce, divorced, divulge, divulged, divulges, divulging, doubt, doubted, doubtful, doubts, downgrade, downgraded, downgrades, downgrading, downsize, downsized, downsizes, downsizing, downsizings, downtime, downtimes, downturn, downturns, downward, downwards, drag, drastic, drastically, drawback, drawbacks, dropped, drought, droughts, duress, dysfunction, dysfunctional, dysfunctions, easing, egregious, egregiously, embargo, embargoed, embargoes, embargoing, embarrass, embarrassed, embarrasses, embarrassing, embarrassment, embarrassments, embezzle, embezzled, embezzlement, embezzlements, embezzler, embezzles, embezzling, encroach, encroached, encroaches, encroaching, encroachment, encroachments, encumber, encumbered, encumbering, encumbers, encumbrance, encumbrances, endanger, endangered, endangering, endangerment, endangers, enjoin, enjoined, enjoining, enjoins, erode, eroded, erodes, eroding, erosion, erratic, erratically, erred, erring, erroneous, erroneously, error, errors, errs, escalate, escalated, escalates, escalating, evade, evaded, evades, evading, evasion, evasions, evasive, evict, evicted, evicting, eviction, evictions, evicts, exacerbate, exacerbated, exacerbates, exacerbating, exacerbation, exacerbations, exaggerate, exaggerated, exaggerates, exaggerating, exaggeration, excessive, excessively, exculpate, exculpated, exculpates, exculpating, exculpation, exculpations, exculpatory, exonerate, exonerated, exonerates, exonerating, exoneration, exonerations, exploit, exploitation, exploitations, exploitative, exploited, exploiting, exploits, expose, exposed, exposes, exposing, expropriate, expropriated, expropriates, expropriating, expropriation, expropriations, expulsion, expulsions, extenuating, fail, failed, failing, failings, fails, failure, failures, fallout, false, falsely, falsification, falsifications, falsified, falsifies, falsify, falsifying, falsity, fatalities, fatality, fatally, fault, faulted, faults, faulty, fear, fears, felonies, felonious, felony, fictitious, fined, fines, fired, firing, flaw, flawed, flaws, forbid, forbidden, forbidding, forbids, forced, forcing, foreclose, foreclosed, forecloses, foreclosing, foreclosure, foreclosures, forego, foregoes, foregone, forestall, forestalled,

forestalling, forestalls, forfeit, forfeited, forfeiting, forfeits, forfeiture, forfeitures, forgers, forgery, fraud, frauds, fraudulence, fraudulent, fraudulently, frivolous, frivolously, frustrate, frustrated, frustrates, frustrating, frustratingly, frustration, frustrations, fugitives, gratuitous, gratuitously, grievance, grievances, grossly, groundless, guilty, halt, halted, hamper, hampered, hampering, hampers, harass, harassed, harassing, harassment, hardship, hardships, harm, harmed, harmful, harmfully, harming, harms, harsh, harsher, harshest, harshly, harshness, hazard, hazardous, hazards, hinder, hindered, hindering, hinders, hindrance, hindrances, hostile, hostility, hurt, hurting, idle, idled, idling, ignore, ignored, ignores, ignoring, ill, illegal, illegalities, illegality, illegally, illegible, illicit, illicitly, illiquid, illiquidity, imbalance, imbalances, immature, immoral, impair, impaired, impairing, impairment, impairments, impairs, impasse, impasses, impede, impeded, impedes, impediment, impediments, impeding, impending, imperative, imperfection, imperfections, imperil, impermissible, implicate, implicated, implicates, implicating, impossibility, impossible, impound, impounded, impounding, impounds, impracticable, impractical, impracticalities, impracticality, imprisonment, improper, improperly, improprieties, impropriety, imprudent, imprudently, inability, inaccessible, inaccuracies, inaccuracy, inaccurate, inaccurately, inaction, inactions, inactivate, inactivated, inactivates, inactivating, inactivation, inactivations, inactivity, inadequacies, inadequacy, inadequate, inadequately, inadvertent, inadvertently, inadvisability, inadvisable, inappropriate, inappropriately, inattention, incapable, incapacitated, incapacity, incarcerate, incarcerated, incarcerates, incarcerating, incarceration, incarcerations, incidence, incidences, incident, incidents, incompatibilities, incompatibility, incompatible, incompetence, incompetency, incompetent, incompetently, incompetents, incomplete, incompletely, incompleteness, inconclusive, inconsistencies, inconsistency, inconsistent, inconsistently, inconvenience, inconveniences, inconvenient, incorrect, incorrectly, incorrectness, indecency, indecent, indefeasible, indefeasibly, indict, indictable, indicted, indicting, indictment, indictments, ineffective, ineffectively, ineffectiveness, inefficiencies, inefficiency, inefficient, inefficiently, ineligibility, ineligible, inequitable, inequitably, inequities, inequity, inevitable, inexperience, inexperienced, inferior, inflicted, infraction, infractions, infringe, infringed, infringement, infringements, infringes, infringing, inhibited, inimical, injunction, injunctions, injure, injured, injures, injuries, injuring, injurious, injury, inordinate, inordinately, inquiry, insecure, insensitive, insolvencies, insolvency, insolvent, instability, insubordination, insufficiency, insufficient, insufficiently, insurrection, insurrections, intentional, interfere, interfered, interference, interferences, interferes, interfering, intermittent, intermittently, interrupt, interrupted, interrupting, interruption, interruptions, interrupts, intimidation, intrusion, invalid, invalidate, invalidated, invalidates, invalidating, invalidation, invalidity, investigate, investigated, investigates, investigating, investigation, investigations, involuntarily, involuntary, irreconcilable, irreconcilably, irrecoverable, irrecoverably, irregular, irregularities, irregularity, irregularly, irreparable, irreparably, irreversible, jeopardize, jeopardized, justifiable, kickback, kickbacks, knowingly, lack, lacked, lacking, lackluster, lacks, lag, lagged, lagging, lags, lapse, lapsed, lapses, lapsing, laundering, layoff, layoffs, lie, limitation, limitations, lingering, liquidate, liquidated, liquidates, liquidating, liquidation, liquidations, liquidator, liquidators, litigant, litigants, litigate, litigated, litigates, litigating, litigation, litigations, lockout, lockouts, lose, loses, losing, loss, losses, lost, lying, malfeasance, malfunction, malfunctioned, malfunctioning, malfunctions, malice, malicious, maliciously, malpractice, manipulate, manipulated, manipulates, manipulating, manipulation, manipulations, manipulative, markdown, markdowns, misapplication, misapplications, misapplied, misapplies, misapply, misapplying, misappropriate, misappropriated, misappropriates, misappropriating, misappropriation, misappropriations, misbranded, miscalculate, miscalculated, miscalculates, miscalculating, miscalculation, miscalculations, mischief, misconduct, misdemeanor, misdemeanors, misdirected, mishandle, mishandled, mishandles, mishandling, misinform, misinformation, misinformed, misinforming, misinforms, misinterpret, misinterpretation, misinterpretations, misinterpreted, misinterpreting, misinterprets, misjudge, misjudged, misjudges, misjudging, misjudgment, misjudgments, mislabel, mislabeled, mislabeling, mislabelled, mislabels, mislead, misleading, misleadingly, misleads, misled, mismanage, mismanaged, mismanagement, mismanages, mismanaging, mismatch, mismatched, mismatches, mismatching, misplaced, misrepresent, misrepresentation, misrepresentations, misrepresented, misrepresenting, misrepresents, miss, missed, misses, misstate, misstated, misstatement, misstatements, misstates, misstating, misstep, missteps, mistake, mistaken, mistakenly, mistakes, mistaking, mistrial, mistrials, misunderstand, misunderstanding, misunderstandings, misunderstood, misuse, misused,

misuses, misusing, monopolistic, monopolists, monopolization, monopolize, monopolized, monopolizes, monopolizing, monopoly, moratoria, moratorium, moratoriums, mothballed, mothballing, negative, negatively, negatives, neglect, neglected, neglectful, neglecting, neglects, negligence, negligences, negligent, negligently, nonattainment, noncompetitive, noncompliance, noncompliances, noncompliant, noncomplying, nonconforming, nonconformities, nonconformity, nondisclosure, nonfunctional, nonpayment, nonpayments, nonperformance, nonperformances, nonperforming, nonproducing, nonproductive, nonrecoverable, nonrenewal, nuisance, nuisances, nullification, nullifications, nullified, nullifies, nullify, nullifying, objected, objecting, objection, objectionable, objectionably, objections, obscene, obscenity, obsolescence, obsolete, obstacle, obstacles, obstruct, obstructed, obstructing, obstruction, obstructions, offence, offences, offend, offended, offender, offenders, offending, offends, omission, omissions, omit, omits, omitted, omitting, onerous, opportunistic, opportunistically, oppose, opposed, opposes, opposing, opposition, oppositions, outage, outages, outdated, outmoded, overage, overages, overbuild, overbuilding, overbuilds, overbuilt, overburden, overburdened, overburdening, overcapacities, overcapacity, overcharge, overcharged, overcharges, overcharging, overcome, overcomes, overcoming, overdue, overestimate, overestimated, overestimates, overestimating, overestimation, overestimations, overload, overloaded, overloading, overloads, overlook, overlooked, overlooking, overlooks, overpaid, overpayment, overpayments, overproduced, overproduces, overproducing, overproduction, overrun, overrunning, overruns, overshadow, overshadowed, overshadowing, overshadows, overstate, overstated, overstatement, overstatements, overstates, overstating, oversupplied, oversupplies, oversupply, oversupplying, overtly, overturn, overturned, overturning, overturns, overvalue, overvalued, overvaluing, panic, panics, penalize, penalized, penalizes, penalizing, penalties, penalty, peril, perils, perjury, perpetrate, perpetrated, perpetrates, perpetrating, perpetration, persist, persisted, persistence, persistent, persistently, persisting, persists, pervasive, pervasively, pervasiveness, petty, picket, picketed, picketing, plaintiff, plaintiffs, plea, plead, pleaded, pleading, pleadings, pleads, pleas, pled, poor, poorly, poses, posing, postpone, postponed, postponement, postponements, postpones, postponing, precipitated, precipitous, precipitously, preclude, precluded, precludes, precluding, predatory, prejudice, prejudiced, prejudices, prejudicial, prejudicing, premature, prematurely, pressing, pretrial, preventing, prevention, prevents, problem, problematic, problematical, problems, prolong, prolongation, prolongations, prolonged, prolonging, prolongs, prone, prosecute, prosecuted, prosecutes, prosecuting, prosecution, prosecutions, protest, protested, protester, protesters, protesting, protestor, protestors, protests, protracted, protraction, provoke, provoked, provokes, provoking, punished, punishes, punishing, punishment, punishments, punitive, purport, purported, purportedly, purporting, purports, question, questionable, questionably, questioned, questioning, questions, quit, quitting, racketeer, racketeering, rationalization, rationalizations, rationalize, rationalized, rationalizes, rationalizing, reassessment, reassessments, reassign, reassigned, reassigning, reassignment, reassignments, reassigns, recall, recalled, recalling, recalls, recession, recessionary, recessions, reckless, recklessly, recklessness, redact, redacted, redacting, redaction, redactions, redress, redressed, redresses, redressing, refusal, refusals, refuse, refused, refuses, refusing, reject, rejected, rejecting, rejection, rejections, rejects, relinquish, relinquished, relinquishes, relinquishing, relinquishment, relinquishments, reluctance, reluctant, renegotiate, renegotiated, renegotiates, renegotiating, renegotiation, renegotiations, renounce, renounced, renouncement, renouncements, renounces, renouncing, reparation, reparations, repossessed, repossesses, repossessing, repossession, repossessions, repudiate, repudiated, repudiates, repudiating, repudiation, repudiations, resign, resignation, resignations, resigned, resigning, resigns, restate, restated, restatement, restatements, restates, restating, restructure, restructured, restructures, restructuring, restructurings, retaliate, retaliated, retaliates, retaliating, retaliation, retaliations, retaliatory, retribution, retributions, revocation, revocations, revoke, revoked, revokes, revoking, ridicule, ridiculed, ridicules, ridiculing, riskier, riskiest, risky, sabotage, sacrifice, sacrificed, sacrifices, sacrificial, sacrificing, scandalous, scandals, scrutinize, scrutinized, scrutinizes, scrutinizing, scrutiny, seize, seized, seizes, seizing, sentenced, sentencing, serious, seriously, seriousness, setback, setbacks, sever, severe, severed, severely, severities, severity, sharply, shocked, shortage, shortages, shortfall, shortfalls, shrinkage, shrinkages, shut, shutdown, shutdowns, shuts, shutting, slander, slandered, slanderous, slanders, slippage, slippages, slow, slowdown, slowdowns, slowed, slower, slowest, slowing, slowly, slowness, sluggish, sluggishly,

sluggishness, solvencies, solvency, staggering, stagnant, stagnate, stagnated, stagnates, stagnating, stagnation, standstill, standstills, stolen, stoppage, stoppages, stopped, stopping, stops, strain, strained, straining, strains, stress, stressed, stresses, stressful, stressing, stringent, subjected, subjecting, subjection, subpoena, subpoenaed, subpoenas, substandard, sue, sued, sues, suffer, suffered, suffering, suffers, suing, summoned, summoning, summons, summonses, susceptibility, susceptible, suspect, suspected, suspects, suspend, suspended, suspending, suspends, suspension, suspensions, suspicion, suspicions, suspicious, suspiciously, taint, tainted, tainting, taints, tampered, tense, terminate, terminated, terminates, terminating, termination, terminations, testify, testifying, threat, threaten, threatened, threatening, threatens, threats, tightening, tolerate, tolerated, tolerates, tolerating, toleration, tortuous, tortuously, tragedies, tragedy, tragic, tragically, traumatic, trouble, troubled, troubles, turbulence, turmoil, unable, unacceptable, unacceptably, unaccounted, unannounced, unanticipated, unapproved, unattractive, unauthorized, unavailability, unavailable, unavoidable, unavoidably, unaware, uncollectable, uncollected, uncollectibility, uncollectible, uncollectibles, uncompetitive, uncompleted, unconscionable, unconscionably, uncontrollable, uncontrollably, uncontrolled, uncorrected, uncover, uncovered, uncovering, uncovers, undeliverable, undelivered, undercapitalized, undercut, undercuts, undercutting, underestimate, underestimated, underestimates, underestimating, underestimation, underfunded, underinsured, undermine, undermined, undermines, undermining, underpaid, underpayment, underpayments, underpays, underperformance, underperforming, underproduced, underproduction, understate, understated, understatement, understatements, understates, understating, underutilization, underutilized, undesirable, undesired, undetected, undetermined, undisclosed, undocumented, undue, unduly, uneconomic, uneconomical, uneconomically, unemployed, unemployment, unethical, unethically, unexcused, unexpected, unexpectedly, unfair, unfairly, unfavorable, unfavorably, unfeasible, unfit, unfitness, unforeseeable, unforeseen, unfortunate, unfortunately, unfounded, unfriendly, unfulfilled, unfunded, uninsured, unintended, unintentional, unintentionally, unjust, unjustifiable, unjustifiably, unjustified, unjustly, unknowing, unknowingly, unlawful, unlawfully, unlicensed, unliquidated, unmarketable, unnecessarily, unnecessary, unneeded, unobtainable, unoccupied, unpaid, unperformed, unplanned, unpopular, unpredictability, unpredictable, unpredictably, unproductive, unprofitable, unqualified, unrealistic, unreasonable, unreasonableness, unreasonably, unrecoverable, unrecovered, unreimbursed, unreliable, unremedied, unreported, unresolved, unrest, unsafe, unsalable, unsaleable, unsatisfactory, unsatisfied, unsavory, unscheduled, unsold, unsound, unstable, unsubstantiated, unsuccessful, unsuccessfully, unsuitability, unsuitable, unsuitably, unsuited, unsure, unsuspected, unsuspecting, unsustainable, untenable, untimely, untruth, untruthful, untruthfully, untruthfulness, untruths, unusable, unwanted, unwarranted, unwelcome, unwilling, unwillingness, upset, urgency, urgent, usurious, usurp, usurped, usurping, usurps, usury, vandalism, verdict, verdicts, vetoed, victims, violate, violated, violates, violating, violation, violations, violative, violator, violators, violence, violent, violently, vitiate, vitiated, vitiates, vitiating, vitiation, voided, voiding, volatile, volatility, vulnerabilities, vulnerability, vulnerable, vulnerably, warn, warned, warning, warnings, warns, wasted, wasteful, wasting, weak, weaken, weakened, weakening, weakens, weaker, weakest, weakly, weakness, weaknesses, willfully, worries, worry, worrying, worse, worsen, worsened, worsening, worsens, worst, worthless, writedown, writedowns, writeoff, writeoffs, wrong, wrongdoing, wrongdoings, wrongful, wrongfully, wrongly, aversely, delists, misclassification, misclassified, misdated, underperform, underperformed, underreporting, unfavourable, unforseen, unmerchantable, unpredicted, unprofitability, redefaulted, cyberattack, cyberattacks, cyberbullying, cybercrime, cybercrimes, cybercriminal, cybercriminals, mischaracterization, misclassifications, misclassify, miscommunication, misprice, mispricing, mispricings, redefault, redefaults, spam, spammers, spamming, underperforms, unfavorability, unmeritorious, unreceptive, unsellable, unstabilized, untrusted

Appendix C

Example of the statistical testing procedure

Here a brief summary of how the LSD-Test (Least Significant Difference Test) is being conducted. Please note that the authors computer performs calculations and outputs in German language. All relevant terms in the following pictures will be translated and explained henceforth. The LSD-Test can be used on equal and unequal sample sizes, the latter being the case for us here.

	1_Whitepap	2_video_trar	3_video_trar	4_potential_	5_potential_b
Long-Term Fc	108	235	29	341	36
Profiability I	172	291	32	579	76
Economic Va	229	369	37	550	65

Figure 23: LSD testing explained.

To the left of this picture, we find a column with 3 examples of dictionaries, together they constitute a bundle of dictionaries, the top row gives us the names of the groups/ data sets (one Whitepaper file, two video-transcript files, 2 comments under the video files). After performing the One-Way-ANOVA on this data, we arrive at the following output.

ZUSAMMENFASSUNG

Gruppen	*Anzahl*	*Summe*	*Mittelwert*	*Varianz*
1_Whitepap	3	509	169.66667	3664.333333
2_video_trar	3	895	298.33333	4529.333333
3_video_trar	3	98	32.666667	16.33333333
4_potential_	3	1470	490	16861
5_potential_	3	177	59	427

ANOVA

Streuungsurs	*Quadratsumi*	*Freiheitsgrad*	*Mittlere Quac*	*Prüfgröße (F)*	*P-Wert*	*kritischer F-W*
Unterschiede	426232.93	4	106558.23	20.8954101	7.615E-05	3.4780497
Innerhalb de	50996	10	5099.6			
Gesamt	477228.93	14				

Figure 24: One-Way-ANOVA output

“ZUSAMMENFASSUNG” aka SUMMARY TABLE:

Under “Gruppen”, we find our 5 groups/ data sets (Whitepaper [1_], video-transcripts [2_ & 3_], comments under the video [4_ & 5_]). Under “Anzahl”,we find the sample sizes for each group, in our example these are the 3 dictionaries called the Long-Term Focus Dictionary, the Profitability Dictionary and the Economic Value Orientation Dictionary. Under “Mittelwert”, we find the Average Scores for each group.

ANOVA TABLE:

Of interest here are “Freiheitsgrad”, meaning the df-Degrees of Freedom Within (highlighted in mint-green) and “Mittlere Quadratsumme (MS)” meaning the Mean Squares Within (highlighted in beige). To determine if we have a statistically significant finding for this One-Way-ANOVA, we will use the “P-Wert” meaning P-value. In our case it is below 0.05, so it is statistically significant. Now we need to find out where the differences are within the groups since we still don’t know this. For this, we will use the LSD-Test.

$$LSD = t\sqrt{MSW\left(\frac{1}{N_1}+\frac{1}{N_2}\right)}$$

Figure 25: Least Significant Difference equation

This picture above shows the Least Significant Difference equation.

ZUSAMMENFASSUNG

Gruppen	Anzahl	Summe	Mittelwert	Varianz
1_Whitepap	3	509	169.66667	3664.333333
2_video_trar	3	895	298.33333	4529.333333
3_video_trar	3	98	32.666667	16.33333333
4_potential_	3	1470	490	16861
5_potential_	3	177	59	427

Figure 26: One-Way ANOVA output

With the One-Way ANOVA output (picture above), we will compare the differences between the Average Scores (here “Mittelwert”, circled in red) for each group. For example, when we compare 1_ Whitepaper of an ICO with 5_Comments under independent YouTuber videos, we calculate 169.66667 – 59 = 110.666….

1_ to 4_	320.3333333
1_ to 5_	110.6666667
2_ to 4_	191.6666667
3_ to 5_	26.33333333

Figure 27: Differences

In the picture above we can see the example calculations of our spreadsheet on these pairs. These are the D in the LSD acronym, the **Differences**.

t	2.228138852
Alpha	0.05
df	10
MSW	5099.6

Figure 28: t-value, Alpha, df-Degrees of Freedom and Mean Square Within

Next we draw this table above. Here the explanation:

The t-value is calculated with the Alpha and the df-Degrees of Freedom. In Excel we use the =T.INV.2T formula. The result is the critical value t in our LSD equation.

Alpha is the error value of 0.05.

df is the Degrees of Freedom (highlighted in mint-green above under “Freiheitsgrad”)

MSW is the Mean Square Within (highlighted in beige above under “Mittlere Quadratsumme”)

- To lay out the process for the sake of clarity and transparency, the author wrote out the calculations, so you can follow along with a pocket-calculator, pen and paper, if you so wish. The authoer, of course, continued to use spreadsheet software to perform the calculations.

$$\left(\frac{1}{N_1}+\frac{1}{N_2}\right)$$

This is the next part of the equation we will calculate.

$\frac{1}{N_1}$ 1 divided by the first sample size 3 (dictionaries) + $\frac{1}{N_2}$ 1 divided by 3 (dictionaries). The result is 0.666…

$\left(\frac{1}{N_1}+\frac{1}{N_2}\right)$		
	1_ to 4_	0.666666667
	1_ to 5_	0.666666667
	2_ to 4_	0.666666667
	3_ to 5_	0.666666667

Figure 29: Formula applied

We apply this to our data in a spreadsheet to all the datasets we wish to compare. The picture above shows the results until now, since we applied the same 3 dictionaries to all the data we want to compare, all results are equal.

$\sqrt{MSW\left(\frac{1}{N_1}+\frac{1}{N_2}\right)}$		
	1_ to 4_	58.30723226
	1_ to 5_	58.30723226
	2_ to 4_	58.30723226
	3_ to 5_	58.30723226

Figure 30: Multiplied with the MSW Mean Square Within

Next, this result of 0.666… will be multiplied with the MSW Mean Square Within (highlighted in beige colour above under “Mittlere Quadratsumme”) of 5099.6. The result is 3399.73 . The square root of that is 58.307… . In the picture above you can see how the author applied it in a spreadsheet to our data.

LSD		
	1_ to 4_	129.9166095
	1_ to 5_	129.9166095
	2_ to 4_	129.9166095
	3_ to 5_	129.9166095

Figure 31: Calculate the LSD value

Now we will calculate the LSD Value. That is the t-value of 2.228138852 times the above square root result of 58.307232… , resulting in 129.916609… . The picture above shows it again applied to our data. These are also now our critical LSD values.

1_ to 4_	320.3333333	>	Kritischer LS	129.91661
1_ to 5_	110.6666667	<	Kritischer LS	*129.91661*
2_ to 4_	191.6666667	>	Kritischer LS	129.91661
3_ to 5_	26.33333333	<	Kritischer LS	*129.91661*

Figure 32: Comparing the Difference values

Now we can compare the Difference values we calculated earlier, with the critical LSD values, by putting them side by side, as done here in the picture above. In our example, the Difference value is larger in case of the 1_ to 4_ and 2_ to 4_ pairs. If the absolute difference (left) is larger than the critical LSD value (right), then we found a Significant Difference.

With the new information of the test data, the author is now able to work out hypotheses he can test with this approach.