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Bootstrapping New Networks - Incentivization Strategies to Leverage Network Effects within Digital Platforms by using Blockchain Technology

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Abstract

Start-ups must deal with the ‘cold start’ problem where building an initial user base is a major challenge, especially for platforms that fight the ‘chicken and egg’ dilemma. Incentivization strategies such as subsidization and the creation of financial incentives are needed to overcome these challenges. Current research focuses on existing online communities and how to encourage participation without addressing the ‘cold start’ problem. Thus, new emerging technologies such as blockchain technology receive little attention although the technology promises to overcome the ‘chicken-and-egg’ dilemma by creating suitable incentive mechanisms through token incentives. Therefore, I ask how blockchain technology can help to bootstrap new networks by using token incentives when application utility is still missing. To answer this question, I conduct 6 semi-structured expert interviews. I find that token incentives create awareness for future utility of the project, incentivize participation and usage, and incentivize to join platforms early by offering financial rewards, future to expected financial profits, access to knowledge and communities, ownership, governance, and voting rights. The findings have theoretical and practical implications for stakeholder management and alignment within platforms, as well on how to create, evaluate or analyse sustainable blockchain-based platform designs.

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1. Introduction

Every company has to deal with the ‘cold start problem’ where acquiring the first customers becomes a major challenge (Hsu, 2022). As many markets in today’s economy are organized around platforms (Cennamo & Santalo, 2013) and firms are continuously moving away from vertically integrated business models towards enabling two parties to directly interact with each other (Hagiu & Wright, 2015), the ‘cold start problem’ becomes even more relevant.

Unlike in traditional businesses, gaining an initial installed user base and attracting and managing complementary products on platforms can be very challenging due to the ‘chicken-and-egg’ dilemma (Ardolino et al., 2020; Mcintyre & Subramaniam, 2009). This dilemma describes the situation where side ‘A’ would not participate without side ‘B’ and vice-versa (Ardolino et al., 2020; Caillaud & Jullien, 2003; Jullien, 2004; Muzellec et al., 2015) resulting in the need to implement appropriate strategies to incentivize participation on all sides of the platform (Ardolino et al., 2020). These strategies aim to trigger direct and indirect network effects to promote the emergence of dominant platforms with strong competitive advantages (Bonardi & Durand, 2003; Eisenmann et al., 2011). Network effects are seen as crucial as users place a higher value on platforms with a higher number of other users (Cennamo & Santalo, 2013). The higher value for network participants can be seen as dependent on the number of users in the network with whom they can interact (Eisenmann et al., 2006; Farrell & Saloner, 1985; Katz & Shapiro, 1985). To take advantage of these network effects, several companies have chosen to boost the growth of the network by providing large subsidies to one of the sides of the platform to make participation on the other side more attractive (Eisenmann et al., 2006). Nowadays, emerging technologies such as blockchain technology promise to overcome the ‘chicken-and-egg dilemma’ by creating a suitable financial incentive mechanism to join the platform as soon as possible (Drasch et al., 2020) while aligning network participants to work towards a common goal such as growing the network and increasing the value of the token (Dixon, 2017).

Within blockchain technology, token incentives serve as a financial incentive mechanism to be used for bootstrapping networks by providing users with financial

utility via token rewards that compensate for the lack of native utility at the outset. While some projects and companies have succeeded in bootstrapping new networks, the development and use of such token incentives requires a careful token design and schedule that is based on many intricacies (Dixon, 2022). It is about the token design that decides how the token is used to encourage certain behaviors among ecosystem actors (Freni et al., 2022), and thus how successful incentives are in triggering network effects.

From the creation of the first platform business models, driven by technological advances in internet, mobile and digital technologies (de Oliveira & Cortimiglia, 2017) to blockchain-based applications and token incentives, much research has been conducted. Platforms have been discussed in various fields, from technology management to product development and industrial organization research (Piezunka, 2011), with the latter being relevant for this study.Within industrial organization research, the characteristics and underlying economics of so-called 'multi-sided' platforms were explored starting in the early 2000s. While in early days the 'multi-sidedness' was seen as a market specific characteristic (Evans, 2003; Rochet & Tirole, 2003; Rochet & Tirole, 2006), later research has noted that firms tend to decide how far they want to be from a multi-sided business model (Hagiu & Wright, 2015). Multi-sided platforms (MSPs) are mainly described as facilitating transactions between firms or individuals who might otherwise not have been able to interact with each other (Eisenmann et al., 2006; Evans & Schmalensee, 2008; Gawer, 2009; Hagiu, 2006; Rochet & Tirole, 2006). Industrial organization economics further focused on the dynamics of platforms and tried to explain the existence of direct and indirect network effects in different settings (Parker & Van Alstyne, 2005; Shapiro & Varian, 1999).

Early research defined MSPs not only as a way of enabling interaction, but also as a feature where the existence of network effects is a given characteristic (Armstrong, 2006; Caillaud & Jullien, 2003; Evans, 2003; Hagiu, 2006; Rochet & Tirole, 2003, Rochet & Tirole, 2006). Although this view has also been challenged by Rysman (2009), as indirect network effects can also occur in single-sided markets and vertically integrated businesses, research defined multi-sided platforms as having two main characteristics, namely that they enable direct interactions between two or more distinct sides where each side is affiliated with the platform (Hagiu & Wright, 2015).

With the rise of digitalization, digital multi-sided platforms (DMSPs) have evolved and extend the definition to potentially reduce transaction costs (van Alstyne et al., 2016) by acting as 'matchmakers' between economic actors (Evans & Schmalensee, 2017). By acting as 'matchmakers', potential trade-offs occur and the need for strategic decisions regarding the management of multiple sides and the composition of the platform increases (Hagiu, 2014), giving the platform a kind of centralized power. In the centralized way of handling trade-offs, the existence of blockchain-based applications and platforms is grounded. While previous research focused on managing platforms as intermediaries, blockchain-based platforms and token networks are seen by Dixon (2017) as a breakthrough in open network design that reverse the centralization of the internet by building open networks that are accessible, vibrant, and fair.

Blockchain-based platforms and token networks are based on the publication of Satoshi Nakamoto (2008), who introduced the first peer-to-peer protocol and the use of blockchain technology for transactional data that is decentralized, transparent, timestamped and shared across a network of untrusted participants (Xu et al., 2017). Peer-to-peer protocols enable disintermediation as intermediaries are no longer needed to verify transactions, so trust in the underlying code and consensus rules replace the trustworthiness of intermediaries (Catalini & Gans, 2016).

Based on Nakamoto's (2008) findings, second-generation blockchains have been developed, offering programmable infrastructure and the possibility of smart contracts (Buterin, 2022; Nakamoto, 2008; Szabo, 1997), which can be used to issue, hold and distribute tokens (Di Angelo & Salzer, 2020).

Since then, research has focused heavily on defining, classifying and differentiating tokens in terms of their utility and function within platforms (Asanov, 2018; Oliveira et al., 2018; Di Angelo & Salzer, 2020; Nofer et al., 2017; Pietrewicz, 2018). Swan (2015) speaks of tokens as a medium of exchange, while the token can serve various purposes within a platform like accelerating network effects by incentivizing early adoption (Chen, 2018; de la Rouviere & Taylor, 2015; Ehrsam, 2016; Sehra, 2017; Vaughan, 2017; Wenger, 2016), building an ecosystem or a community (Di Angelo & Salzer, 2020) and exerting influence over the network and its holders by providing

incentives to enter early and stay long in a platform (Lena & Oxana, 2017). To create an acceleration of network effects within blockchain platforms (Drasch et al., 2020), also called token network effects (Dixon, 2022; Karnjanaprakorn, 2017), the literature names the importance of the token price (Di Angelo & Salzer, 2020; Dixon, 2022; Karnjanaprakorn, 2017; Monegro, 2016) as the underlying magic to create incentives for all stakeholders to hold the token and participate in the token's appreciation (Karnjanaprakorn, 2017).

In the literature, there is no clear understanding and clarity on what the token design should look like, which decides how the token is used to promote certain behaviors among ecosystem actors (Freni et al., 2022). Although several research papers define possible supply strategies and the distribution methods that currently exist (Cong et al., 2019; Di Angelo & Salzer, 2020; Freni et al., 2022; Harrigan et al., 2018; Liljeqvist, 2021; Monegro, 2016; Smith & Crown, 2019; Tasca & Tessone, 2019), there is a lack of systematic understanding on what specific token design works best in bootstrapping networks and what other variables might influence the effectiveness of token incentives in the short but also long run. Furthermore, the understanding on how financial incentives and token incentives can help in onboarding the first mass of critical users is missing as much research has focused on existing online communities and how to encourage user adoption and participation without considering the 'cold start' problem (Becker et al., 2010). This research aims to provide clarity on how tokens can be used in platforms that are struggling in the ‘cold start’ phase and how the role of the platform owner has changed. In addition, token-specific aspects are examined, such as how the token design influences the power and effect of token incentives, how the method of token distribution influences the effect of token incentives, and how the specific allocation of tokens can influence a sustainable development of the token price as well as token network effects. In general, the research aims to answer the following research question.

“How can blockchain technology help to bootstrap new networks by using token incentives when application utility is still missing”.

The author of this scientific paper uses a qualitative research method, as the aim of this study is not so much to verify what is already known, but rather to discover and

develop new and empirically-based theories (Flick, 2006). Expert interviews were conducted via digital collaboration tools with an average duration of about 35 minutes, which build the foundation for applying the qualitative content analysis according to Mayring (2014). Here, the author opted for an inductive approach to category formation, which is part of the summarizing content analysis. A total of five one-on-one interviews as well as one interview with the two experts at the same time were conducted, recorded, and transcribed.

The findings clearly show that token incentives can help to onboard the first critical mass of users by creating awareness for the future utility of the project, by incentivizing participation, or, by incentivizing them to join early even though the utility is missing. Token incentives have the power to serve as a catalyst for adoption and provide the user with various value propositions and promises that range from receiving financial rewards, future expected profits, access to specific networks, ownership, and voting rights. Token incentives can provide users with various benefits, but only if a sustainable economic base layer is implemented that give the incentives value in the future and where the allocation and distribution are regulated on a fair basis. Important aspects are a vesting schedule, a clear token utility, the prevention of fraud attempts, an appropriate distribution strategy, the interaction between the user and the product, and the prevention of price fluctuations of the token.

The findings contribute to the existing literature by linking the field of industrial organization research on multi-sided and digital platforms with insights on the use of blockchain technology and token incentives. The findings create an important foundation for the current state of research by developing a conceptual framework that lays out what variables need to be considered when creating blockchain-based platforms with sustainable communities and the existence of strong network effects. The results have implications for stakeholder management within platforms, stakeholder alignment, attracting early adopters, and how to create sustainable platform designs with lock-in effects. These insights are further relevant to businesses, policymakers, and entrepreneurs as the blockchain industry grows tremendously and decision-making in the building phase of platforms requires strategic assessments regarding how tokens are created, distributed, and allocated. Since the ability to issue, hold and distribute tokens, often considered as the 'killer application' of blockchains

(Di Angelo & Salzer, 2020), over 10,000 different tokens are available for trading on secondary markets, up from around 1,300 in 2017 (de Best, 2022). These figures make it necessary to develop appropriate methods for evaluating platform business models and token economies that offer sustainable investment opportunities in terms of money, time, and effort. In addition, it is important to raise awareness for new platform business models that could lead to more innovation due to their open network design, which enables accessibility and a dynamic and fair environment (Dixon, 2017), as centralized entities no longer exert heavy influence on participants within the network. The findings also contribute to the current industry by developing a conceptual framework that can be used by different business-oriented parties. The framework can serve as a basis for strategic and analytical assessments of different platforms and their likelihood of success. It helps policymakers and compliance-focused companies to establish guidelines and requirements that help create transparency and sustainability in the development of blockchain-based platforms and to ensure credibility, security, and trustworthiness for various stakeholders.

The study follows a simple structure in which the theory landscape is discussed first. The theory mainly focuses on the area of multi-sided platforms and the importance of network effects within platforms. As part of network effects, the value creation within platforms is discussed. One focus area is on limiting factors that prevent companies from creating application utility in the early stages and strategies to overcome them. It will be addressed how to solve the ‘chicken and egg dilemma’ through subsidization and the creation of financial or monetary incentives. In a final theory part, the current state of research in the field of blockchain technology is discussed especially in elaborating on token incentives as a means of aligning different stakeholders and creating so-called token network effects. Token distribution and supply strategies that can influence the token price and the effectiveness of token incentives are further discussed, as well as the sustainability of platform development.

In chapter three, the research method is discussed with three major areas. First, the general research design is explained, followed by the data collection method. In the last subchapter, the data analysis is described, applied, and illustrated. In the fourth chapter, the results are discussed and interpreted so that the theoretical and practical

implications as well as the limitations can be elaborated. The final part presents a short concluding statement that highlights the findings of this research.

2. Theoretical context

2.1. Digital multi-sided platforms and network effects

Platforms have received significant attention in various research domains ranging from product development, technology management over industrial organization research (Piezunka, 2011). While the research area of new product development mainly focuses on increasing the efficiency of product platforms, the area of technology management aims to provide insights into the concept of industrial platforms (Ardolino et al., 2020). The concept of industry platforms can be described as a product, service or technology that is developed to serve as a foundation on which other companies can build complementary products, services or technologies (Ardolino et al., 2020). For this research, the concept of multi-sided platforms (MSPs) is relevant, which is discussed in the industrial organization research domain (Ardolino et al., 2020).

Numerous authors have shown interest in defining and characterizing multi-sided platforms and the underlying economics. Nevertheless, to date, there is no clear direction as many definitions of MSPs are considered too specific or vague for use (Hagiu & Wright, 2015). In pioneering research within organizational economics, the term 'platform' was used to refer to markets with two or more sides, and possibly with network effects that span different sides. These 'multi-sided' markets offer goods or services to different groups of customers, all of whom rely on each other in some way and rely on the platform to mediate their transactions (Evans, 2003; Rochet & Tirole, 2003, Rochet & Tirole, 2006). Early research also found that there are indirect network effects that arise between two different sides of a market when customer groups need to be affiliated to the platform in order to interact with each other (Armstrong, 2006; Caillaud & Jullien, 2003; Evans, 2003; Hagiu, 2006; Rochet & Tirole, 2003; Rochet & Tirole, 2006).

These considerations have been challenged by Hagiu and Wright (2015) who criticized that all these contributions treat the 'multi-sidedness' as a given characteristic of the

relevant industries rather than being a choice by many real-world organizations that determine how close or how far they are from a multi-sided economic model. For example, Amazon initially started as a pure retailer, but over time moved closer to an MSP model by allowing third-party sellers to sell their products directly to consumers on its website (Hagiu & Wright, 2015). Furthermore, Rysman (2009) points to limitations in defining MSPs based on the existence of indirect network effects, as these can also occur within regular businesses and other intermediaries without being directly considered MSPs (Hagiu & Wright, 2015). Following on from this, Hagiu and Wright (2015) suggest that MSPs have two main characteristics, namely that they enable direct interactions between two or more different sides, with each side connected to the platform. This means that two or more distinct sides retain control over the key terms of the interaction while users on each side consciously make platform-specific investments that are necessary to be able to directly interact with each other (Hagiu & Wright, 2015).

It can be seen that companies are continuously moving away from vertically integrated business models where all client services are provided by their employees and instead allow two parties to interact directly with each other through MSPs (Hagiu & Wright, 2015). Digitalization in particular is changing the competitive landscape and challenging incumbents by leading to new and innovative business models such as digital multi-sided platforms (Ardolino et al., 2020; Schallmo et al., 2017).

Ardolino et al. (2020) address multi-sided platforms based on digital and internet technologies, so-called digital multi-sided platforms (DMSPs). In doing so, they extend Wright and Hagiu's (2015) definition by defining digital MSPs as a business model based on the existence of a virtual or physical place, called a 'platform', that enables and facilitates interactions between two or more different groups of users (Evans, 2003; Rochet & Tirole, 2003; Rysman, 2009). DMSPs are also characterized by interdependent relationships, as indirect and bilateral positive network effects are present (Hagiu & Wright, 2015). They further extend the definition to include the potential ability to track interaction events between the users involved (van Alstyne et al., 2016). Prominent examples of such digital multisided platform business models are Airbnb, Uber, eBay, Alibaba.com, PayPal, or Apple’s iOS (Hagiu, 2014). These platforms enabled either homeowners and renters, professional drivers and passengers,

buyers and sellers, merchants and consumers, or even application developers and users to transact with each other. Whether calling these business models as online marketplaces for services or products (Hagiu & Wright, 2015), mobile software applications (Campbell-Kelly et al., 2015), social networks (Wang et al., 2014), crowdsourcing (Kang et al., 2016), dating (Bryant & Sheldon, 2017), or job-seeking platforms (Rajeswari, 2017), all those examples can be considered as examples of such digital multi-sided platforms.

Several key areas of investigation can be identified in the existing literature on digital multi-sided platforms, focusing on the main features. Ardolino et al. (2020) summarize seven areas that are network effects/network externalities (Armstrong, 2006; Caillaud & Jullien, 2003; Evans, 2003; Goos et al., 2013; Rochet & Tirole, 2003), pricing (Bhargava, 2014; Goos et al., 2013; Rochet & Tirole, 2003; Wang et al., 2014), integration and control (Belleflamme & Peitz, 2010; Hagiu & Wright, 2014; Rysman, 2009; Scholten & Scholten, 2012), engagement (Caillaud & Jullien, 2003; Jullien, 2004; Muzellec et al., 2015), competition (Evans & Schmalensee, 2008; Gawer, 2009; Huotari et al., 2016), advertisement (Albuquerque et al., 2010; Jullien, 2004; Luchetta, 2012) as well as regulation and antitrust (Evans & Schmalensee, 2005; Henten & Windekilde, 2016; Luchetta, 2012). For this research context, the areas of network effects and engagement are of higher relevance.

Digital multi-sided platforms differ from traditional business models mainly in that they enable interactions and transactions between users from two or more participating sides (Bhargava, 2014; Gazé & Vaubourg, 2011). Typically, platforms always have a supply side that offers a specific product, service or content that is demanded by the user side, which benefits from the content provided by the supply side (Eisenmann, 2008; Thomes, 2015; Wang et al., 2014). Therefore, it can be seen as useful to implement structures to maximize the size of both sides (van Alstyne et al., 2016). Eisenmann et al. (2011) highlight this aspect as companies are increasingly characterized by competition between platform-mediated networks where network users, such as individuals or companies, desire compatibility and interaction. As a result, many digital products are built and organized on platforms that facilitate transactions between two parties that might not otherwise be able to transact (Eisenmann et al., 2006; Evans & Schmalensee, 2008; Gawer, 2009; Hagiu, 2006;

Rochet & Tirole, 2006). In addition to facilitating transactions, the value of platforms also comes from reducing transaction costs (van Alstyne, 2016) by acting as 'matchmakers' between economic actors and helping members of the different sides to interact productively (Evans & Schmalensee, 2017).

The fundamental premise of platforms is based on the fact that users place a higher value on platforms with a larger number of other users (Cennamo & Santalo, 2013). Consequently, the increased value placed on network participants can be seen as dependent on the number of other users on the network with whom they can interact (Eisenmann, 2008; Farrell & Saloner, 1985; Katz & Shapiro, 1985). However, it is not only the number of users or other participants on the platform that increases value, but also the resulting greater variety of complementary products and services (Evans, 2003; Rochet & Tirole, 2003).

These so-called direct and indirect network effects can favor the emergence of dominant platforms with strong competitive advantages (Bonardi & Durand, 2003; Eisenmann et al., 2011). This is also expressed by Gawer and Cusumano (2014), as the authors speak of network effects as positive feedback loops that can grow at exponentially increasing rates as platform adoption and the number of complements increase.

The positive feedback loops can be either ‘same-side’ or ‘cross-side’. ‘Same-side’ positive feedback loops correspond to direct network effects where users attract more users, which can even lead to a point where switching from one platform to another is difficult or costly (Gawer & Cusumano, 2014). ‘Cross-side’ positive feedback loops on the other hand are synonymous with indirect network effects, e.g. when advertisers go to a platform because of the large number of users. (Gawer & Cusumano, 2014).

2.2. Financial incentives and application utility in platforms

The utility that is derived from a user when consuming a good increases with the number of other agents consuming the good (Katz & Shapiro, 1985). Therefore, previous research has focused intensively on how to exploit the first installed base, which is considered a strategic asset in network industries (Brynjolfsson & Kemerer,

1997; Chacko & Mitchell, 1998; Shankar & Bayus, 2003) and describes the cumulative number of users at a given point in the life of a product (Mcintyre & Subramaniam, 2009). Especially in markets with direct network effects, the importance of the installed base is clear in gaining a competitive advantage, as network value comes from other consumers already using the product (Mcintyre & Subramaniam, 2009). Consequently, there is a dependency between network value and the size of the installed base. The number of users in the network leads to more interactions between members and thus to higher network value (Mcintyre & Subramaniam, 2009). While the research focuses on direct network effects by increasing the installed base, the management of complementary products can trigger indirect network effects that provide indirect network value to customers (Mcintyre & Subramaniam, 2009).

But unlike in traditional firms, gaining an initial installed base and acquiring and managing complementary products can be very challenging (Ardolino et al., 2020; Mcintyre & Subramaniam, 2009) due to the so-called chicken and egg dilemma. This dilemma describes the situation where side 'A' would not participate without side 'B' and vice-versa (Ardolino et al., 2020; Caillaud & Jullien, 2003; Jullien, 2004; Muzellec et al., 2015). Taking Uber as an example, no individual who intends to commute from A to B would enter the platform of Uber without having drivers available at a given time. On the other side, no driver would enter the platform without any traction on the user side. It is therefore important to implement appropriate strategies to incentivize all sides of the platform to participate (Ardolino et al., 2020). Within this strategy, it is important to decide which of the two sides contributes most to the demand on the other side (Muzellec et al., 2015).

In this research, the focus is on the strategic initiatives that aim to use the first installed base to overcome the described archetypal initial challenge of the 'circular conundrum' by convincing the demand side A to join first (Spulber, 2010) in order to approach supply side B with an offer that highlights the value of interacting and/or transacting with group A members (Veisdal, 2020). This strategy of managing prices on two sides of a platform has already been explored by Eisenmann et al. (2006). They note that several companies have chosen to boost the growth of the network by heavily subsidizing one of the sides in order to make participation on the other side more attractive (Eisenmann et al., 2006). Furthermore, according to Cennamo and Santalo

(2013), research that has investigated platform entry, agrees that platform operators should pursue aggressive monetary strategies to attract the buy side and motivate the supply side to join. Becker et al. (2010) also addressed this aspect, as in newly created communities it is important to attract and retain users in order to achieve a sufficient level of benefits for early participants. This led many companies to use monetary incentives to encourage contributions and motivate them to participate (Liu & Feng, 2021).

Such strategies are often referred to as financial incentives and stem from the motivation theory formulated by Ryan and Deci (2000) as part of their self-determination theory. They formulate two types of motivation, extrinsic and intrinsic motivation. Extrinsic motivation refers to doing something because it leads to a separable outcome while the activity is done for its instrumental value rather than receiving inherent satisfaction a as result of doing an activity which is described as intrinsic motivation (Ryan & Deci, 2000). Extrinsic incentives are widely discussed in the literature, as their effects depend on how they are designed and in what form they are given, as well as how they interact with intrinsic motivation (Gneezy et al., 2011). In general, financial incentives are found to influence individuals' behavior (Burtch et al., 2017; Hofstetter et al., 2010; Lu et al., 2018; Yan et al., 2018) although they have two types of effects, such as the standard direct price effect that makes the incentivized behaviour more attractive, while also having an indirect psychological effect that can crowd out the incentivized behavior (Gneezy et al., 2011). The direct price effect is relevant to this wider research agenda as it looks in detail at token incentives as a means of driving platform adoption and encouraging certain behaviors (Freni et al., 2022) by making participation more attractive.

2.3. Token incentives as financial incentivization strategy

The utility of a platform increases with the number of participants. This leads to a challenge for multi-sided platforms in their early stages, as the network lacks an incentive for potential users to join. Blockchain technology and utility tokens promise to overcome this problem by providing a suitable financial incentive mechanism to join the platform as soon as possible (Drasch et al., 2020).

Blockchain technology can be seen as a peer-to-peer protocol for transactional data that is decentralized, transparent, time-stamped and that is further shared across a network of untrusted participants (Xu et al., 2017). Using the technology allows for disintermediation as intermediaries are no longer required to verify transactions, so that trust in the underlying code as well as consensus rules replace trustworthiness in the intermediaries (Catalini & Gans, 2016). The most famous consensus rules and mechanisms, called ‘proof-of-work’ and ‘proof-of-stake’, are part of the underlying blockchain protocol and enable the confirmation of transactions of the respective blockchain (King & Nadal, 2012; Xu et al., 2017; Zheng et al., 2017).

In proof-of-work (PoW) protocols, anyone can become a ‘miner’ by participating in maintaining the security of the system and being compensated for this work. This security maintenance requires performing ‘proof-of-work’ calculations that attempt to solve difficult computational problems (Bentov et al., 2016).
The miners performing PoW computations can be viewed as instances voting on transaction blocks that users have recently sent to the network, so that each miner's decision-making power is proportional to its computational power. The purpose of the PoW element in the Bitcoin system is to achieve consensus on ledger history in order to synchronize transactions and protect users from double-spending attacks (Eyal, 2015; Garay et al., 2015; Nakamoto, 2008, Bentov et al., 2016).

Cryptocurrency protocols that aim to avoid wasting scarce physical resources are usually based on a ‘proof-of-stake’ (Bentov et al., 2016). The rationale behind ‘proof-of-stake’ is that entities holding a stake in the system are well placed to maintain the security of the system, as their stake loses value when the security of the system erodes (Bentov et al., 2016). The system is based on mechanisms that delegate decision-making power over the continuation of ledger history to entities holding coins within the system (Bentov et al., 2016). On the one hand, the reward system must incentivize participation in consensus by rewarding creators and validators of blocks (Nguyen et al., 2019), often described as staking. On the other hand, it must also punish malicious behaviors and prevent various attacks (Nguyen et al., 2019). One hurdle for decentralized, pure ‘proof-of-stake’ systems is the fair initial distribution of the money supply to the interested parties (Bentov et al., 2016).

In 2008, the first peer-to-peer protocol called Bitcoin was invented by Satoshi Nakamoto, which led to the development of other blockchain protocols such as the Ethereum blockchain. The so-called second-generation blockchains provide a programmable infrastructure on which smart contracts are possible (Buterin, 2022; Nakamoto, 2008; Szabo, 1997). Second-generation blockchains or cryptocurrencies enable the creation of decentralized peer-to-peer networks that issue, hold and distribute so-called tokens, often referred to as the 'killer application' of blockchains and cryptocurrencies (Di Angelo & Salzer, 2020). The creation of tokens takes place on an existing blockchain such as the Ethereum network and is carried out via smart contracts, known as token contracts. According to Swan (2015), issued tokens are a medium of exchange that can be used to acquire various goods, services, or privileges. However, within a blockchain network, participants use digital tokens for various purposes, e.g. as an internal unit of account, for blockchain verification, to facilitate transactions or for other creative use cases that prevent unintended use of the blockchain or grant access to token holders (Conley, 2017; Fridgen et al., 2018; Bachmann, 2019; Swan, 2015, Drasch et al., 2020).

In general, there is the need for differentiating between native tokens such as Bitcoin that are inherent to a blockchain protocol and on-chain tokens that are issued on top of a blockchain using the earlier described smart contracts as part of the second generation blockchains (Buterin, 2022; Chuen, 2017). However, there are different types of on-chain tokens, such as asset-backed tokens and utility tokens (Asanov, 2018; Pietrewicz, 2018). For this research, utility tokens are considered most relevant as they mainly grant access to digital services or products and provide a means of payment on the platform that can also be traded on secondary markets (Asanov, 2018; Pietrewicz, 2018). While native tokens like Bitcoin can be seen as a cross-platform means of payment, the issuance of utility tokens is limited to their use of the respective platform (Ho, 2021).

These blockchain-based platforms, also called ‘dApps’, are applications on a peer-to-peer network that are not controlled by a single entity, where the tokens themselves act as currency and can be used to trigger certain functions in the dApp's smart contracts due to their programmability. They can also serve as a means of fundraising,

pre-ordering or investing, and building an ecosystem or community (Di Angelo & Salzer, 2020).

Both, utility tokens and native tokens, can be either fungible or non-fungible. Fungible tokens such as Bitcoin are equivalent and indistinguishable, while non-fungible tokens (NFTs) cannot be exchanged equally, making them suitable for identifying something or someone in a unique way. By using NFTs, a creator can easily prove the existence and ownership of digital assets in the form of videos, images and art (Franceschet et al., 2020; Wang et al., 2021; Nakamoto, 2008).

Whether a token is necessary on a platform depends on the project and purpose. In a research by Oliveira et al. (2018), various dimensions of why a project should issue tokens are highlighted including that tokens can be seen as a tool for accelerating networks effects by incentivizing early adoption (Chen, 2018; de la Rouviere & Taylor, 2015; Ehrsam, 2016; Sehra, 2017; Vaughan, 2017; Wenger, 2016). Tokens also exert influence on the network and its holders by offering incentives not only to join as an early adopter, but also to use or stay on a platform for the long term (Lena & Oxana, 2017). A crucial factor here is the value of the token. As tokens are traded on secondary markets, the value is based on the mechanisms of supply and demand and the trust that the participating community places in them due to credibility and service (Di Angelo & Salzer, 2020). By owning the token and depending on supply and demand dynamics, token-based networks get participants to work together towards a common goal of growing the network and increasing the value of the token (Dixon, 2017).

According to Karnjanaprakorn (2017) the underlying magic of tokens is to create incentives for all participants to hold the token and participate in the increase of the token's value. Monegro (2016) elaborates on this aspect by saying that when a token increases in value, it will attract the attention of early speculators, developers, and entrepreneurs. These early adopters become stakeholders, and some of them will increase their efforts to develop products and services to further increase the value of the token. As products and services are optimized, the benefits increase, leading to an increase in investors and users, who in turn increase the value of the token.

This feedback loop then starts all over again. Token network effects can remove previous boundaries of digital platforms. The work of Hagiu (2014) elaborates on the potential conflicts of interest that might arise between multiple sides of a platform. He points out that it is important to create value for multiple sides in order to avoid trade-offs that have to be made by different sides on the platform. Therefore, Cusumano et al. (2019) call for strategic choices in identifying and deciding which sides can join the platform. Gawer (2020) summarizes these constraints and highlights the need to make strategic decisions about the configuration (i.e., number of sides) and composition (i.e., who can join) of the sides they want to connect to their platform.

With blockchain-based platforms and the presence of token network effects, the boundary of conflicts of interest may no longer exist. Token network effects enable the growth of the network while different stakeholders align to work towards increasing the value of the token as they have an incentive to hold the token (Karnjanaprakorn, 2017). Moreover, token networks are a breakthrough in designing open networks that reverse the centralization of the internet. Strong, dominant networks such as Google, Amazon, Apple, or Facebook, control massive proprietary developer platforms that charge high fees and exert great influence over the distribution of applications. These platforms decide and restrict access and hinder the ability of third-party developers to scale, while tokens enable the creation of open networks that are accessible, dynamic, fair and might lead to more innovation (Dixon, 2017).

In the context of the so-called token network effect, the ‘chicken and egg dilemma’ has yet to be solved, as the initial token price increase is speculative in nature (Monegro, 2016) and a sustainable token value has yet to be found (Dixon, 2022). Dixon (2022) suggests token incentives to support bootstrapping networks by providing financial utility to users via token rewards in order to compensate for the lack of native utility at the outset. He further elaborates on the difference between traditional platforms and blockchain-based platforms. Within traditional platforms, the overall utility equals the application utility which is dependent on the number of users. Within token networks, the overall utility comes from combining the financial utility and the application utility. This might lead to a situation, where the financial utility through token incentives can be given to the users to make up for the lack of native

utility. As soon as the native utility grows, the incentives get reduced and tapered off, to leave a new and scaled network behind (Dixon, 2022). It could be an opportunity to design incentives in such a way that talent and manpower or other key resources that the ecosystem needs to scale are attracted. Catalini and Gans (2016) cite examples such as building a marketplace for data storage and data services where hard drive manufacturers and data centers can join the digital platform and sell their services directly to consumers in exchange for tokens. Various ventures already bootstrapped their networks via these incentives. Helium for example, bootstrapped its supply side of the platforms by incentivizing individuals to install networking equipment in their homes by rewarding them with the HNT token. The equipment is needed to offer a decentralized wireless infrastructure that can be used by the demand side (Dixon, 2022; Helium, 2022).

To develop a sustainable token network, the token design and schedule is important which is based on many intricacies (Dixon, 2022). It is the process of token design that determines how the token will be used to encourage certain behaviors among ecosystem actors (Freni et al., 2022). In the case of utility tokens, whose underlying value is trust in the network and the benefits the token can provide to token holders, the supply strategy has a significant impact. The supply strategy provides a summary of the monetary policy that is shaping the token's dynamics (Freni et al., 2022) setting the timeline for token distribution. Tasca and Tessone (2019) identify three possible layouts, such that the token design is limited-deterministic, unlimited-deterministic, and pre-mined. Limited-deterministic and unlimited-deterministic supply strategies can be explained as tokens to be created over time with limited or unlimited supply, rather than being mined in advance. A limited-deterministic supply strategy is more widespread in the industry than a non-unlimited-deterministic supply strategy. An example is Bitcoin, which has a limited maximum supply of 21 million Bitcoins (Nakamoto, 2008) and which is distributed with a predefined deterministic mechanism such as rewarding the miners (Bruschi et al., 2022; Tasca & Tessone, 2019). In the case of Bitcoin, there was no initial distribution of tokens, while the entire finite supply is allocated via an ongoing distribution of block rewards (Smith & Crown, 2019). In contrast to deterministic supply strategies, the pre-mining supply strategy describes a path where all tokens have been created and are redistributed via various initial and ongoing distribution methods (Smith & Crown, 2019; Tasca & Tessone, 2019).

The initial distribution methods, called genesis distribution, are a strategic decision by the protocol and vary. The genesis distribution of tokens is of high relevance as it shows a way to bootstrapping the network at inception, including a base of users, network operators, developers or third-parties, and market participants (Monegro, 2016). At a later state, ongoing distribution methods need to be defined that are mostly rule-based or principled and subsidize elements of network operations (Smith & Crown, 2019).

The most used genesis token distribution mechanisms are token sales, internal allocations, passive airdrops, interactive airdrops or by only receiving tokens through subsequent network contributions (Di Angelo & Salzer, 2020; Smith & Crown, 2019). Token sales describe a way in which tokens are mostly distributed in Initial Coin Offerings (ICOs) in exchange for fiat currency or cryptocurrency and are usually aimed at funding an underlying project (Conley, 2017). ICOs and similar fundraising opportunities such as STOs (Security Token Offerings) or IEOs (Initial Exchange Offerings) mainly take place before development work is completed (Cong et al., 2019; Smith & Crown, 2019). Internal allocations are instead mainly used to compensate the team, partners, advisors (Smith & Crown, 2019), but also venture capital firms, which often own large amounts of the tokens, leaving only a small percentage available for regular investors in an ICO (Liljeqvist, 2021) or other distribution methods such as airdrops. Passive airdrops describe a distribution method where the tokens are not sold or allocated to internal stakeholders. The tokens get distributed automatically to participants of the network without active participation, often based on other crypto asset holdings. The use case of this type of allocation is considered to distribute tokens to interested parties to market a project within broad user groups (Smith & Crown, 2019). Harrigan et al. (2018) describe airdrops to spread tokens for free to owners of specific cryptocurrencies as part of its marketing strategy also referencing passive airdrops. But within the industry, interactive, targeted airdrops are growing in popularity as this method aims to distribute tokens only when user groups are actively participating or claiming their tokens. This means that tokens are allocated to incentivize ‘skin-in-the-game’ token holders that interact with the platform already in some way (Smith & Crown, 2019). There are plenty of examples in the industry such as Althea, a wireless mesh network, that airdropped a small number of tokens for learning about the project while giving a bigger amount to

individual contributors that organize an Althea subnet in their local community (Smith & Crown, 2019). This example is like Helium which solved the ‘chicken and egg’ dilemma by bootstrapping the supply side of its network (Dixon, 2017).

3. Methods

In the following chapter, the type of analysis is presented with a focus on the research design, the data collection method, and the applied data analysis. The current state of research builds the foundation for the applied analysis that will be outlined in the following. Added to that, figure 1 will help to create an understanding of the overall research process within this paper. It shows the connection between chapter two, three and four in how the author aims to tackle the topic and the formulated research question.

3.1. Research Design

This research uses a qualitative research method as the goal of this study is less in testing what is already known but rather in discovering and developing new and empirically grounded theories (Flick, 2006). The novelty of the topic and the research question increases the need of having a research design and method that is appropriate for finding the necessary insights. Qualitative researchers study participants' knowledge and practices and take the individual and subjective perspectives into consideration which is elementary to be able to trim down a complex and novel topic (Flick, 2006). The research setting for this paper is the platform economy that might be disrupted by blockchain-based start-ups and ventures that aim to build networks by leveraging new incentivization schemes using token incentives. It is about ventures that develop or analyze blockchain business models and are familiar with the creation and use of token incentives to bootstrap networks. As the author will use qualitative expert interviews and more specifically systematizing expert interviews (Bogner & Menz, 2009; Doeringer, 2020) it is about selecting individuals within the research setting.

Systematizing expert interviews qualify for this research paper as the goal is to focus on technical and processual knowledge (Doeringer, 2020). Especially, technical knowledge is highly correlated with knowledge in a specific field such as technical applications, information, and data (Doeringer, 2020). This suits well with the intended outcome and the data which shall be gathered throughout the data collection part. This type of interview aims to further collect the expert knowledge in a comprehensive and structured way such that a high level of data comparability is possible (Glaser & Laudel, 2006). Within systematized expert interviews the expert is seen as a kind of advisor with specialist knowledge whose expertise is collected by using a relatively differentiated guideline (Bogner & Menz, 2009).

For setting up the interviews, the first step has been to identify the relevant experts across various mediums, such as the personal network of the author, cold-mailing experts on channels such as LinkedIn, Twitter, and other social media channels, as well as by contacting incubators and accelerators, or by attending relevant meetups. The author used a mixed sampling method for defining which individuals to approach. Especially the snowball method has been applied where the personal network of the author as well as university-related networks were important pillars for success. Most experts were acquired via the snowball method while an opportunistic sampling method helped to find the remaining experts by attending industry events and meetups. Even though these sampling methods allow for a relatively flexible approach, the selected experts had to meet pre-defined selection criteria. The selection criteria are individuals who are either founders or entrepreneurs, employees of venture capital firms, blockchain advocates, advisors, incubators or accelerators, or consultants with a specific focus on blockchain-based business models. The selected interviewees are visible in figure 2 with a short description of their roles and business areas. After the sampling process, the interviews were conducted, and the data was collected. In the context of systematizing expert interviews, both open interviews and structured interviews can be conducted, as the thematic comparison of the data is the main focus (Bogner & Menz, 2009). In this research setting, the author has opted for a semi-structured interview setting that uses broader themes without adhering too closely to predefined questions. This is important so that respondents feel comfortable in this setting and can best share their experiences. Especially with a new research topic such as blockchain technology, there is a lack of suitable theoretical frameworks and

formulation structures, so a closed and fully structured interview could be overwhelming or lead to undesirable results. Upon the empirically won and transcribed material, the data analysis part will be applied that is described in chapter 3.3. The overall methodology and how the author approaches the research question is illustrated in figure 1.

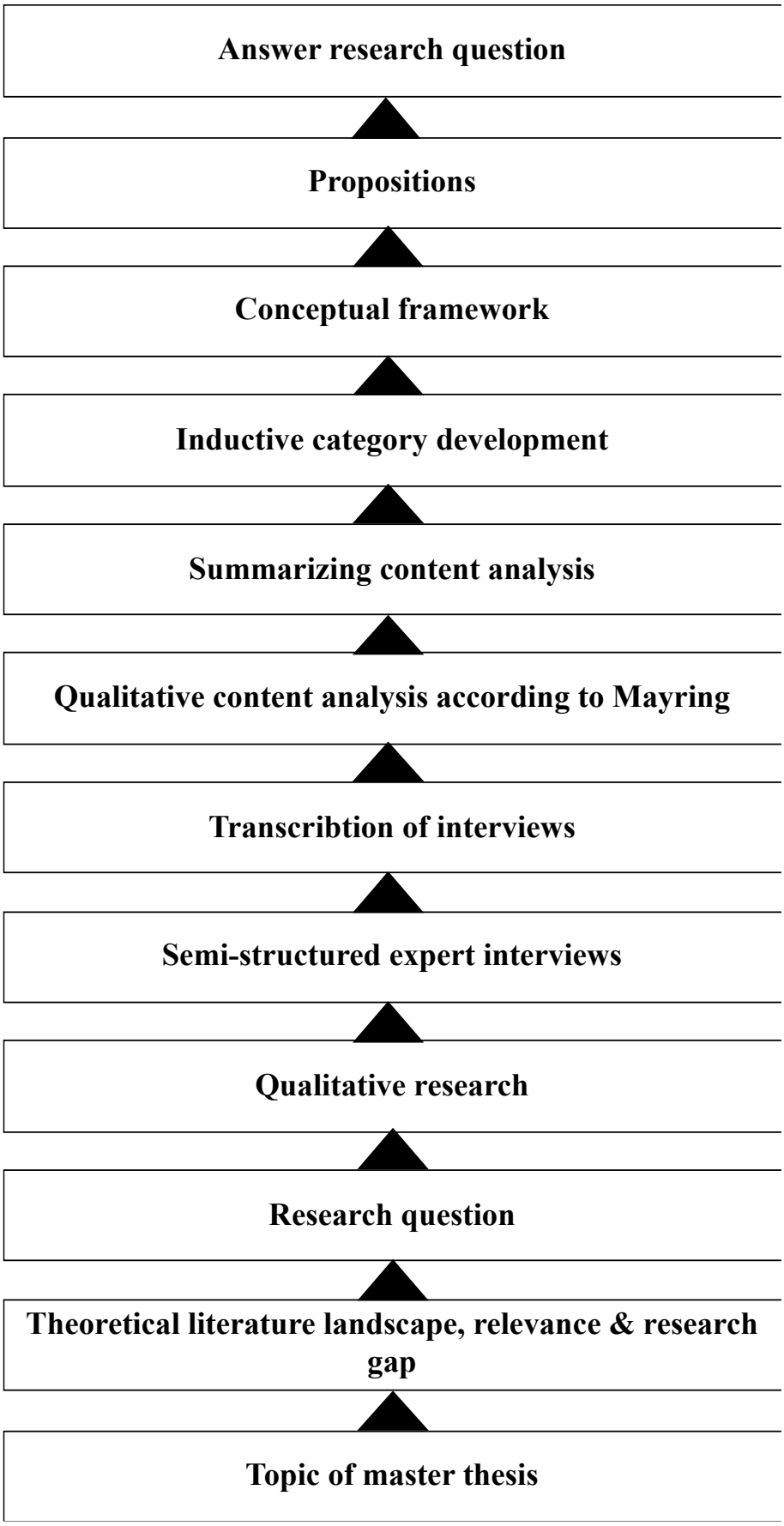

Figure 1: Methodology & process of research

3.2. Data Collection

The data collection part was done through semi-structured expert interviews. All interviews were conducted using digital collaboration tools such as Microsoft Teams, Zoom or Google Meetup and lasted on average about 35 minutes. The interviews were conducted in a one-on-one setting, except for one interview where the author interviewed the CEO and the CMO of the company at the same time. All interviews were recorded and transcribed to ensure the validity and reliability of the results and to be able to analyze the empirically obtained data. The transcription and qualitative content analysis were carried out using the software tool MAXQDA. The tool helped to cope with the large amount of data and to carry out the category formation in a structured way. A total of 6 interviews were conducted. The experts come from different fields and backgrounds, but all have experience with blockchain business models in common. An overview of the interviewees and their backgrounds can be found in the following.

Interview ID	Profession	Duration of interview	Setting
1	Founder of blockchain platform to allow customers to make data-driven investment decisions	20:55 min	Google Meet
2	Director Business Development and Operations at a leading proof-of-stake blockchain protocol	44:15 min	Google Meet
3	Transaction Advisory, Advocate of Decentralized Oracle Network, Founder of blockchain-based platform	35:52 min	Google Meet
4	PhD candidate blockchain and platform business models; contributor to various DAOs (decentralized autonomous organizations)	35:50 min	Google Meet
5	CEO of a NFT-based fundraising platform	34:00 min	Google Meet
6*	CMO of a NFT-based fundraising platform	34:00 min	Google Meet
7	Partner at a leading consultancy firm with a focus on financial markets, banking, tokenization and public sector	22:51 min	Microsoft Teams

*Interviewee 5 & 6 were interviewed in the same interview

Figure 2: Interview partner description

The basis of the interviews was a semi-structured interview guide that ensured the core structure and comparability of the data in order to apply the appropriate data analysis

method. The semi-structured interview guide serves as an exact level of standardization. The interview guideline considers important aspects of data quality and orientates on the existing literature without being too dependent on it as the inductive category development aims at finding new structures, patterns, and insights within the obtained data. Saunders et al. (2009) cite the need to collect reliable data, avoid bias and have a high degree of validity as well as generalizability.

Reliability is ensured by the degree of standardization, as the insights gained in this work can be repeated by further researchers due to the semi-structured nature of the guideline and the transparency of the research design (Marshall & Rossman, 2011). Furthermore, good preparation by the author is crucial for the credibility and trust of the respondents (Marshall & Rossman, 2011). The author's preparation mainly focuses on a high level of knowledge about the topic discussed and the questions asked. In addition, the respondent's level of information before the interview is important. Pre-developed topics ensure and promote validity and reliability and allow the interviewee to prepare supporting documents to back up their views and perspective (Marshall & Rossman, 2011). Using these themes, the guide is developed and discussed in an interview setting that is appropriate in terms of location, researcher appearance and language use (Marshall & Rossman, 2011). Generalizability as a final concern will be addressed by ensuring the relevance and broader significance of the findings to the existing theory landscape. The results will be visualized and analyzed in such a way that further research can be conducted, and the findings utilized. Through the development of a well-prepared and commonly understood semi-structured interview guideline (Marshall & Rossman, 2011), the links to existing theory will be made clear. In addition, an appropriate interview design, which includes a well-suited questioning technique, is crucial for the success and outcome of the interviews (Marshall & Rossman, 2011). Therefore, the semi-structured interview uses three types of questions that build on the themes without excluding the possibility of a flexible approach during the interview (Marshall & Rossman, 2011). The themes can be found in the appendix. The first type of question is the open question that will be used for revealing specific attitudes or obtaining facts while expecting extensive and developmental answers (Grummitt, 1980). Open questions are applied by the author to trigger and start a new set of questions that highlight a specific theme. It is important to give the interviewee the chance to get into a new topic without being overwhelmed. The second type of

question are the probing questions that are used to focus on a specific direction and are of main significance for the research topic (Marshall & Rossman, 2011). These can be questions about a specific token design which is important such as specific initial distribution methods that are most important in networks. Exploratory questions can also be formulated to seek explanations or reflections on a specific issue which need to be addressed. Supplementary questions as a sub-form of probing questions can also help to find an answer that was not possible to receive with an open question. (Marshall & Rossman, 2011). As a last type, the closed and specific question can be used to confirm a fact or opinion. Here, avoiding bias is very important as it would affect the validity of the results (Marshall & Rossman, 2011).

3.3. Data Analysis

As expert interviews that aim at revealing technical and processual knowledge mostly apply the procedures of systematic textual analysis, the qualitative content analysis according to Mayring (2014) is suitable. For the analysis of the empirical data, the author opted for an inductive approach. In general, inductive category development can be seen as a form of summarizing content analysis, that aims to reduce the amount of data collected during the expert interviews. Summarizing content analysis is one of the three core methods formulated by Mayring (2014) and serves to reduce the amount of empirical data to such an extent that the content is retained but the amount of data becomes more manageable (Mayring, 2014). The summarizing content analysis follows seven pre-defined steps that can be found in figure 9. To reduce the amount of data, the process of paraphrasing and generalization is used. Coding units that are considered relevant and content-rich text passages are paraphrased and generalized so that a category system can be developed by reducing the material (Mayring, 2014). While the reduction of the material with summarizing content analysis is impressive, the procedure is highly extensive as compiling those summarizing tables needs nearly as many pages as the basic material (Mayring, 2014). Also, the process takes the whole material into account and considers every statement from the experts even if it they are not relevant to the research question. Therefore, Mayring (2014) developed a more specific procedure, the inductive category development. The author applies this procedure based on three key advantages. First, the entire material is not used for

analysis, but only the relevant coding units and text passages that are relevant to the research question are selected. A selection rule helps to create a suitable framework. Secondly, inductive categorization eliminates the formation of paraphrases, which, as described, is very time-consuming to carry out. As a third advantage, the reduction level is determined in advance so that category formation can jump directly to this level. The aim is to directly summarize categories that are derived from the material itself and not from theoretical considerations (Mayring, 2014). The decision to use inductive category building is also based on the absence of relevant theoretical models and the lack of research in the novel field of blockchain technology, especially regarding the implications for platform business models. The inductive category development in this thesis followed the proposed framework and process of Mayring (2014) which can be found in figure 3. In the following, the applied process is described while respecting the core procedure as defined.

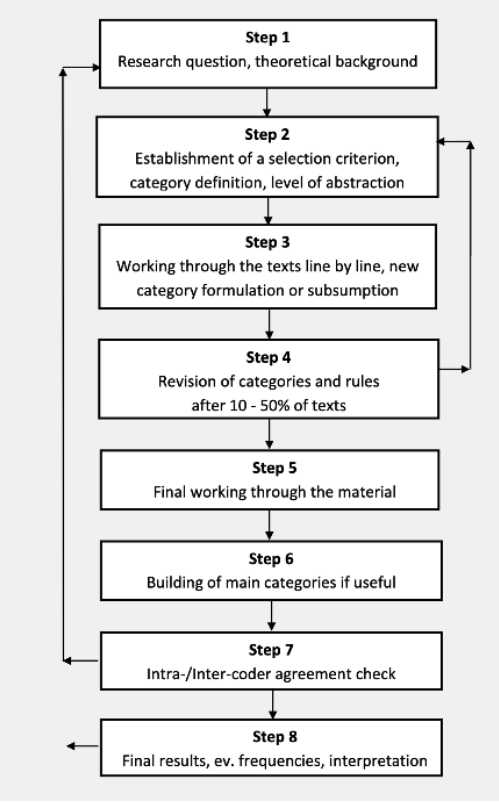

Figure 3: Steps of inductive category development according to Mayring (2014, p.80)

The first step is the formulation of the research question that not only addresses a topic but also fits into an inductive logic, that is explorative or descriptive in its nature (Mayring, 2014). The research question in this paper is focusing on the following.

"How can blockchain technology help to bootstrap new networks by using token incentives when application utility is still missing?"

The theoretical background and previous studies that build the foundation for this research question can be seen in chapter 2. Especially, chapter 2.3 highlights many important themes and constructs as well as definitions that will be elementary for further category development. The formulation of the research question is an important part to make a good contribution to the existing academic literature and the current state of practical knowledge in the field of business and technology.

In a second phase, the author determined in advance how concrete or abstract the inductive categories should be (Mayring, 2014). In this study, the degree of abstraction is moderate to low, as the topic requires a clear delineation of terms and concepts due to its technological and economic complexity. Token incentives and the analysis of their effectiveness can only provide clear results if aspects such as the distribution of tokens are treated at a rather low level of abstraction. For example, the impact of initial distribution methods is considered different compared to ongoing distribution methods but could serve as the same category if a higher level of abstraction is chosen. In figure 4 the level of abstraction is displayed as well as the category definition. The core focus lies upon the behaviours token incentives can trigger as well as what intricacies are decisive for the effectiveness of token incentives to bootstrap networks. Important theoretical considerations helped to define the category definition so that the empirical data will result in useful findings for future research that builds on existing theoretical constructs and assumptions.

Level of abstraction	The category definition
Concrete ways of behaviors that get incentivized by token incentives and specific intricacies that are mentioned to influence the effectiveness or the impact of token incentives	Categories are built when token incentives are discussed as a tool for accelerating networks effects by incentivizing early adoption (Chen, 2018; de la Rouviere & Taylor, 2015; Ehrsam, 2016; Sehra, 2017; Vaughan, 2017; Wenger, 2016) a suitable financial incentive mechanism to join the platform as soon as possible (Drasch et al., 2020); and as financial incentives to influence individuals' incentivized behaviors (Burtch et al., 2017; Hofstetter et al., 2010; Lu et al., 2018; Yan et al., 2018) whose effectivness relie on how they are designed (Gneezy et al. 2011) and on many intricacies (Dixon, 2022).

Figure 4: Level of abstraction and category definition

In a third step, the author coded the text to check if there is material that relates to the category definition, so that all other material is ignored in the process (Mayring, 2014). The first level of categories have been formulated below the level of abstraction and further selected material is subsumed or a new category is developed. After revision, when the level of generalization is sufficient, the category system fits the research question, and the correct level of abstraction is present, the final coding process is applied. The final categories are built on steps three, four and five, so that a list of categories with eventual main categories is created directly from the material. The coding scheme leading to a final set of inductively generated categories can be seen in figure 5.

As required and described in the process of inductive category development, the categories were revised several times and the final categories were combined into main categories. In total, 5 main categories and 12 subcategories were developed from the

material. To find a suitable category system, the author first developed 20 categories from the material. After analyzing 33% of the data by coding the text, the first category system was revised into new categories, respecting the category definition and the defined level of abstraction. A second structure was developed, resulting in a comprehensible structure that formed the basis for the framework, which can be seen in figure 7. The process and the changing structure of the category system can be seen in figure 5 with colors highlighting the categories that were further clustered into main categories.

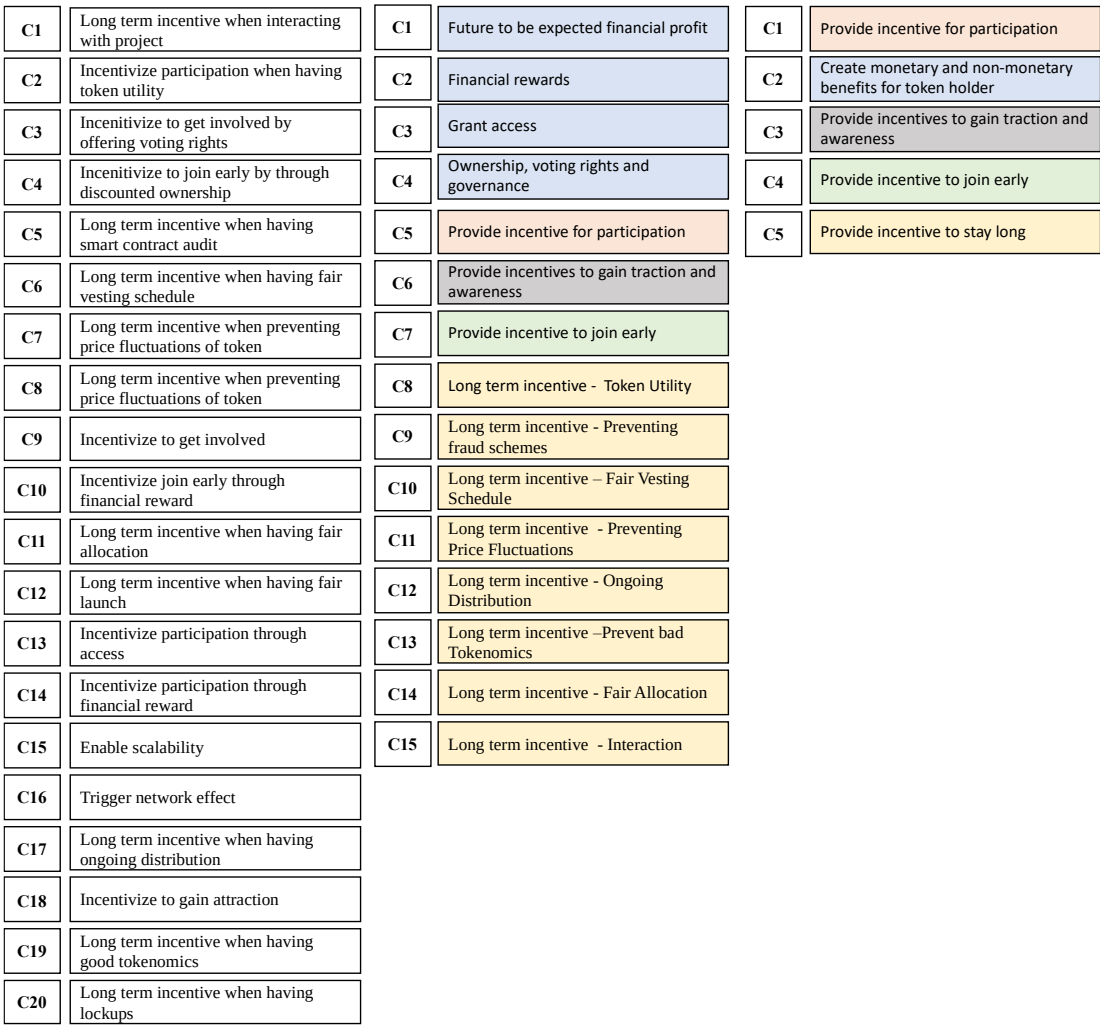

Figure 5: Category system development

Apart from the category development, the category occurrences within the materials are shown in figure 6. As proposed by Mayring (2014), the illustration shows the absolute number of category occurrences within the material, and the number of different texts or persons in which the categories have been coded. Added to that, the

absolute number is highlighted in percentages to give a hint on the relevance of the category especially for further research and interpretation purposes. In this research category C8 is mentioned by the most experts, making it relevant for further theoretical contributions but also for practical implications of the results. Category C8 focuses on the importance of a clear token utility that is necessary to turn a bootstrapped community into a sustainable project that will attract participants on a longer time frame rather than bootstrapping the first critical mass of users that exit the platform soon after the entry. Another category that will be of importance in this paper is C4 which is not only mentioned by the second most industry experts but also in terms of total occurrences within the interview transcripts. A detailed view on the single categories will be given in the following chapter.

Category	N of C	% of C	N of P	% of P
C1: Future to be expected financial profit	3	5%	3	50%
C2: Financial rewards	6	10%	3	50%
C3: Grant access	4	7%	2	33%
C4: Ownership, voting rights and governance	6	10%	4	75%
C5: Provide incentive for participation	3	5%	3	50%
C6: Provide incentives to gain traction and awareness	3	5%	2	33%
C7: Provide incentive to join early	3	5%	3	50%
C8: Long term incentive - Token utility	5	8%	5	83,33%
C9: Long term incentive - Preventing fraud schemes	3	5%	2	33%
C10: Long term incentive - Fair Vesting Schedule	5	8%	3	50%
C11: Long term incentive - Preventing Price Fluctuations	4	7%	3	50%
C12: Long term incentive - Ongoing Distribution	3	5%	2	33%
C13: Long term incentive - Prevent bad Tokenomics	3	5%	3	50%
C14: Long term incentive - Fair allocation	4	7%	2	33%
C15: Long term incentive - Interaction	5	8%	2	33%
	60		Max = 6	

Figure 6: Category frequencies

4. Findings

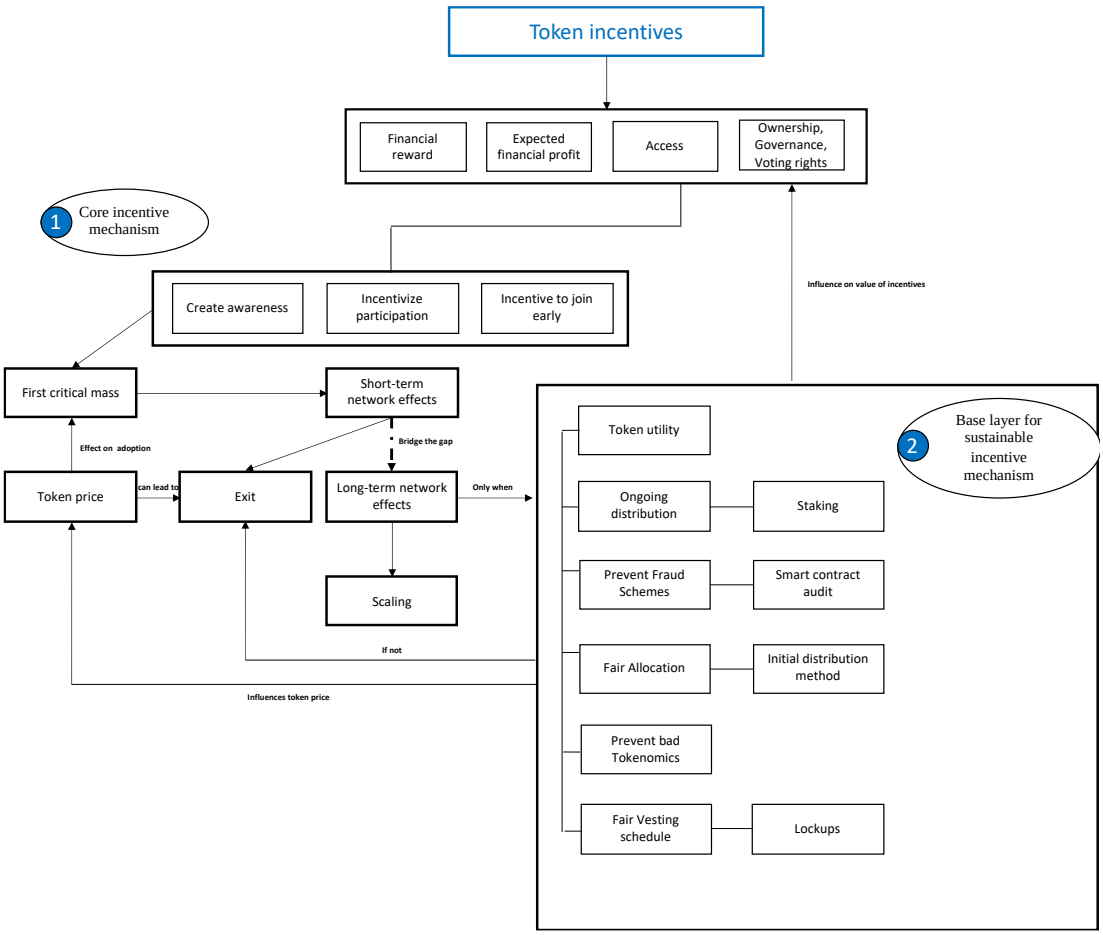

Figure 7: Developed conceptual framework

The results and findings of this qualitative research show that token incentives can bootstrap new networks by creating awareness for the future utility of the project, by incentivizing participation and usage, or by incentivizing to join early although the application and token utility is missing. Token incentives can onboard a first critical mass of users that have the power to create short-term network effects that can turn into long-term network effects only when respecting the underlying economics of the respective incentive mechanism. The findings indicate the significance to bridge the gap from creating a first critical mass through token incentives to creating a clear token utility that prevents the exit of the initial installed base. Token incentives have the power to serve as a catalyst and provide the participants or early adopters with various value propositions and promises including financial rewards, to be expected financial profits, access to knowledge or specific groups of people, ownership, governance, and

voting rights. Token incentives can empower the individual with different rights and privileges but only when a sustainable base layer can be found that keeps incentives valuable in the future. Many interviewees brought up ‘pump and dump’ schemes as well as ‘Ponzi’ schemes that refer to fraudulent behavior that prevents the development of a sustainable and scaled network in exchange for short-term profits. Especially ‘Ponzi’ schemes prevent networks to become sustainable by paying earlier investors the profit from recent investors which might result in a toxic environment so that many projects are bound to fail. The findings also emphasize the token price as a key element within token network effects and in bootstrapping networks. The token price and the token price development over time is discussed as important variable. According to the experts, it can serve as a base layer for keeping the satisfaction and participation of the stakeholders high, especially in the beginning when certain milestones and promises are made regarding future growth prospects of the venture and the expected utility.

In the following, a detailed description and interpretation of the results will be given. In order to present the results in a clear and comprehensible way, the author created a conceptual framework that helps in providing an overview of interdependencies between various categories and enables a deep dive into the broader topic of token incentives that can be utilized by future theoretical research and the industry. The framework is built upon the inductive categories that were developed out of the material as explained in chapter 3 and highlighted in figure 5. The research model is focusing on the development of a network from an enterprise perspective and on relationships between the different categories. The visualized model is shown in figure 7 and is divided into two key areas that are marked and highlighted. The first part of the framework elaborates on the core incentive mechanism of a blockchain-based network. This part explains the visible and understandable instrument to bootstrap a critical mass of users that aims to attract and bring early adopters into the network via various benefits and incentives offered to them. However, building a long-term oriented network is highly dependent on the second part of the framework that shows clearly what variables need to be considered to build a sustainable network. According to Dixon (2022), a sustainable and scaled network is the goal of bootstrapping via using token incentives which is also confirmed by interview partner 1.

"Once you acquire the first users and incentivize them to get on board to the platform, the network effects hopefully kicks in"

[Interview 1]

"And then they could easy scale the whole business model to the whole world."

[Interview 1]

The expert refers to Airbnb as an example of multi-sided platforms and emphasizes on the importance of network effects that are needed and required first before a company can scale. Furthermore, the initial user base is mentioned as a core foundation and reason why incentives can and should be used. According to interview partner 1, incentives can enable to bring the first users on board. However, incentivizing an initial user base is very different between a non-decentralized and a decentralized platform or network, as the community aspect plays a key role. Communities are seen as larger in decentralized applications and incentives play a crucial role while also raising questions regarding the sustainability of these platforms. The sustainability of the network is dependent on various aspects that need to be discussed and thought-out upfront. A long-term-oriented network should focus on aspects such as the utility of a token, fairness in the ecosystem and ongoing incentives. All these aspects play an important role in transforming short-term network effects into a network that attracts and scales a larger community. If these aspects are not considered, the likelihood of participants and early entrants leaving the platform increases which has severe consequences for the long-term success. According to the token network effect and the findings, the exit of participants affects the token price, the satisfaction, and the effectiveness of the token incentives. Therefore, part two of the framework discusses these aspects and shows under which circumstances and conditions a fair and sustainable network can exist.

"Which means, if you wanted to build such a platform, obviously you have to take care of that is critical, but then we could also question the current state of the business, the current state of the community, is it good, is it sustainable?"

[Interview 3]

"So, all kind of the transfer from web 2 to web3 is mostly just to get smaller and more users or investors into your product involved into your project, kind of community wise. So, community and web3 is definitely, probably, not more important, but it's bigger."

[Interview 2]

The following chapter is structured thematically congruent to the hierarchical developed category system. The five main categories build the sub-chapters 4.1, 4.2, 4.3, 4.4, and 4.5. The sub-categories will be highlighted under the respective main categories. Four of the five main categories focus on the visible core incentive mechanism, while one main category highlights the importance of the underlying base layer. In the following, the author further presents various propositions that are a concise statement of the core results that are likewise inspired by the inductively developed categories. Proposition 1 closely follows and expresses the findings of main categories C1, C3 and C4. The proposition indicates the actions that can be initiated or anticipated through issuing a token and distributing them to several stakeholders. Proposition 2 displays the perceived benefits of token holders that are monetary and non-monetary and are to be seen as the stimulus for proposition 2. These benefits are discussed in category C2. Compared to the first two propositions, the third proposition considers less visible aspects of the incentive mechanisms where the technological and economic decisions are discussed that have the power to influence propositions 1 and 2. The proposition is a broad statement that will unraveled within C5 and its subcategories. The last proposition emphasizes the token price development and its importance while also highlighting the prevention of price fluctuations. The proposition is discussed as a subcategory of C5.

Proposition 1. Blockchain technology can help to bootstrap new networks by providing token incentives that create awareness for the project, boost participation, and incentivize people to join early.

Proposition 2. Blockchain technology can help to bootstrap new networks by providing token incentives that hold various benefits such as receiving financial rewards, expecting future profits by holding vouchers, getting access to exclusive communities and knowledge, or becoming an owner of the network through governance and voting rights.

Proposition 3. Blockchain technology can help to bootstrap new networks when providing token incentive mechanisms that are built on a sustainable and fair economic base layer that align stakeholder holder interests in the long run and prevent fraud schemes.

Proposition 4. Blockchain technology can help to bootstrap new networks by using the token price as a catalyst and foundation while keeping token price fluctuations as low as possible.

4.1. Create monetary and non-monetary benefits for token holder

Token incentives differ from traditional monetary incentives as they offer benefits to token holders that go beyond the financial aspect. Although financial rewards play an important role and can be seen as the base layer of the incentive mechanism as they are highly correlated with the token price, non-monetary benefits can provide participants with voting rights that enable the user to be part of the overall governance system. Being able to shape the overall governance of a project or platform makes the participant or early entrant not only interested in being a token holder, but it can also empower the individual. In the following, the monetary and non-monetary benefits are highlighted that can incentivize to enter early, participate, and create awareness.

4.1.1. Financial rewards

As described by Di Angelo and Salzer (2020), the token value is subject to the supply and demand mechanism and the trust that individuals and institutions place in the token. Due to this fact, financial considerations play a major role on the user side as well as on the network side. Financial rewards are a popular means to trigger certain desired behaviors to provide the network with an initial user base. Financial rewards especially hold the power to incentivize participation and engagement in various applications and networks. The findings show that an economically meaningful reward and incentive mechanisms can boost the usage of networks and platforms. One incentive mechanism that is used very prominently in the blockchain space is to

receive a financial reward in form of tokens that are distributed on a regular or ongoing basis as already described by Smith and Crown (2019) in chapter 2.3.

The regular or ongoing distribution of tokens only occurs when individuals participate and use a certain product that requires involvement. As elaborated in the literature, participation in the consensus mechanisms describes one of these incentive constructs. Securing the network and validating transactions in 'proof-of-stake' protocols via the staking mechanisms enables delegators of tokens to receive token rewards that are pegged to the respective token price. Receiving these token rewards or token incentives in exchange for providing liquidity is a widespread mechanism and is not only lucrative for the participant of the product but is also critical for the existence and security of the network. As described in 2.3, through holding a stake and serving as a validator in the system, the double-spending problem can be prevented, and intermediaries are no longer required as validators.

As stated by one of the experts, many people still don't understand how profitable it can be to just secure a network. Moreover, the expert highlights the promising future of this innovative way of securing networks and compares it to the next big thing. The expert further mentions that the core utility back in 2020 when they launched their 'proof-of-stake' infrastructure project has been to provide staking with a two-month lock-up period. Without the provided liquidity by the participants, the utility would not have been there, and the validation process of transactions could not occur in a safe manner as there would be a lack of decentralization. Only rewarding the participant with a competitive yield enabled the project to create a secure 'proof-of-stake' infrastructure project upon which future decentralized applications can be built. This mechanism is deeply connected to what is expressed by Catalini and Gans (2016). Both state that peer-to-peer protocols such as 'proof-of-stake' blockchains allow for disintermediation as intermediaries a no longer required to verify transactions so that the trust lies within the consensus rules. This disintermediation only works when incentives are distributed to a point where the more a product is used the more you can profit from it. Interview partner 3 agrees with these theoretical considerations within the literature as the expert sees a promising future for the 'staking' mechanism that brings decentralized and economic safety while creating a democratically and fair decision making that is further incentivized by distributing financial rewards.

“So, when it comes to staking, I think that's that's the next big thing, which people are still not kind of fully aware of it. How much you can get out of just securing the network.”

[Interview 2]

“Obviously (...) competitive yield, has to be profitable for people to use, otherwise they won't do it. Is has to be economically meaningful”

[Interview 3]

“Staking is also a definition that is used for two different use cases. First one is providing liquidity for lending. So, it's just like the borrowing lending market. And then the other one is a more technological perspective, for staking, which means that you're locking up your tokens to provide decentralized safety, economic safety. And in my opinion, this is basically the future of our planet or whole society, which will work in different staking mechanisms. So, this is by far the most democratical and fair way of decision making and and providing security, safety, also technological device, and then also distributing rewards.”

[Interview 3]

“First of all, it is the incentive mechanism. So, the more you use something, the more you profit from it.”

[Interview 3]

"What do tokens change (...). Of course, while holding a token, to get either incentivized because of financials"

[Interview 1]

While stakeholders that are providing their liquidity demand rewards as a form of compensation, the network itself is also interested in providing the early supporters with some incentive for their participation. This view is supported by interview partner 1, as the expert values financial rewards as being decisive for the success of projects

in the blockchain industry. The expert names that holding a token is mainly incentivized because of financials and that there must be some form of financial incentivization as otherwise the participation, in the long run, won't happen and users won't stick to a network. Although the previous part mainly focused on the community-building aspect and the view of the participant in terms of incentivization, the network itself is also interested in providing incentives. This is grounded on the fact that attracting liquidity and locking it into the network for security reasons is a critical aspect for the network and the team behind it. The more tokens by various validators are locked for staking purposes, the more secure the network gets. As a result, incentivization can be seen as a two-sided interest that provides the user with token rewards for securing the network which is on the other side highly demanded and needed by the network itself for security reasons.

"The incentivization has to be there at some point. And you can't be like, I can only access some kind of chat. That doesn't work in the long run. So, ideally what incentivized the user there, is when you get some kind of reward and most of the time that has to be financial. I can see a couple of projects there (...) which are quite successful, just because of the financial reward for the customers at the end of the day."

[Interview 1]

„So, finding a way to incentivize people in the long run is something that is very difficult"

[Interview 1]

"And for network security, it's always good to have a lockup period. For us, it's more of a staking period. It's a two months staking period. So it helps kind of calculating at least security of the network."

[Interview 2]

4.1.2. Future to be expected financial profit

How the incentive mechanism is designed varies between different platforms and networks. Decisions need to be made about the initial distribution of tokens and what individual behavior to incentivize (Monegro, 2016). In particular, the initial distribution or genesis token distribution methods are promising as they can bootstrap the network with a base of users at the beginning (Monegro, 2016). Initial distribution methods in most cases do not require participation and focus more on attracting early adopters to join early. Especially in the early stages, when there is no utility yet and the product development is underway, people only join the network by buying or holding a token if there is an expected financial gain in the future and if there is a promised utility according to the project's roadmap. This expected financial profit incentive is especially true when there are early private or public sales of tokens through various methods such as ‘ICOs’, ‘IEO’s, ‘IDOs’ or so-called ‘SAFT’ agreements. This type of benefit differs from financial rewards that are distributed when participating actively or showing involvement and might lead to unequal allocations of tokens. The inequality and early allocation of tokens are favoring larger investors that secure themselves a big part of the circulating supply via an early investment. While this method provides huge opportunities for the network in the beginning to create a first critical mass, a fair distribution for all stakeholders should be a high priority. This aspect is discussed at a later stage in the main category of 4.5 where various variables are considered that need to be respected when trying to incentivize the participant in the long run.

According to interviewee 4, the described methods can be used to incentivize early adopters by creating a vision and distributing tokens in the sense of a voucher so that once the service goes live, it can be used for free. With these tokens distributed, holders are incentivized to benefit at a later stage from the use, value and perhaps even a price increase, as the tokens can be sold on secondary marketplaces to future users who want to participate in the service for a certain price. Similarly, interviewee 2 mentions that a few years ago, so-called SAFT holders were incentivized to buy tokens at a discount once the network goes live. For this risk, they were rewarded and incentivized with certain discounts on the token price. This view is also shared by interviewee 6 who believes in the ability of token sales events such as ICOs that serve as an incentive to

speculate on the future value of the price. In general, incentivizing the early entry of participants is highly connected with making an investment into a project and holding the token for the promised benefits or the general access to a product or service as described in the following chapter.

"And they said that if you now also believe in this vision, then you can acquire tokens from us. Tokens in the sense of vouchers. That means that once this service goes live, you can use it directly, for free."

[Interview 4]

"And they got a certain discount, a token discount, because they were super early even though the project was not built in. And they didn't get the token, they just kind of agreed on buying tokens as soon as the network is going live. And for that risk, they got a certain amount of a certain discount. I don't like kind of the airdrop thing, which is going around, obviously like community love airdrops, because they get free money, and everyone loves free money. But when it comes to kind of incentivization, I think it's the wrong way. You at least should do something to get money."

[Interview 2]

"So, that people want to step in ICO because they expect the value to increase that I understand."

[Interview 6]

4.1.3. Grant access

The results imply that tokens hold further incentives that go beyond the monetary and financial aspect. Nearly all experts focus on the importance of ownership and voting rights that come along with being a token holder. As the shift towards decentralized applications puts trust and ownership in the center, tokens present a means of giving token holders access to exclusive knowledge, or exchange in a community or network. This has already been outlined by Asanov (2018) and Pietrewicz (2018) in chapter 2.3 where utility tokens are mentioned as a means of granting access to digital services and products. The findings highlight not only access to products and services but also elaborate on the importance of getting access to communities that are growing in

importance as outlined at the beginning of this chapter. The findings are connected to the paradigm shift in the blockchain industry where the community is more important and bigger according to interview partner 2.

This view is also expressed by interview partner 1 who speaks of received exclusivity as a form of incentive. The expert defines exclusivity as access to knowledge or some kind of exchange a token holder might get. This view is supported by interview partner 4 who speaks of utility tokens as being used for three core reasons that are utility, governance, and access to a community. The expert compares the situation of holding a token with having a voucher that is necessary to enter the community and leaves you with empty hands if that is not the case. The token serves in this scenario as an access voucher rather than giving investors the right to buy a token at a financial discount such as described by interview partner 2 in chapter 4.1.2 as part of the ICO phase in 2017 and early 2018 or other early investment rounds. One of the experts in interview 5 even goes beyond the fact of gaining access to a community by comparing the power of non-fungible utility tokens to the function of logging in within traditional platforms or within the so-called ‘Web2’ world where logging-in means creating an account to enter a community or platform. These statements symbolize that tokens are increasingly seen as access to individual communities, allowing like-minded people to meet and have the exclusive exchange described by interview partner 1. The expert relates to the core functionality and characteristic of non-fungible tokens as unique way of certified ownership where the token cannot be seen as equivalent and indistinguishable and rather makes them suitable for identifying something or someone while proving the existence of certain property or access rights (Franceschet et al., 2020; Wang et al., 2021). In the business model of the experts from interview 5, owning a token serves as an incentive to access a conscious community of environmentally friendly people working together to protect the rainforest. Apart from being part of a community and receiving access to exclusive knowledge or some sort of exchange, holding a token can provide you additionally with extended utility features as pointed out by the experts from interview 5.

The results and text passages show that holding a token is not only incentivized by triggering extrinsic motives as formulated within the self-determination theory by Deci and Ryan (2000). Holding a token goes beyond the direct price effect and the hope of

individuals to gain instrumental value. Tokens also hold incentives that focus on intangible benefits that might boost inherent satisfaction through the access and exchange with like-minded or exclusive communities.

"(…) get either incentivized because of financials or you get some kind of exclusivity of some kind of access to knowledge, or some kind of exchange you get there."

[Interview 1]

"(...) So, on the one hand the utility, on the other hand this governance story (...) and in general utility in the sense of access to a community. If you don't have a voucher, if you don't have vouchers, if you don't have tokens, then you don't have access to this community."

[Interview 4]

"Okay, so NFT technology can be used as a certificate for ownership, which is also in the web3, this idea of certifying the ownership, it's like logging in, what you call it back in Web2 world."

[Interview 5]

„But you can log in and then you can kind of, if you like, you can access a lot of other features (…)"

[Interview 5]

4.1.4. Ownership, voting rights and governance

Since the technological innovation of smart contracts as part of second-generation blockchains and the subsequent ability to issue and distribute tokens (Buterin, 2022; Nakamoto, 2008; Szabo, 1997), various incentive schemes have developed over time. As highlighted in the opening paragraph of this chapter, tokens offer more than just financial benefits either by incentivizing users to expect future profits or by distributing token rewards that are paid in exchange for participation and usage. As discussed in 4.1.3 there are also non-financial ways to incentivize users over the long run by granting users exclusive exchange or access. Another non-financial related incentive discussed in this chapter are voting rights and the ability to be part of the

governance system of a project. Above all, blockchain technology changes the aspect of ownership, in that investors become owners, who are endowed with further rights. This paradigm shift primarily changes the fact that users and participants have a stake in the success of the platform and therefore act in its interest. According to the findings, the new role grants the individual voting rights to shape the governance and future direction of the venture. The token can serve as a means for having a say on the platform while serving as an access voucher in the first place. Interview partner 2 describes this paradigm shift as a movement towards free markets. The new role gives the user a say and empowers them to co-decide where a project or the infrastructure should develop. Being part as an owner with voting rights who is able to shape the future outlook of a platform or network culminates in the DAO (decentralized autonomous organization) movement. DAOs are a new form of governance that still lack proper definitions. Singh and Kim (2019) define it as scalable, self-organizing coordination on the blockchain controlled by smart contracts while El Faqir et al. (2020) describe it as a group of people with common goals that join under a blockchain infrastructure which enforces a set of shared rules. This movement focuses on creating governance structures that empower the individual and establish decision-making structures that makes pursuing a common and shared goal possible.

Besides ownership in terms of voting rights and governance participation, tokens can further provide the token holder with actual ownership via a tokenized real-life object. The use case of tokenization of a real-life object and turning it into a utility token is brought up by the experts in interview 5. They elaborate on the fact that non-fungible tokens can certify you as an owner. In their project, ownership means owning a piece of land in the rainforest that is protected from clearing which saves the environment and rainforest by holding their utility token. All this is thanks to free markets, which are becoming more widely accepted and a movement according to Dixon (2022). He points out that breakthroughs in the design of open networks are reversing the centralization of the internet by building open networks that are accessible, dynamic, and fair. Ownership and voting rights are very different from monetary incentives and start at the moment of token issuance on the network side and at the moment of token ownership on the buyer side. Being the owner of the token cannot only leave you with responsibility and the opportunity to shape the project itself but also provide the individual with a potential social incentive attached to it. This social incentive enabled

through certified ownership lets people use an NFT as a status symbol that they want to show. This social incentive through ownership can help to onboard users just by providing them with the opportunity to feel good and access a conscious community or platform.

"So, token always, (...) should already be usable, let's say as a voucher for something or in a DAO for example, as as you can vote for certain topics already from the beginning of token issuance, and or to secure network like we were back then."

[Interview 2]

"First of all, it is the incentive mechanism. So the more you use something, the more you profit from it. And they also bring in the ownership idea, which integrates user into the ownership"

[Interview 3]

"But nowadays, they can buy a token, and depends on the token, but they can even vote directly. And you don't need to kind of take part in a general assembly or whatever. I mean, it's literally, it's open to not all investment, not all token holders, but mostly kind of a free world where you can vote for what you want to have for your infrastructure project go into, or whether you want to have to go into. So, I think that kind of that free markets, if you want to call it that sounds like a kind of movement."

[Interview 2]

„And also you can use that NFT as a way to certify you as an owner, you as someone who protects rainforest."

[Interview 5]

"And then recent research of our hypothesis is that people perceive an NFTs as status symbol, and sustainability is also a status symbol and a green product awareness really get people to like, feel good to really want to show it. It's like, I don't know, new, like luxury 4.0, to be honest. So, that is something really important for people to really add on. Add on. Exactly, but in real life and in digital life. I think both are really important just in different forms for them to show." [Interview 5]

"Then something was added to this use, to this voucher. Hey, you can even have a say on the platform. So, when we exist, when we are bigger and the community is a bit bigger, then you not only get this voucher, so you have a benefit, but you also have the right of co-determination."

[Interview 4]

4.2. Provide incentives for participation

The use of incentives to initiate desired actions was outlined in the previous chapter, with four different value propositions filtered out from the empirically generated material. In the data collected, we found that token incentives as a stimulus for certain behavior can increase the willingness of individuals to participate in an ecosystem or network. The author found that within blockchain ecosystems, the concept of incentive mechanism plays a leading role, which is considered by interview partner 3 as being even too strong in some projects.

"Yeah, very large role maybe even too large, (...)"

[Interview 3]

The results show that token incentives play a crucial role in the early days of a platform or network especially when aiming to engage and motivate individuals to use a product or service. Moreover, the findings indicate the importance of incentives in preventing participants that got initially motivated to not lose interest in the project. Although the sustainability of incentive mechanisms is mentioned several times by the experts, they are seen as a key foundation and essential component within the blockchain industry and projects that issue tokens for various purposes. Through issuing and distributing tokens at different stages of the network's lifecycle, it is possible to influence and boost participation in the short-term but also in the long run when respecting the aspects discussed in 4.5.

Several interviewees emphasized the need to incentivize a specific group and early supporters, as this can be seen as a prerequisite for long-term participant satisfaction. This is clearly expressed by interviewee 2, who mentions the need to get something out of participation which has been discussed within chapters 4.1.1 and 4.1.2 and

relates to financial benefits that should come along with the participation. In this research, the author treats the terms participation and usage as equivalent, as both terms go beyond joining a network and require people to take clear action. This is important because interviewee 3 clearly makes the use of the network or the applications built on top of it dependent on the token incentives offered. Furthermore, interviewee 3 emphasizes that the release of tokens over time is very useful to engage early adopters. Involvement is another term that is to be seen as synonymous with participation and usage. It is an important aspect that will be discussed later when it comes to supporting networks on their way to becoming long-term-oriented ecosystems.

"So, you want to gain X amount of your participation. But so that's probably the thing. So, if you incentivize a certain group, you definitely should do or you should definitely incentivize a certain group, like your early supporters."

[Interview 2]

"(...) it is very critical because token incentives, yeah (...), is the main reason why people started using it nowadays. I mean, it really is all or nothing, if there is a token incentive people use it, if there is not they hardly do."

[Interview 3]

"So, getting them involved and releasing tokens over time makes a lot of sense, yes."

[Interview 1]

For the experts, incentives are necessary to turn people into participants and users of a product. This is also aligned with the view of Freni et al. (2022) who highlight the importance of a token design process to encourage certain behaviors among stakeholders, such as participation in a specific product that could lead to utility for the token and the network. Even though the design process is highlighted at a later stage, it shows the congruence between the theoretical considerations and the practical experiences of the experts regarding the power of blockchain technology. Where the findings display a different picture is regarding the assumptions made by

Dixon (2022). Dixon (2022) highlights the need of financial utility that can initially compensate for the lack of native utility but needs to be decreased as soon as the native utility grows. According to the findings, this view could be optimistic as many people lose interest even though the project is great just because there is no continuous distribution of token incentives. One expert is speaking of massive price drops that are not seldom in secondary markets where you can trade tokens. The expert explains his view by seeing the continuous distribution as an important stimulus for individuals to remain loyal to projects.

"Give people in certain time periods (..) their tokens, of course helps to keep the price rather stable than just having these -80 or 90% and people lose interest in the project even if it is great. Unfortunately that happens"

[Interview 1]

4.3. Provide incentives to join early

The entry into blockchain-based networks is, as shown by previous results, to be considered differently from traditional networks. The possession of a token enables access to a product or service and therefore serves as an incentive to bind users to the platform or network, even if the benefit of the application will only come to bear in the future. In addition to motivating users to participate in various decentralized applications or networks, the early entry of users is extremely important and is mainly incentivized through the early purchase of tokens or by receiving tokens through various genesis distribution methods such as interactive and passive airdrops. While tokens are traded on secondary markets and the token price is seen as the underlying magic of the token network effect (Karnjanaprakorn, 2017), an early entry holds various financial benefits for early adopters, particularly in terms of price and expected profits as highlighted in 4.1.2. Interviewee 2 elaborates on this advantage for early investors that are part of a pre-seed or early funding round that involve higher risk and must be incentivized with discounts on the token price. This was a common method in the early days of the blockchain industry as part of the ICO phase in 2017. According to the expert, 'SAFT' holders agreed upon buying tokens at a certain discount as soon

as the network is going live. This means that investors were buying the right to buy a token first and basically funded the project even though it wasn't built back then.

Besides being an early adopter and buyer of a token, various experts mention airdrops as a popular method of distributing tokens. While interviewee 2 is not entirely convinced by the concept of airdrops due to the lack of interaction between the recipient of the tokens and the project itself, the sentiment of the other experts is more positive. Interviewee 2 claims that the community loves airdrops as they can be seen as free money, but he would like to see some interaction or involvement before receiving incentives. He is mainly referencing to passive airdrops instead of interactive airdrops that require interaction with the platform in some way (Smith & Crown, 2019). Still, the view of interviewee 2 is aligned with the view of Harrigan et al., (2018) who describe airdrops as a marketing strategy to spread tokens for free to owners of specific cryptocurrencies. The marketing aspect is also brought up by interviewee 3 that highlights incentives as a means of bringing in the people. Interviewee 1, on the other hand, values airdrops as the most effective way to incentivize the early entry into a project. The use of tokens as an incentive to join the community early is also mentioned in the literature by Drasch et al. (2020). The authors note that blockchain technology and utility tokens provide a suitable financial incentive mechanism to join the platform as soon as possible (Drasch et al., 2020).

"I think Airdrops are most effective to incentivize people joining the project early on."

[Interview 1]

"Incentives, it's just bringing in people, if there is the utility, they don't stay, obviously you have to have the utility, first of all. But then if you know, you have the utility already know you want to bring into people, you need to talk on incentives for the other part, like it's the marketing part of the platform, so I would really differentiate it."

[Interview 3]

"Back in the days that were called, like those SAFT holders. So, the future token holders, they got in very, very early like a seed round or like a pre seed funding. And they got a certain discount, a token discount, because they were super early even though the project was not built in. And they didn't get the token, they just kind of agreed on buying tokens as soon as the network is going live. And for that risk, they got a certain amount of a certain discount. I don't like kind of the airdrop thing, which is going around, obviously like community love airdrops, because they get free money, and everyone loves free money. But when it comes to kind of incentivization, I think it's the wrong way. You at least should do something to get money."

[Interview 2]

4.4. Provide incentives to gain traction and awareness

Tokens offer both lucrative benefits for the community and lucrative acquisition opportunities for the platform or network. Apart from people joining the network and participating or using a product, token incentives can help gain traction and create awareness for the project and the upcoming utility they can expect. Only when the people know about a project and its promised utility, they will participate in exchange for financial rewards, voting rights, or other benefits. Airdrops, for example, are seen by the interviewees as a Web3 marketing technique that can be useful according to the experts while the sentiment is in favor of other token distribution methods that should stimulate the community growth and awareness for a project. One expert emphasizes token incentives paid as part of so-called 'learn-to-earn' campaigns that help to expand knowledge and gain traction as a project. The expert considers these interactive campaigns to be a more successful form of token incentive as they require interaction from the user side rather than just distributing tokens to a random selection of people as part of passive airdrops. The expert is not convinced by this distribution method as the financial reward only goes into an unidentified wallet with no interaction with the project. He goes on to say that he is not a big supporter of airdrops as means of token distribution but still believes in the impact of different options and other types of methods that have the power to influence early supporters and make them attracted to the network. One last remark is made by the interview partner as he elaborates on airdrops that are done in a different setting such as in the NFT (non-fungible-token)

sector or play-to-earn domain. Here, gamers are sometimes rewarded with utility tokens by playing the game with their NFT as the centerpiece. In this context, the expert suggests that he sees a difference regarding the relevance of airdrops but does not elaborate on it further.

"But yeah, so I think they're the learn and earn campaigns, the launchpads. They help to gain traction and to kind of grow knowledge about your project, compared to an airdrop, which is just dropped into unidentified wallet."

[Interview 2]

"Personally, I think marketing wise, they are meaningful, and they are good."

[Interview 3]

"I think there are different options of kind of distributing or incentivizing early supporters and adopters and in general intending to gain attraction to your network. But Airdrops in my opinion is just the wrong the wrong way. I mean, it always depends what groups, if you own an NFT, and then there's the utility token coming and you get kind of an amount of a certain amount of utility tokens within that, for let's say that play to earn game or whatever. That's something else."

[Interview 2]

4.5. Provide incentives to stay long

The incentive mechanisms developed by networks aim to promote early adoption by raising awareness and encouraging different actors to participate and join early. The need to retain participants over the long-term requires a robust incentive mechanism that is able to bridge the gap and turns short-term oriented participants, that entered the network only for quick financial and monetary benefits, into long-term retained owners of the network. The results of the research show that several aspects are considered important to achieve robust networks with network effects that develop from being short-term into long-term. The results show that the future expected utility of the token, a required interaction between participant and the project, the prevention of fraud attempts through smart contract audits, vesting schedules that have a positive

impact on the price development of the token, the prevention of price fluctuations, ongoing distribution methods, and a fair token allocation in the early days are key areas to investigate further. Only if these aspects are taken care of, the short-term growth and adoption of new networks can thrive and develop into a sustainable ecosystem that can be further scaled. While the chapters 4.1, 4.2, 4.3, and 4.4 focused on the first part of the framework highlighted in figure 7, this chapter elaborates on subcategories of C5 that influence the token price and the willingness of early adopters to continue being part of the network. The focus of these findings is not on figuring out how to maximize the payoff for individual actors who have joined and participated early in the network as part of their hope to receive as many financial rewards as possible. Rather, it is about showing a way to build new networks where participants do not feel cheated or trapped in a pyramid scheme and want to continue participating in a fair and open network.

"And of course, in the end of the day, you feel kind of rugged. So, it has to be fair."
[Interview 2]

4.5.1. Long term incentive - token utility

The conversion of an initial mass of users into loyal participants who commit to a network or platform depends on the token having a clear utility. As formulated in the theoretical background, the token network effect builds on the increasing utility of the token resulting from the optimization of products and services and the use of the token (Karnjanaprakorn, 2017; Monegro, 2016). However, according to interviewee 2, many projects do not offer a token utility and use initial distribution methods for fundraising that makes the token more of a security than a utility. This is not only counterproductive but also critical from a legal point of view. Likewise, projects that only aim to quickly create communities that try to drive up the value of the token are more likely to be considered 'pump and dump' projects. Even if the token has no utility of its own initially, it needs to have a purpose as to why it exists and how it can be used within the network. In the 'proof-of-stake' infrastructure project scenario discussed earlier, the token plays a critical role in enabling a secure and reliable way to develop decentralized applications on the blockchain and by allowing participants to delegate their tokens for the purpose of staking. This fundamental utility of the token

provides a basis on which to define a derived value. If there is a lack of utility, according to the token network effect and according to interviewee 1, the price development of the token is missing. The expert cites poor utility as a reason why early incentivized people drop out of a platform in the long run because they bleed out over time. However, if there is utility and usage on the platform, the price development will follow over time and the value of the platform will increase. This is also mentioned by interviewee 4. The expert makes it clear that incentives are often based on incentivizing at the beginning, but also on highlighting the community with a promising roadmap that will bring future utility to the project. It is obvious that the gap between promises and a clear token utility needs to be bridged, as the value of incentives, such as voting rights or expected financial benefits, depend on the intrinsic value of the project. This fact becomes obvious and clear when thinking of an early adopter that is attracted by the incentive to be a partial owner with voting rights and an expected financial gain in the future, but the project does not deliver the promised utility. As a result, these incentives lose value and credibility and eventually lead to selling pressure on the token and consequently to the exit of early adopters and the first crowd. This process is also highlighted in the conceptual framework where the importance of bridging the gap from short to long-term network effects highly depends on the base layer and subsequently the token utility. It is important for the long-term outlook of the project to 'prevent pump and dump' schemes. All the previously mentioned aspects focus on fungible tokens. Also, within the area of non-fungible tokens the need for a clear utility is growing in importance according to the founders of interview 5. Whether the utility is considered as financial or non-financial doesn't matter. According to the expert in the case of NFT art, it is not solely about the art itself but about the utility the project brings in. In summary, utility and token utility are core pillars of the base layer and must be considered.

"Because of the usage, the demand increased. And the demand increase led to a price increase, and then the price increase led to more usage because people are, hey, that's profitable, right?"

[Interview 3]

"But if you look at like the older ICOs in 2016, 2017 or 2018 ICOs, some of them, they weren't really utilities. They were literally securities. Their token had no use on their platform. Because the platform wasn't existing, the infrastructure wasn't built in there, so they literally raised funds to create the platform itself, or the org infrastructure project. So, when it comes to utility of a token or of a project (...), you always need to kind of differentiate between if a token can already be used or not. And I think that's the one of the most one of most important parts when you start a project."

[Interview 2]

"What I love to see is that the projects can incentivize the people to stay in it for the long run and instead of just creating a buzz and then they bleed out over time which is simply due to bad tokenomics and bad utility of the token."

[Interview 1]

"*Otherwise you run into the problem that the community is hyper, but the community doesn't believe in the ambitious roadmap and secretly just wants to 'pump and dump'. At some point, everything is dumped, you lose the majority of your community because no one believes in it, because the utility is simply not there."*

[Interview 4]

"So, nowadays, people are not really buying the token just because it's generate generative art, but it's really about utility, if you look at the board ape, I hate the pronunciation of that one (laughs), and then why people are buying it. I mean to be honest, the art itself is just bad but what kind of value they bring it obviously, that can be a past to exclusive package deal and like you can, they are planning to do, I don't know, if you have the token you can go to a luxury hotel or something just by holding a token for instance, globally."

[Interview 5]

4.5.2. Long term incentive - interaction

Creating a connection to the community as a project or network is essential. This connection intensifies when the project uses token distribution methods that require a certain level of involvement and interaction that goes beyond just receiving free money

as part of airdrops in most cases. Even though the interview partners speak of passive airdrops without focusing on interactive airdrops, the sentiment towards this token distribution method is clear. While airdrops have proven useful in attracting attention and bringing participants into the project early, the experts are skeptical about their impact on creating the necessary interaction between the project and the participants. They mainly criticize the lack of two-way interaction and are more in support of other methods such as ‘learn-to-earn’ campaigns, token launchpads, or ICOs. These methods help to spread the word about a project and its utility, rather than just sending a token to an unidentified wallet that the recipient may not even know about. Airdrops are also considered by one of the experts as a mere marketing strategy without a sustainable strategy. The expert claims that airdrops are a 'Ponzi' scheme that benefits the project but are rather unsuccessful for the recipients in the long run. The aspect of showing some level of interaction is mainly important for the network itself rather than for the community as the lack of interaction doesn’t mean that airdrops are not lucrative for the recipient. It just doesn’t create the involvement that is needed to build the bridge from a short-term oriented token holder to a long-term oriented network participant. Especially chapter 4.3 elaborated on that aspect when highlighting the power of tokens to incentivize the early entry of users.

“But if you kind of interact with people, if they learn about you, they know about you. So, they know what kind of, what the token does. And I think the connection then to the community, the connection of the community to the project itself is much bigger than just if you just drop a token into someone's wallet at that party that might not even see that token got dropped into their model.”

[Interview 2]

“If you just airdrop funds, tokens, I mean, you don't get anything back, right? That's probably big difference as much as probably that's one of the largest or biggest differences.”

[Interview 2]

“But yeah, so I think they're the learn and earn campaigns, the launchpads. They help to gain traction and to kind of grow knowledge about your project, compared to an airdrop, which is just dropped into unidentified wallet.”

[Interview 2]

"So why should I get kind of get into the project? But if you a token buyer on a platform like ideal or whatever, ICO, token launchpad, you somehow get involved into the project"

[Interview 2]

"Obviously, I had some airdrops which were nice. And others were not. But a sustainable or profitable, I don't know. Did it make me use the platform more? I don't think so. Airdropping tokens, creating tokens is by a fact a ponzy. (...) And the Ponzi scheme is basically a scam and the betrayal on users and this is usually used as a marketing strategy in web3, rather successfully for the projects and rather unsuccessfully for the users on a long term strategy, but it depends (laughs)."

[Interview 3]

4.5.3. Long term incentive – prevent fraud schemes

Creating sustainable networks with long-term oriented communities rises the need for the prevention of fraud schemes and security exploits that often appear in the blockchain space according to the experts. Especially as the distribution of tokens is often based on rules that are set in the smart contracts, it is important to implement processes that enable transparency and prevent scams within these contracts. Interview partner 1 brings up the topic of smart contract audits that enable a transparent overview of who owns which tokens, and under which circumstances these tokens can be sold. The expert underlines the large number of people that get 'rugged'. This fraud scheme describes the case where the founding team owns a large number of tokens and where it is possible to sell them immediately after launching the network without having smart contract audits in place that prevent such cases. Interview partner 4 does not highlight the need for smart contract audits but highlights the need for preventing exploits in the projects where either tokens are stolen or where other fraud schemes destroy the trust of the community in the project. The expert further explains that preventing such fraud schemes is critical, especially in projects where the utility and purpose of the project are to be created or achieved in the future and where the initial growth phase is highly dependent on the token price. This is in line with the theoretical considerations of Di Angelo and Salzer (2020) who highlight that the value of a token

is based on its creditability that comes from the trust the community has in the project and the token.

"So, I would love to see that a smart contract audit is mandatory that more people check before investing, right, which is why we build our platform by the way (laughs), to actually make people more aware and let them easily check if that is a legit project or if it is not. If you are in for the long run and most of the people aren't in crypto, there in it for the short-term money gains and the next 100x in two days. That is something we see as casino style right now in the whole space in some ways where I think there is so much more to it."

[Interview 1]

"Because first of all you want to avoid that people somehow exploit tokenomics, that some kind of exploit takes place, because otherwise you're directly down."

[Interview 4]

"(...) technically implemented in the contract which is no one can actually, or it is very difficult to elaborate if that's true or to verify that"

[Interview 1]

4.5.4. Long term incentive – fair vesting schedule

As it is profitable for people to join early into projects and networks, the allocation of tokens mainly favors risk-tolerating parties such as the team, developers, and further value-creating participants. As a result, these stakeholders of the network are often overallocated which leads to risks in terms of long-term orientation and the sustainability of projects. The findings clearly show that it is inevitable to ensure that early adopters hold their tokens long-term. Vesting schedules are therefore discussed by various experts as a solution. Interview partner 1 is focusing on vesting schedules that should ensure that the team can sell their tokens last. This should ideally be implemented technically in the smart contract. Interview partner 4 agrees upon the need of having certain lock-up or holding periods. The findings of the interview call attention to preventing 'pump and dump' schemes after the launch of the network and

subsequently the release of the token by implementing holding periods that must be adhered to be eligible to use the token. These periods can give developers and the whole network time to fulfill their roadmap which could lead to a price appreciation and a more sustainable fundament of the project. If that is not the case, investors might dump their tokens right away which creates selling pressure. This selling pressure can further lead decreasing interest in the project which is difficult to restore. The holding period not only incentivizes the value creators to increase their productivity but should also provide the token holders with further incentives such as extended access to new features or other incentives. Interview partner 1 mainly uses arguments in favor of the broader community while interview partner 2 brings up arguments that ensure a sustainable network on both sides, the operational side, and the community side. But also, from a solely operational side of the network itself, a vesting or lock-up period of tokens make sense, as it can ensure the security of the network in the scenario of 'proof-of-stake' protocols. Interview partner 2 addresses this point as he elaborates on vesting and lockup periods of tokens to not only create sustainable token allocations for the community but also to increase the security of the network. This is grounded on the fact that for 'proof-of-stake' infrastructure protocols, the staking process is the foundation for a secure network that allows programmable decentralized application development. When there is a staking lock-up period or according to the expert a staking period, it enables to calculate at least the security of the network for the respected period. This means vesting can also be applied on top of token incentives or rewards that are received via participating in different use cases.

Vesting and lock-up periods are also mentioned to align various stakeholders when unfair allocations or overallocated participants hold more voting rights compared to new entrants with low token allocations. Interview partner 4 brings up the idea of holding periods of a certain number of tokens for a set time that might grant voting rights to community members even though the allocation is lower compared to other stakeholders. This would enable to turn an unfair allocation into a long-term oriented network where even smaller token holders are incentivized to stay long although they missed the early entry in the platform.

"Your token can only be used if you hold it for six months after release. Then at least this team has a six-month period to fulfil something on the roadmap and if they then see (...) all right, they are fulfilling the promises they made on their roadmap, hey I think the token is cool, then it could be worth even more. That's an option that says, yes, you just can't sell the token yet. Or the longer you hold it, at least six months, you get extended access to new features, whatever."

[Interview 4]

"When you look at the allocation and the vesting, you should always see that the team can sell the tokens last which of course is always pretty on the powerpoint slide but in the end of the day if it is not technically implemented in the contract which is no one can actually, or it is very difficult to elaborate if that's true or to verify that. But it is about having a fair launch and a fair allocation is the most important aspect for a successful project in the long run."

[Interview 1]

"The vesting schedule in terms of time for instance if the investors dump straight away, (...) people lose interest in the project."

[Interview 1]

"And for network security, it's always good to have a lockup period. For us, it's more of a staking period. It's a two months staking period. So it helps kind of calculating at least security of the network. And to check it out, to figure out okay, probably like in two months time, or that's next month, maybe foundation needs to help out and delegate certain amount of certain tokens to a node to keep the node active and the network more secure."

[Interview 2]

"But then maybe through this, through this vesting or a holding period, that they say, hey, as soon as you've held something in our community for so and so long, let's say minimum maybe or somehow only one token or minimum requirements of token, as soon as you hold something for so long, then you also get a vote token that is worth just as much as with other people. Because hey, you've been there for half a year now, your vote counts just as much now."

[Interview 4]

4.5.5. Long-term incentive – prevent price fluctuations

The token price development plays an important role according to theoretical considerations that were presented in chapter 2.3. It is seen as a central element within the token network effect according to Karnjanaprakorn (2017). The token price itself can be seen as irrelevant and rather the development of the token price over time is to be seen as critical, especially for the community of smaller investors. Larger investors and token holders such as venture capital firms tend to believe more in the people who develop and create the networks instead of focusing too much on price development. This is expressed by interview partner 2 who elaborates on the difficulties of keeping up the price and the differences between various stakeholders of the ecosystem. For the effectiveness of the token incentives, interview partner 3 believes in the importance of the token price development as a token value depreciation can lead to frustration within the community. And this frustration should be prevented as the price can keep a community alive. These findings originated out of interview 4, where the expert discusses the price importance in projects such as DAOs (decentralized autonomous organizations) where the utility and long-term purpose is yet to be created and achieved. The data shows that the price can help to keep the community alive while building and creating the utility that was promised within the roadmap. Still, the expert names the deep connection of the price with the purpose, roadmap, and credibility. Only when the team achieves the milestones, the price can be prevented from falling apart. According to the expert, the price can be seen as a foundation and a driver. This is also mentioned by interview partner 1 who sees the price as being decisive that people won't lose interest just because the price drops even though it is a great project. It becomes apparent that there is a fine line between using the price as a foundation and making the community dependent on it. Interview partner 4 addresses an important point, which once again points to the importance of a long-term orientation, which cannot be based solely on the token price.

"It's hard to keep up the price. And people are just not aware of that. That's I think, again, then the community issue. They are then finding a project. Like all the smaller investors, they're seeing, oh, that project, everyone is fighting around, talking bad about the project, just because the price goes down."

[Interview 2]

"(...) people want to invest in order to increase their investment. So, if the token dumps, they're frustrated. Obviously, price development plays a large role. And it is important not to destroy any value or investments of people."

[Interview 4]

"The price is about important to keep this community alive a little bit. So if you manage to keep the prize from falling apart completely, because as soon as the prize falls apart completely, you're almost back to 0 and have to argue with the purpose alone. But if you manage to keep the price a little bit, that is to say to delivern or make credible directly instant one or two milestones that really work, then the price doesn't fall so much and then you can argue with the price, with the potential and with the purpose at the same time. So yes, the price is super important, but it is very much connected to purpose and roadmap and credibility."

[Interview 4]

"(...) whole marketcap falls and so price itself falls and most of the time the people lose interest in the project."

[Interview 1]

"(...) helps to keep the price rather stable than just having these -80 or 90% and people lose interest in the project even if it is great."

[Interview 1]

4.5.6. Long term incentive – ongoing distribution

Initial distribution methods can help create an initial community that joins a network early, participates in the network, or gets aware of a particular project. However, to turn these community members into long-term token holders and thus long-term participants within a network, ongoing distribution methods are needed, such as receiving staking rewards. Interviewee 2 points to a situation during the development phase of the infrastructure project where some of the early investors intended to leave the network and withdraw their stake in the protocol. However, since they had to stake their tokens from the beginning, they were sort of locked into the network.

Furthermore, due to the received staking rewards that earned them more and more tokens, they decided to stick to the network. Consequently, the opportunity cost of leaving the network has been the new tokens they gained through providing liquidity. Interviewee 1 values ongoing distribution methods like staking as a good way to keep the price stable by releasing tokens over time. He further names staking as the most successful type of project he is seeing right now.

"And they got their token, not just like in one, one package, they always got a certain amount of tokens released, so they could take them out. But since they needed to stake them from the beginning, they were like, well, why should we take out a certain amount, because we get staking rewards, which is even better for us, because then they had kind of just gained and gained and gained new tokens."

[Interview 2]

"Yeah, I think that's a great way to go. Give people in certain time periods (..) their tokens (...) and releasing tokens over time makes a lot of sense, yes."

[Interview 1]

"(...) provide people with the opportunity to stake. I think it is about get rewards by staking. That's most of the time the most successful type of project I am seeing right now."

[Interview 1]

4.5.7. Long term incentive - prevent bad tokenomics

Not only Dixon (2022), but also Gneezy et al. (2011) believe that incentives do matter but depend on how they are designed, and in which form they are given. Especially in blockchain-based projects the underlying economic layer is complex and requires serious consideration. Creating a suitable token design is considered by the experts as extremely important as a network requires considering many aspects such as the inflation or economics of the token and the specific problem the project aims to solve. In general, the interview partners agree on the complexity of such a design. Interview partner 2 admits that the hire of an economics PhD has been necessary to develop a

token design that is appropriate. Furthermore, one expert partner mainly highlights the importance to prevent a bad tokenomics or token design. It is about preventing flaws within the created model. This is an interesting way of thinking because the goal is not to create a perfect economic foundation, but rather to avoid strong uncertainties, fluctuations, and conflicts of interest. Above all, it is about creating an incentive structure that avoids short-termism or security flaws and focuses on long-term stability that binds participants to the network. Especially interview partner 3 mentions the importance of a waterproof model that is highly relevant for the long run. Added to that, interview partner 1 names that apart from a missing token utility, the tokenomics of many projects lead to a failure even though they initially managed to incentivize various participants.

"I mean, we had a PhD in economics, making that kind of figuring that out. We hired like an external guy for that. Because literally, that's, that's something which not everyone can do. So it's super important. It's super hard. It's probably the hardest part, kind of figuring out the token economics on the model, and the vesting schedule and the inflation."

[Interview 2]

"So having a waterproof token model and tokenomics is important in the long run. You will not feel the benefits from it, maybe, but you will feel the threats of having a bad one. So, it's something you should prevent or, you should avoid having a bad one."

[Interview 3]

"What I love to see is that the projects can incentivize the people to stay in it for the long run and instead of just creating a buzz and then they bleed out over time which is simply due to bad tokenomics and bad utility of the token, (...)"

[Interview 1]

4.5.8. Long term incentive – fair allocation

According to interview partner 1, the allocation of tokens is one of the core aspects of a successful project in the long run. Only when a fair allocation of tokens is in place, it won't rise critics and the community won't feel 'rugged'. When the expert speaks of 'rugged' he refers to situations where investments in different projects and networks turn out to be a fraud scheme that leaves the community with empty hands behind, where the funds, they initially invested, are worthless or the investment value is diluted. A fair allocation means analyzing how much the different stakeholders hold. It is important to consider how many of the tokens are sold via 'closed' doors where the smaller investors are not a part and how many of the tokens are available for public sale. One expert also raises concerns from a community perspective that a too large number of tokens in the hands of the owners might lead to a negative impact. Another concern might be that not only owners but also venture capital firms become too powerful as token holders due to their possibility to buy in at a discount. Thus, they could just sell everything in one part and leave the smaller investors behind with a negative impact on the price. A special focus on a fair allocation should be within 'proof-of-stake' protocols, as the consensus algorithm depends on how many tokens or coins an entity holds which gives the entity a potential decision-making authority that negatively impacts decentralization (Nguyen et al., 2019; Bentov et al., 2016).

"Also, if you get the feeling that the team owns a too large amount of tokens themselves, that always rises critics. And of course, in the end of the day, you feel kind of rugged. So, it has to be fair."

[Interview 1]

"But it is about having a fair launch and a fair allocation is the most important aspect for a successful project in the long run."

[Interview 1]

"So yeah, the token allocation first of all. So, how much does the team hold, how much do investors hold, how much is public and private sale. This plays an important role in here."

[Interview 1]

"Because the early adopters, they normally hold a lot of tokens. (…) I mean, they could literally just sell everything at one part."

[Interview 2]

5. Discussion & Conclusion

In the following a summary will be given that highlights what the findings mean for theory and the blockchain industry. Moreover, the limitations are highlighted that help future research to address important questions that were not tackled within this research but are of high relevance. Also, a final concluding statement will be given that summarizes this qualitative research and its findings.

5.1. Theoretical implications

The results of this academic research project have a clear impact on the existing theoretical literature and the future research landscape. While industrial organization research has looked in-depth at platform business models, the literature on blockchain technology is still in its infancy. Most research attempts to examine the technology at a fundamental level, looking at its taxonomy, architecture, potential areas of influence, and trends. Few studies focus on linking the technological side with the industrial organization side. The results of this study bridge the gap by showing how blockchain technology and its underlying economic foundation can create sustainable incentive mechanisms that influence how platform business models can thrive and attract stakeholders in the early days, but also in the long term. This study demonstrates the importance of tokens as a means of creating benefits for stakeholders that go beyond the financial aspect.

The findings not only bridge the research fields but also show the changing landscape of stakeholder management and the importance of community-building efforts in determining the success or failure of projects. The research goes beyond the technological capabilities of blockchain technology to highlight a potential shift in decision-making, stakeholder engagement, and stakeholder alignment within

platforms that challenge the views of previous research. The findings show how the decentralization of platforms enables a different way of dealing with trade-offs in terms of managing multiple sides. They show the power of stakeholder alignment using token incentives and that managing different parties on multi-sided platforms no longer require strategic decisions about which side can enter the platform, as discussed by Cusumano et al. (2019). Instead, the results show that a paradigm shift is underway in the blockchain space that emphasizes the importance of token appreciation and a fair economic foundation that aims to attract the first mass of users regardless of their role in the network.

The findings also have implications on the existing theory landscape as they provide an overview of important terms and variables and their dependencies upon which certain hypotheses can be tested. For example, it can be focused on how various economic designs correlate with the growth of a network. Quantitative research could select real-world projects that chose specific initial distribution methods, allocations for their networks, and certain vesting schedules for their early adopters and how they affect the network growth in the long run. Of course, the product itself needs to be comparable such as a 'proof-of-stake' infrastructure project that chose a different economic base layer.

5.2. Practical implications

The findings displayed and mapped out within the conceptual framework have several practical implications for different parties. First, the findings can help ventures that aim to evaluate blockchain-based platforms at a fundamental level. The results can help consultancies, venture capital firms, and other strategic or analytical-oriented businesses to get an overview and understanding of the key concepts and variables that could affect the outcome and success of the project in the long run. The framework can be used to analyze projects in a comparable way so that the key incentive mechanism and underlying economic base layer can be assessed, compared, and evaluated. This is becoming increasingly important as more companies engage with blockchain business models and the assessment of long-term prospects differs from traditional platform business models due to the existence of tokens. It is further important to understand the dynamics within blockchain-based platforms, especially

regarding the mutual relationship between token price and the adoption of the community that grounds on the developed base layer.

Secondly, the findings have implications for policymakers or compliance-focused companies that aim to make the blockchain industry a safe place for innovation and growth. As described by the experts, fraud attempts are seen as a major problem in the industry, so potential fraud areas need to be addressed in the early stages. The framework can help policymakers to analyze the economic base layer and create requirements and regulations that prevent 'Ponzi' schemes or 'pump-and-dump' projects that lead to financial uncertainty and a lack of protection for late entrants. For projects dealing with compliance, the framework can serve as a basis to conduct some sort of audit of the project's reliability, credibility, and trustworthiness, making it clear when a project is distributing and allocating tokens unfairly. In addition, these companies could focus on creating transparency reports and measurements to give users an overview of the promised milestones and expected benefits that a project initially communicated but cannot deliver. This is important because, according to one interviewee, the token price serves as a driver as long as the project has no benefits and does not achieve its purpose.

As a third target group, the findings can serve as an initial basis for business creation for less experienced companies or people who have experience with traditional platform business models without using token and token incentives. While communities play an increasingly important role in society, this framework can help individuals take a step closer to what to consider when issuing a token. It is important to raise awareness in the business realm that creating token-based economies and communities requires in-depth and early engagement with the topic. The design that is chosen at the beginning of the project has a long-term impact on the network. This can have serious implications on the business side. These insights are a suitable first starting point, giving them an understanding, and highlighting the importance of balancing the interests of stakeholders, even if early supporters and adopters need to be rewarded with discounts and greater incentives than late entrants. Nevertheless, projects not only need to implement safeguards that allow for fair allocation and equitable distribution of tokens but also communicate clearly and reach milestones.

But it is not only for companies, enterprises, or political decision-makers that these findings can serve as a guideline for future measures. Above all, the community itself should be trained and enabled to judge projects according to their trustworthiness and credibility. 'Ponzi schemes' or other scams only work if the individual does not have a certain level of knowledge to analyze the business model properly. Individuals who participate in the network and receive incentives in the form of financial or non-financial benefits need to understand the importance of evaluating the underlying basis of the token itself and whether the incentive mechanism leads to a sustainable project. While policymakers and compliance-focused companies can help individuals make better-informed decisions by creating transparency, it is clearly the responsibility of the individuals themselves to protect the time, effort, and resources they invest in the network and project.

5.3. Limitations & further research

The basic assumption of this paper is based on the positive influence of network effects on the success and growth of a company and the importance of the first base of users. While the current literature mainly analyzes the positive power of ‘same-side’ or ‘cross-side’ network effects, Boudreau (2012) found that positive network effects are limited, for example when too many complementors at some point may discourage additional firms from making investments to join the ecosystem. Taking Facebook as an example, potential advertisers won’t enter the platform when there is already a form of saturation on the platform (Cusumano, 2019). As a result, further research should focus on how network effects can have a negative influence on platforms and networks. Consequently, the influence of token incentives should be analyzed in this regard even though the limitations of the research should be minor as the research focus has been on the early stage of a business when network effects first need to kickstart. It is also important to think of developers, early adopters, and thought leaders in the space that might get intrinsically crowded out due to token incentives that are distributed without showing strong contribution or effort as a user.

In order to expand the evidence and create a better understanding of how token incentives can contribute to network bootstrapping, further research could consider networks and platforms that have initially managed to bootstrap their network but have

failed to create a sustainable network where lock-in effects take hold. Here, research should provide insights into how token incentives can help restore token network effects or whether bad decisions in the base layer cannot be repaired. Future research could evaluate best practices in the industry in an exploratory research design to develop clear token designs that have proven successful in bootstrapping the network using real data. Although this paper shows the impact of certain decisions in a broader context, insights should be gained that go into more detail. For example, best practices could be developed for how many tokens the team should own, how many tokens should be distributed via airdrops or other methods, or how long early adopters need to hold their tokens.

Another research gap could be filled by assessing the usefulness of token incentives in different business constellations and phases. Different studies should focus on industries and sectors where the use of token incentives within blockchain-based platforms leads to overcoming the cold start problem faster and more efficiently.

Regarding the research design of this paper, the qualitative content analysis is suitable for assessing the strategic dimensions and variables to think of when aiming to bootstrap a network with token incentives. However, the qualitative research design is not cross-checking these assumptions via a quantitative setting. This could be interesting when developing certain best practices and testing them in a quantitative study or survey. Added to that, the selection of experts is suitable as well for the research setting. Still, within the field of blockchain technology, decentralization and fairness aspects are treated differently by various individuals. Some perceive a certain allocation or incentivization to be fair while others are perceiving the contrary. Therefore, it is important to be clear about the fact that there is no one size fits all solution and design.

As a last remark regarding the limitations of this research, the early phase of the whole industry needs to be mentioned. The blockchain industry is still in its infancy and a lot of experimentation takes place such that a clear differentiation of terms is difficult. Still, the results give a great overview of variables and their dependencies upon which further research can build on.

5.4. Conclusion

The findings of this research extend the literature by linking the field of technology management with industrial organization research by connecting the technological capabilities of blockchain technology with the economics of multi-sided platforms. The results show that the use of token incentives can help to get an initial critical mass on board by offering them various benefits, such as receiving financial rewards, future profits by holding vouchers, by getting access to exclusive communities and knowledge, or by becoming an owner of the network through governance and voting rights. These benefits can help raise awareness, increase participation and usage, and encourage people to join early if the incentive mechanism is built on a sustainable and fair economic base layer that aligns the interests of stakeholder holders over the long term while preventing fluctuations in the token price. The results provide guidance on the variables and determinants under which the first critical mass can create sustainable token economies and networks. The conceptual framework developed is relevant for companies, policy makers and individuals and provides a new basis for stakeholder management and stakeholder alignment within platform business models and networks.

Reference List

Albuquerque, Paulo, Pavlidis, Polykarpos, Chatow, Udi, Chen, Kay-Yut, Jamal, Zainab, Koh, Kok-Wei & Fitzhugh, Andrew (2010). Evaluating Promotional Activities in an Online Two-Sided Market of User-Generated Content. *Marketing Science*, 31(3), pp.406-432.

Ardolino, Marco, Saccani, Nicola, Adrodegari, Federico & Perona, Marco (2020). A Business Model Framework to Characterize Digital Multisided Platforms. *Journal of Open Innovation: Technology, Market, and Complexity*, *6*, pp. 1-23.

Armstrong, Mark (2006). Competition in Two-Sided Markets. *RAND Journal of Economics*, *37*(3), pp. 668–691.

Asanov, Pavel (2018, June 10). *Asset-Backed vs. Utility Tokens: Understanding the Pros and Cons*. Retrieved from https://medium.com/equitytoken/asset-backed-vs-utility-tokens-understanding-the-pros-and-cons-ca4d1cf41432.

Bachmann, Nina, Drasch, Benedikt, Miksch, Michael & Schweizer, Andre (2019). Dividing the ICO Jungle: Extracting and Evaluating Design Archetypes. *14th International Conference on Wirtschaftsinformatik (WI)*, pp.1-16.

Becker, Jan, Clement, Michel & Schaedel, Ute. (2010). The Impact of Network Size and Financial Incentives on Adoption and Participation in New Online Communities. *Journal of Media Economics*, *23*, pp.165–179.

Belleflamme, Paul & Peitz, Martin (2010). Platform Competition and Seller Investment Incentives. *European Economic Review*, *54*, pp. 1059–1076.

Bentov, Iddo, Gabizon, Ariel & Mizrahi, Alex (2016). Cryptocurrencies Without Proof of Work. *Financial Cryptography Workshops*, pp. 142-157.

Bhargava, Hermant (2014). Platform Technologies and Network Goods: Insights on Product Launch and Management. *Information Technology and Management*, 15, pp. 199-209.

Bogner, Alexander & Menz, Wolfgang (2009). „Deutungswissen“ und Interaktion Zu Methodologie und Methodik des theoriegenerierenden Experteninterviews. *Soziale Welt*, *52*(4), pp. 477–500.

Bonardi, Jean-Philippe & Durand, Rodolphe (2003). Managing Network Effects in High-Tech Markets. *Academy of Management Executive*, 17(4), pp. 40–52.

Bruschi, Francesco, Tumiati, Manuel, Rana, Vincenzo, Bianchi, Mattia & Sciuto, Donatella (2022). A Scalable Decentralized System for Fair Token Distribution and Seamless Users Onboarding. *IEEE Symposium on Computers and Communications (ISCC)*, pp.1-6.

Bryant, Katherine & Sheldon, Pavica (2017). Cyber Dating in the Age of Mobile Apps: Understanding Motives, Attitudes, and Characteristics of Users. *American Communication Journal*, 19, pp. 1–15

Brynjolfsson, Erik & Kemerer, Chris (1997). Network Externalities in Microcomputer Software: An Econometric Analysis of the Spreadsheet Market. *Management Science*, 42, pp.1627-1647.

Burtch, Gordon, Hong, Yili, Bapna, Ravi & Griskevicius, Vladas (2017). Stimulating Online Reviews by Combining Financial Incentives and Social Norms. *Management Science*, 64, pp. 2065-2082.

Buterin, Vitalik (2022, February 24). *Ethereum White Paper*. Retrieved from https://github.com/ethereum/wiki/wiki/White-Paper#decentralized-autonomous-organizations.

Caillaud, Bernard & Jullien, Bruno (2003). Chicken & egg: Competition Among Intermediation Service Providers. *RAND Journal of Economics*, *34*(2), pp. 309–328.

Campbell-Kelly, Martin, Garcia-Swartz, Daniel, Lam, Richard & Yang, Ying (2015). Economic and Business Perspectives on Smartphones as Multi-Sided Platforms. *Special Issue on Consumer Behavior and Telecommunications Policy*, *39*(8), pp. 717–734.

Catalini, Christian & Gans, Joshua (2016). Some Simple Economics of the Blockchain. *NBER Working Paper Series No. w22952*. Available at SSRN: https://ssrn.com/abstract=2887234.

Cennamo, Carmelo & Santalo, Juan (2013). Platform Competition: Strategic Trade-Offs in Platform arkets. *Strategic Management Journal*, 34, pp. 1331-1350.

Chacko, Mani & Mitchell, Will (1998). Growth Incentives to Invest in a Network Externality Environment. *Industrial and Corporate Change*, 7, pp. 731–744.

Chen, Yan (2018). Blockchain Tokens and the Potential Democratization of Entrepreneurship and Innovation. *Business Horizons*, *61*, pp. 567–575.

Chuen, David (2017). Fintech Tsunami: Blockchain as the Driver of the Fourth Industrial Revolution. *SSRN Electronic Journal*.

Cong, Lin, Li, Ye & Wang, Neng (2019). Tokenomics and Platform Finance. *Cornell University Working Paper.*

Conley, John (2017). Blockchain and the Economics of Crypto-tokens and Initial Coin Offerings.*Vanderbilt University Department of economics working papers*, pp. 1-18.

Cusumano, Michael A., Gawer, Annabelle & Yoffie, David B. (2019). *The Business of Platforms: Strategy in the Age of Digital Competition, Innovation, and Power*. 1st Edition. New York: Harper Business.

de Best, Raynor (2022, February 8). *Number of Cryptocurrencies Worldwide from 2013 to February 2022*. Retrieved from https://www.statista.com/statistics/863917/number-crypto-coins-tokens/.

de la Rouviere, Simon & Taylor, Ashley (2015, December 2). *A Token-Powered Future on Ethereum*. Retrieved from https://medium.com/@ConsenSys/tokens-on-ethereum-e9e61dac9b4e.

de Oliveira, Daniel T. & Cortimiglia, Marcelo N. (2017). Value Co-Creation in Web-Based Multisided Platforms: A Conceptual Framework and Implications for Business Model Design. *Business Horizons*, 60(6), pp. 747–758.

Di Angelo, Monika & Salzer, Gernot (2020). Tokens, Types, and Standards: Identification and Utilization in Ethereum. *2020 IEEE International Conference on Decentralized Applications and Infrastructures (DAPPS)*, pp. 1-10.

Dixon, Chris (2017, June 1). *Crypto Tokens: A Breakthrough in Open Network Design*. Retrieved from https://medium.com/@cdixon/crypto-tokens-a-breakthrough-in-open-network-design-e600975be2ef.

Dixon, Chris (2022, January 19). *The Web3 Playbook: Using Token Incentives to Bootstrap New Networks*. Retrieved from https://future.a16z.com/the-web3-playbook-using-token-incentives-to-bootstrap-new-networks/.

Doeringer, Stefanie (2020). 'The Problem-Centred expert nterview'. Combining Qualitative Interviewing Approaches for Investigating Implicit Expert Knowledge. *International Journal of Social Research Methodology*, 24(3), pp. 265-278.

Drasch, Benedict, Fridgen, Gilbert, Manner-Romberg, Tobias, Nolting, Fenja & Radszuwill, Sven (2020). The Token's Secret: The Two-faced Financial Incentive of the Token Economy. *Electronic Markets*, 30, pp. 557-567.

Ehrsam, Fred (2016, August 1). *Blockchain Tokens and the Dawn of the Decentralized Business Model.* Retrieved from https://blog.coinbase.com/app-coins-and-the-dawn-of-the-decentralized-business-model-8b8c951e734f.

Eisenmann, Thomas. (2008). Managing Proprietary and Shared Platforms. *California Management Review*, 50, pp. 31–53.

Eisenmann, Thomas, Parker, Geoffrey & van Alstyne, Marshall (2011). Platform Envelopment. *Strategic Management Journal*, *32*(12), pp.1270–1285.

Eisenmann, Thomas, Parker, Geoffrey G., & van Alstyne, Marshall (2006). Strategies for Two Sided Markets. *Harvard Business Review*, 84(10), pp.1-10.

El Faqir, Youssef, Arroyo, Javier & Hassan, Samer (2020). An Overview of Decentralized Autonomous Organizations on the Blockchain. *Proceedings of the 16th International Symposium on Open Collaboration*, pp.1-8.

Evans, David (2003). Some Empirical Aspects of Multi-sided Platform Industries. *Review of Network Economics*, *2*(3), pp. 191-209.

Evans, David & Schmalensee, Richard. (2005). The Industrial Organization of Markets with Two-Sided Platforms. *Competition Policy International*, 3(1), pp. 151-179.

Evans, David & Schmalensee, Richard (2008). Markets with Two-Sided Platforms. *Issues in Competition Law and Policy*, 1, pp. *667-693*.

Evans, David & Schmalensee, Richard (2017). Multi-sided Platforms. In Vernengo, Matias, Caldentey, Esteban & Rosser, Barkley J. (Eds.). *The New Palgrave Dictionary of Economics* (pp. 1–9). London: Palgrave Macmillan.

Eyal, Ittay (2015). The Miner's Dilemma. *IEEE Symposium on Security and Privacy*, pp. 89-103.

Farrell, Joseph & Saloner, Garth (1985). Standardization, Compatibility, and Innovation. *RAND Journal of Economics*, 16, pp. 70–83.

Flick, Uwe (2006). *An Introduction to Qualitative Research.* 4th Edition. London: SAGE Publications.

Franceschet, Massimo, Colavizza, Giovanni, Smith, T'ai, Finucane, Blake, Ostachowski, Martin, Scalet, Sergio, Perkins, Jonathan, Morgan, James & Hernández, Sebastian (2020). Crypto Art: A Decentralized View. *Leonardo*, 54, pp. 1–8.

Freni, Pierluigi, Ferro, Enrice & Moncada, Roberto (2022). Tokenomics and Blockchain Tokens: A Design-Oriented Morphological Framework. *Blockchain: Research and Applications*, 3(1), pp.1-10.

Fridgen, Gilbert, Regner, Ferdinand, Schweizer, Andre & Urbach, Nils (2018). Don't Slip on the Initial Coin Offering (ICO): A Taxonomy for a Blockchain-enabled Form of Crowdfunding. *European Conference on Information Systems (ECIS)*, pp.1-17.

Garay, Juan, Kiayias, Aggelos & Leonardos, Nikos (2015). The Bitcoin Backbone Protocol: Analysis and Applications, *Eurocrypt*, 2, pp.281-310.

Gawer, Annabelle (2009). Platforms, Markets and Innovation: An Introduction. In Gawer Annabelle (Ed.), *Platforms, Markets and Innovation* (pp. 1-16). Cheltenham: Edward Elgar.

Gawer, Annabelle (2020). Digital Platforms' Boundaries: The Interplay of Firm Scope, Platform sides, and Digital Interfaces. *Long Range Planning*, 54(5), pp.1-16.

Gawer, Annabelle & Cusumano, Michael (2014). Industry Platforms and Ecosystem Innovation. *Journal of Product Innovation Management*, 31(3), pp.417-433.

Gazé, Pierre & Vaubourg, Anne-Gael (2011). Electronic Platforms and Two-Sided Markets: A Side-Switching Analysis. *The Journal of High Technology Management Research*, *22*(2), pp. 158–165.

Glaser, Jochen & Laudel, Grit (2006). *Experteninterviews und Qualitative Interviews als Instrumente Rekonstruierender Untersuchungen*. Wiesbaden: VS Verlag für Sozialwissenschaften.

Gneezy, Uri, Meier, Stephan & Rey-Biel, Pedro (2011). When and Why Incentives (Don't) Work to Modify Behavior. *Journal of Economic Perspectives*, 25, pp. 191–210.

Goos, Maarten, Van Cayseele, Patrick & Willekens, Bert (2013). Platform Pricing in Matching Markets. *Review of Network Economics*, *12*(4), pp. 437–457.

Grummitt, Janis (1980). *A Guide to Interviewing skills*. London: Industrial Society.

Hagiu, Andrei (2006). Pricing and Commitment by Two-Sided Platforms. *RAND Journal of Economics*, 37, pp. 720–737.

Hagiu, Andrei (2014). Strategic Decisions for Multisided Platforms. *MIT Sloan Management Review*, *55*, pp. 92–93.

Hagiu, Andrei & Wright, Julian (2014). Marketplace or Reseller? *Management Science*, 61(1), pp. 184-203.

Hagiu, Andrei & Wright, Julian (2015). Multi-sided platforms. *International Journal of Industrial Organization*, 43, pp. 162–174.

Harrigan, Martin, Shi, Lei & Illum, Jacob (2018). Airdrops and Privacy: A Case Study in Cross-Blockchain Analysis. *IEEE International Conference on Data Mining Workshops (ICDMW)*, pp.63-70.

Helium (2022, March 1). *People-Powered Networks.* Retrieved from https://www.helium.com/.

Henten, Anders & Windekilde, Ivona (2016). Transaction Costs and the Sharing Economy. *Info*, 18, pp. 1–15.

Ho, Eric (2021, January 26). *Security Tokens vs Utility Tokens*. Retrieved from https://cryptodigestnews.com/security-tokens-vs-utility-tokens/.

Hofstetter, Reto, Shriver, Scott & Nair, Harikesh (2010). Social Ties and User Generated Content: Evidence from an Online Social Network, *Management Science*, 59(6), pp.1425-1443.

Hsu, Maggie (2022, February 4). *Go-to-Market in Web3: New Mindsets, Tactics, Success Metric*. Retrieved from https://future.a16z.com/go-to-market-in-web3-new-mindsets-tactics-success-metrics/.

Huotari, Pontus, Järvi, Kati, Kortelainen, Samuli & Huhtamäki, Jukka (2016). Winner Does Not Take All: Selective Attention and Local Bias in Platform-Based Markets. *Technological Forecasting and Social Change*, 114, pp. 313-326.

Jian Li (2015). Is Online Media a Two-Sided Market? *Computer Law & Security Review*, 31(1), pp. 99–111.

Jullien, Bruno (2004). Two-Sided Market and Electronic Intermediaries. *CESifo Economic Studies*, 51, pp. 233-260.

Kang, Minghui, Gao, Yiwen, Wang, Tao & Zheng, Haichao (2016). Understanding the Determinants of Funders? Investment Intentions on Crowdfunding Platforms: A Trust-Based Perspective. *Industrial Management & Data Systems*, 116, pp. 1800–1819.

Karnjanaprakorn, Michael (2017, June 13). *Token Network Effects—A New Business Model for a Decentralized Web*. Retrieved from https://www.freecodecamp.org/news/token-network-effects-a-new-business-model-for-a-decentralized-web-6cde8b4e862/.

Katz, Michael L. & Shapiro, Carl (1985). Network Externalities, Competition, and Compatibility. *The American Economic Review*, 75(3), pp. 424–440.

King, Sunny & Nadal, Scott (2012). *PPCoin: Peer-to-Peer Crypto-Currency with Proof-of-Stake*.

Lena & Oxana (2017, July 26). *What Are You Token About? Blockchain Token Economics and Rights.* Retrieved from https://hackernoon.com/token-economy-4a38ad02a239.

Liljeqvist, Ivan (2021, February 28). *Understanding Tokenomics – An Introduction to Token Economics*. Retrieved from https://academy.moralis.io/blog/understanding-tokenomics-an-introduction-to-token-economics.

Liu, Yuewen & Feng, Juan (2021). Does Money Talk? The Impact of Monetary Incentives on User-Generated Content Contributions. *Information Systems Research*, 32(2), 394–409.

Lu, Yixin, Ou, Carol & Angelopoulos, Spyros (2018). Exploring the Effect of Monetary Incentives on User Behavior in Online Sharing Platforms. *Proceedings of the 51st Hawaii International Conference on System Sciences (HICSS 2018)*, pp.3437-3444.

Luchetta, Giacomo (2012). Is the Google Platform a Two-Sided Market? *Journal of Competition Law and Economics*, 10(1), pp.185-207.

Marshall, Catherine & Rossman, Gretchen (2011). *Designing Qualitative Research*. 5th Edition. Thousand Oaks: SAGE Publications.

Mayring, Philipp (2014). *Qualitative Content Analysis—Theoretical Foundation, Basic Procedures and Software Solution*. Klagenfurt: SSOAR.

Mcintyre, David & Subramaniam, Mohan (2009). Strategy in Network Industries: A Review and Research Agenda. *Journal of Management*, 35, pp. 1494–1517.

Monegro, Joel (2016, August 8). *Fat Protocols*. Retrieved from https://www.usv.com/writing/2016/08/fat-protocols/.

Muzellec, Laurent, Ronteau, Sebastien & Lambkin, Mary (2015). Two-Sided Internet Platforms: A Business Model Lifecycle Perspective. *Industrial Marketing Management*, 45, pp. 139–150.

Nakamoto, Satoshi (2008). *Bitcoin: A Peer-to-Peer Electronic Cash System*. Retrieved from https://bitcoin.org/de/bitcoin-paper.

Nguyen, Cong, Dinh Thai, Hoang, Nguyen, Diep, Niyato, Dusit, Nguyen, Huynh & Dutkiewicz, Eryk (2019). Proof-of-Stake Consensus Mechanisms for Future Blockchain Networks: Fundamentals, Applications and Opportunities. *IEEE Access*, 7, pp. 85727-85745.

Nofer, Michael, Gomber, Peter, Hinz, Oliver & Schiereck, Dirk (2017). Blockchain. *Business & Information Systems Engineering*, 59(3), pp. 183-187.

Oliveira, Luis, Zavolokina, Liudmila, Bauer, Ingrid & Schwabe, Gerhard (2018). To Token or not to Token: Tools for Understanding Blockchain Tokens. *ICIS 2018 Proceedings*, 5, pp.1-17.

Parker, Geoffrey & van Alstyne, Marshall (2005). Two-Sided Network Effects: A Theory of Information Product Design. *Management Science*, 51(10), pp. 1494–1504.

Pietrewicz, Leslaw (2018). Emerging Trends in Entrepreneurial Finance: The Rise of ICOs. *Studia i Materiały*, 27, pp. 65–78.

Piezunka, Henning (2011). Technological Platforms. *Journal Für Betriebswirtschaft*, 61, pp. 179-226.

Rajeswari (2017). A study on effectiveness of social media in recruitment process. *International Journal of Economic Research*, 14, pp. 367–373.

Rochet, Jean-Charles & Tirole, Jean (2003). Platform Competition in Two-Sided Markets. *Journal of the European Economic Association*, 1(4), pp. 990–1029.

Rochet, Jean-Charles & Tirole, Jean (2006). Two-sided Markets: A Progress Report. *The RAND Journal of Economics*, 37, pp. 645–667.

Ryan, Richard & Deci, Edward (2000). Intrinsic and Extrinsic Motivations: Classic Definitions and New Directions. *Contemporary Educational Psychology*, 25(1), pp. 54–67.

Rysman, Marc (2009). The Economics of Two-Sided Markets. *Journal of Economic Perspectives*, *23*(3), pp. 125–143.

Saunders, Mark, Lewis, Philip & Thornhill, Adrian (2009). *Research Methods for Business Students*. Harlow: Pearson Education.

Schallmo, Daniel, Williams, Christopher & Boardman, Luke (2017). Digital Transformation of Business Models - Best Practice, Enablers, and Roadmap. *International Journal of Innovation Management*, 21, pp.1-17.

Scholten, Simone & Scholten, Ulrich (2012). Platform-based Innovation Management: Directing External Innovational Efforts in Platform Ecosystems. *PICMET Technology Management for Global Economic Growth*, pp.1-12.

Sehra, Avtar (2017). *Economics of Initial Coin Offerings.* Retrieved from https://medium.com/@avtarsehra/economics-of-initial-coin-offerings-c083311e53ec.

Shankar, Venkatesh & Bayus, Barry (2003). Network Effects and Competition: An Empirical Analysis of the Home Video Game Industry. *Strategic Management Journal*, 24(4), pp. 375–384.

Shapiro, Carl & Varian, Hal (1999). The Art of Standards Wars. *California Management Review*, 41(2), pp.7-32.

Singh, Madhusudan & Kim, Shiho (2019). Chapter Four – Blockchain Technology for Decentralized Autonomous Organizations. *California Management Review*, 41(2), pp.7-32.

Smith & Crown (2019, October 28). *Introduction to Token Distribution Mechanisms*. Retrieved from https://smithandcrown.com/research/introduction-to-token-distribution-mechanisms/.

Spulber, Daniel (2010). Solving the Circular Conundrum: Communication and Coordination in Two-Sided Markets. *Northwestern University Law Review*, 104, pp. 537–591.

Swan, Melanie (2015). *Blockchain: Blueprint for a New Economy*. Sebastopol. O'Reilly.

Szabo, Nick (1997). Formalizing and Securing Relationships on Public Networks. *First Monday*, 2(9).

Tasca, Paolo & Tessone, Claudio (2019). A Taxonomy of Blockchain Technologies: Principles of Identification and Classification. *Ledger*, 4, pp. 1-39.

Thomes, Tim (2015). In-house Publishing and Competition in the Video Game Industry. *Information Economics and Policy*, 32, pp. 46-57.

van Alstyne, Marshall, Parker, Geoffrey & Choudary, Sangeet (2016). Pipelines, Platforms, and the New Rules of Strategy. *Harvard Business Review*, 94, pp. 54-62.

Vaughan, Wayne (2017, June 6). *Going Full Token—The Impact of ICOs*. Retrieved from https://medium.com/@WayneVaughan/going-full-token-the-impact-of-icos-49dc662dfc6b.

Veisdal, Jorgen (2020). The Dynamics of Entry for Digital Platforms in Two-Sided Markets: A Multi-Case Study. *Electronic Markets, 30, pp. 539-556.*

Wang, Qin, Li, Rujia, Wang, Qi & Chen, Shiping (2021). *Non-Fungible Token (NFT): Overview, Evaluation, Opportunities and Challenges.*

Wang, Yufeng, Tang, Jing, Jin, Qun & Ma, Jianhua (2014). On Studying Business Models in Mobile Social Networks Based on Two-sided Market (TSM). *The Journal of Supercomputing*, 70(3), pp. 1297-1317.

Wenger, Albert (2016, July 28). Crypto Tokens and the Coming Age of Protocol Innovation. Retrieved from https://continuations.com/post/148098927445/crypto-tokens-and-the-age-of-protocol-innovation.

Xu, Xiwei, Weber, Ingo, Staples, Mark, Zhu, Liming, Bosch, Jan, Bass, Len, Pautasso, Cesare & Rimba, Paul (2017). A Taxonomy of Blockchain-Based Systems for Architecture Design. *2017 IEEE International Conference on Software Architecture (ICSA)*, pp. 243–252.

Yan, Zhijun, Kuang, Lini & Hong, Yili (2018). Spillover Effects of Financial Incentives on Non-Incentivized User Engagement: Evidence from an Online Knowledge Exchange Platform. *Journal of Management Information Systems*, 36, pp.289-320.

Zheng, Zibin, Xie, Shaoan, Dai, Hong-Ning, Chen, Xiangping & Wang, Huaimin (2017). An Overview of Blockchain Technology: Architecture, Consensus, and Future Trends. *IEEE International Congress on Big Data (BigData Congress),* pp. 557-564.

Appendix

ID	Theme/Topic	Purpose
1	Introduction individual and professional background	Start the discussion and introduce topic
2	Utility/value within platform business models	Question to focus on key research area of thesis; value creation on platforms
3	Network effects and platform business models	Focus on another key part of research question – network effects as a key characteristic of platform business models
4	Cold start problem and the importance of a first user base	Lead the conversation towards possible strategies to overcome to 'chicken egg dilemma' and network effects
5	Web2 vs. Web3 – differences and opportunities	Bridge from platform business models to networks and blockchain-based platforms
6	Platforms and influence of tokens/utility tokens	Lead discussion towards utility tokens and their use on platforms
7	Token incentives in the early days of a platform	Highlight underlying incentive mechanism of platforms and networks
8	Effectiveness of token incentives – Focus on variables that might influence token incentives	Focus on intricacies when launching a token and bootstrapping a network
9	Closing question and outlook	Finish conversation with open question about the future

Figure 8: Interview guideline

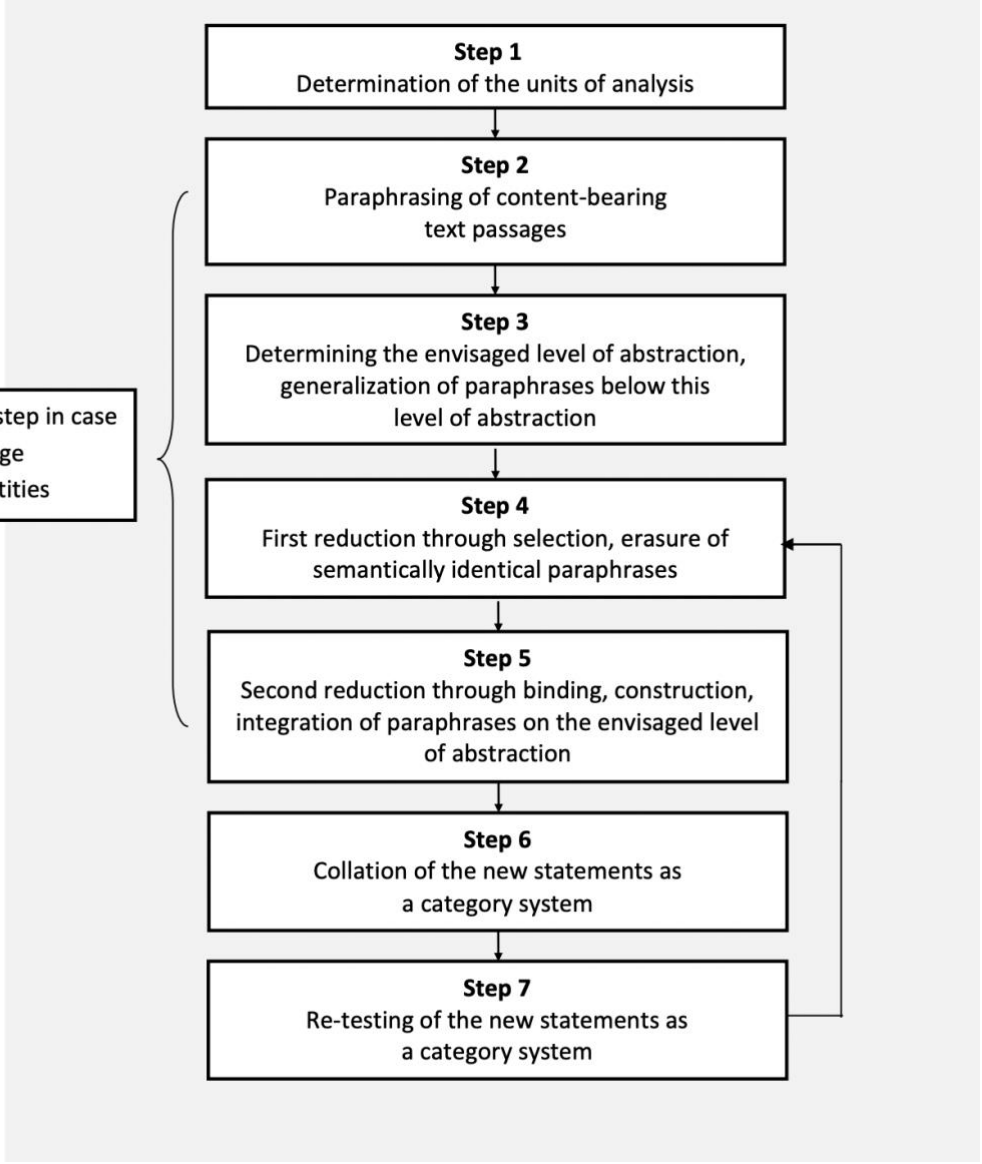

Figure 9: Summarizing content analysis according to Mayring (2014, p.66)

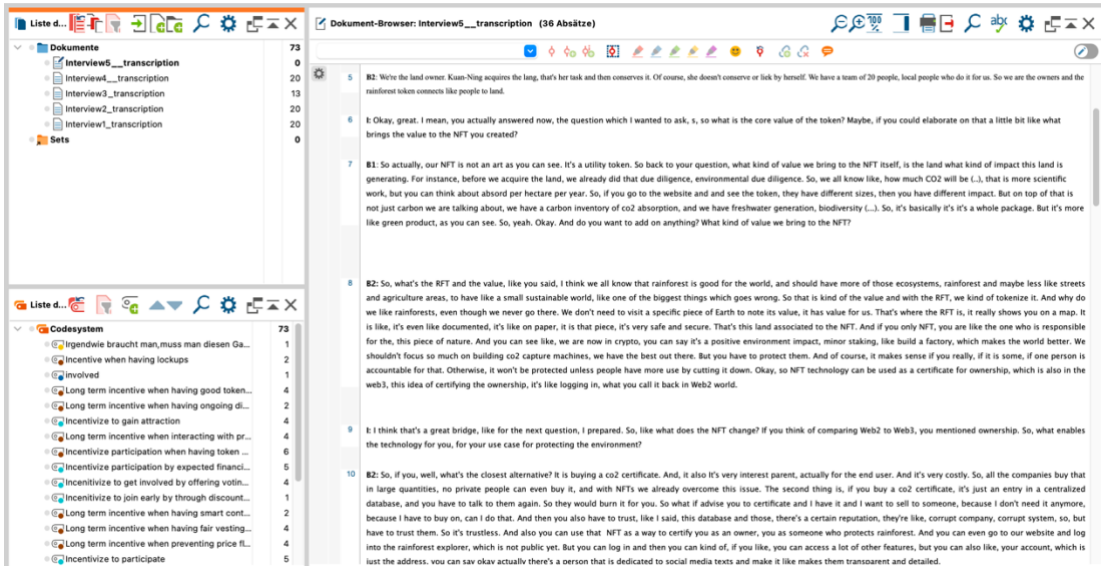

Figure 10: Coding process of empirical data with MAXQDA

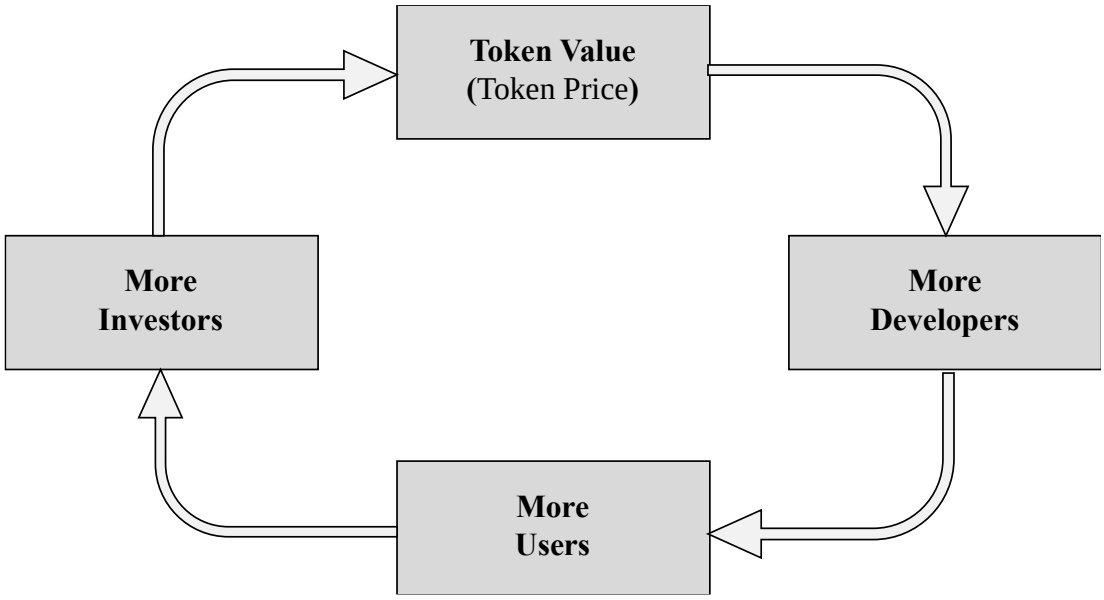

Figure 11: Token network effect (Adapted from Karnjanaprakorn (2017))

Category ID	Category	Text passages	Category definition
C8	**Long term incentive - Token utility**	"But if you look at like the older ICOs in 2016, 2017 or 2018 ICOs, some of them, they weren't really utilities. They were literally securities. Their token had no use on their platform. Because the platform wasn't existing, the infrastructure wasn't built in there, so they literally raised funds to create the platform itself, or the org infrastructure project. So, when it comes to utility of a token or of a project (…), you always need to kind of differentiate between if a token can already be used or not. And I think that's the one of the most one of most important parts when you start a project." **Interview 2**	Include coding units when incentives are discussed as losing in value or when networks are considered as being unsustainable due to missing utility or bad token utility in gerneral
		"Because of the usage, the demand increased. And the demand increase led to a price increase, and then the price increase led to more usage because people are, hey, that's profitable, right?" **Interview 3**	
		"Otherwise you run into the problem that the community is hyper, but the community doesn't believe in the ambitious roadmap and secretly just wants to 'pump and dump'. At some point, everything is dumped, you lose the majority of your community because no one believes in it, because the utility is simply not there." **Interview 4**	
		"What I love to see is that the projects can incentivize the people to stay in it for the long run and instead of just creating a buzz and then they bleed out over time which is simply due to bad tokenomics and bad utility of the token." **Interview 1**	
		"So, nowadays, people are not really buying the token just because it's generate generative art, but it's really about utility, if you look at the board ape, I hate the pronunciation of that one (laughs), and then why people are buying it. I mean to be honest, the art itself is just bad but what kind of value they bring it obviously, that can be a past to exclusive package deal and like you can, they are planning to do, I don't know, if you have the token you can go to a luxury hotel or something just by holding a token for instance, globally." **Interview 5**	
C1	**Future to be expected financial profit**	"And they said that if you now also believe in this vision, then you can acquire tokens from us. Tokens in the sense of vouchers. That means that once this service goes live, you can use it directly, for free." **Interview 4**	Include coding units when tokens are discussed as a means of profiting at a later stage. Either as part of positive price developments that are based on heavy discounts, or as form of a voucher that was
		"So, that people want to step in ICO because they expect the value to increase that I understand." **Interview 6**	
		"Back in the days that were called, like those SAFT holders. So, the future token holders, they got in very, very early like a seed round or like a pre seed funding. And they got a certain discount, a token discount, because they were super early even though the project was not built in. And they didn't get the token, they just kind of agreed on buying tokens as soon as the network is going live. And for that risk, they got a certain amount of a certain discount. I don't like kind of the airdrop thing, which is going around, obviously like community love airdrops, because they get free money, and everyone loves free money. But when it comes to kind of incentivization, I think it's the wrong way. You at least should do something to get money." **Interview 2**	
C4	**Ownership, governance and voting rights**	"So, token always, when it comes to usability should have at least one use case. Since either using other on a platform or if you issue a token on a certain application, you should the token itself should already be usable, let's say as a voucher for something or in a DAO for example, as as you can vote for certain topics already from the beginning of token issuance, and or to secure network like we were back then." **Interview 2**	Include coding units that focus on: the role of being an owner, granting participants voting and governance rights; or being eligible to do something only when having a certain token
		"Then something was added to this use, to this voucher. Hey, you can even have a say on the platform. So, when we exist, when we are bigger and the community is a bit bigger, then you not only get this voucher, so you have a benefit, but you also have the right of co-determination." **Interview 4**	
		"And then recent research of our hypothesis is that people perceive an NFTs as status symbol, and sustainability is also a status symbol and a green product awareness really get people to like, feel good to really want to show it. It's like, I don't know, new, like luxury 4.0, to be honest. So, that is something really important for people to really add on. Add on. Exactly, but in real life and in digital life. I think both are really important just in different forms for them to show." **Interview 5**	
		"But nowadays, they can buy a token, and depends on the token, but they can even vote directly. And you don't need to kind of take part in a general assembly or whatever. I mean, it's literally, it's open to not all investment, not all token holders, but mostly kind of a free world where you can vote for what you want to have for your infrastructure project go into, or whether you want to have to go into. So, I think that kind of that free markets, if you want to call it that sounds like a kind of movement." **Interview 2**	
		"And they also bring in the ownership idea, which integrates user into the ownership. " **Interview 3**	
		"And also you can use that NFT as a way to certify you as an owner, you as someone who protects rainforest." **Interview 5**	
C5	**Provide incentivize to participate**	"(…) it is very critical because token incentives, yeah (...), is the main reason why people started using it nowadays. I mean, it really is all or nothing, if there is a token incentive people use it, if there is not they hardly do." **Interview 2**	Include coding units when experts mention incentives as a way to either drive/boost/increase usage, participation or involvement
		"Give people in certain time periods (..) their tokens, of course helps to keep the price rather stable than just having these -80 or 90% and people lose interest in the project even if it is great. Unfortunately that happens" **Interview 1**	
		"So, you want to gain X amount of your participation. But so that's probably the thing. So, if you incentivize a certain group, you definitely should do or you should definitely incentivize a certain group, like your early supporters." **Interview 3**	
		"Yeah, very large role maybe even too large, (…)" **Interview 2**	
		"So, getting them involved and releasing tokens over time makes a lot of sense, yes." **Interview 1**	
C7	**Provide incentivize join early**	"Incentives, it's just bringing in people, if there is the utility, they don't stay, obviously you have to have the utility, first of all. But then if you know, you have the utility already know you want to bring into people, you need to talk on incentives for the other part, like it's the marketing part of the platform, so I would really differentiate it." **Interview 3**	Include coding units where tokens can function as an incentive to join the network early by serving as a voucher for future profits or by serving as a way to profit more for buying tokens early
		"I think Airdrops are most effective to incentivize people joining the project early on" **Interview 1**	
		"Back in the days that were called, like those SAFT holders. So, the future token holders, they got in very, very early like a seed round or like a pre seed funding. And they got a certain discount, a token discount, because they were super early even though the project was not built in. And they didn't get the token, they just kind of agreed on buying tokens as soon as the network is going live. And for that risk, they got a certain amount of a certain discount. I don't like kind of the airdrop thing, which is going around, obviously like community love airdrops, because they get free money, and everyone loves free money. But when it comes to kind of incentivization, I think it's the wrong way. You at least should do something to get money." **Interview 2**	
C3	**Grant access**	"get either incentivized because of financials or you get some kind of exclusivity of some kind of access to knowledge, or some kind of exchange you get there." **Interview 1**	Inlcude coding units that treat incentives as a way to access a community, certain features, a platform, knowledge or other exclusivitities that wouldn't be possible to
		"(...) So, on the one hand the utility, on the other hand this governance story (...) and in general utility in the sense of access to a community. If you don't have a voucher, if you don't have vouchers, if you don't have tokens, then you don't have access to this community." **Interview 1**	
		"Okay, so NFT technology can be used as a certificate for ownership, which is also in the web3, this idea of certifying the ownership, it's like logging in, what you call it back in Web2 world." **Interview 5**	
		"But you can log in and then you can kind of, if you like, you can access a lot of other features, (…) " **Interview 5**	

Figure 12: Citation table 1 of 2

C2	**Financial rewards**	"First of all, it is the incentive mechanism. So the more you use something, the more you profit from it." **Interview 2**	Include coding units that treat incentives as a way to reward participation, early entry, driving awareness or staying long in the network via offering financial rewards. Rewards can be framed as a yield, financial reward, staking reward, to get something out, or when the expert speaks about financials that are directly distributed in exchange for an action
		"Obviously (...) competitive yield, has to be profitable for people to use, otherwise they won't do it. Is has to be economically meaningful" **Interview 3**	
		„So, finding a way to incentivize people in the long run is something that is very difficult"	
		"And for network security, it's always good to have a lockup period. For us, it's more of a staking period. It's a two months staking period. So it helps kind of calculating at least security of the network."	
		"Staking is also a definition that is used for two different use cases. First one is providing liquidity for lending. So, it's just like the borrowing lending market. And then the other one is a more technological perspective, for staking, which means that you're locking up your tokens to provide decentralized safety, economic safety. And in my opinion, this is basically the future of our planet or whole society, which will work in different staking mechanisms. So, this is by far the most democratical and fair way of decision making and and providing security, safety, also technological device, and then also distributing rewards." **Interview 3**	
		"So when it comes to staking, I think that's that's the next big thing, which people are still not kind of fully aware of it. How much you can get out of just securing the network." **Interview 3**	
		"The incentivization has to be there at some point. And you can't be like, I can only access some kind of chat. That doesn't work in the long run. So, ideally what incentivized the user there, is when you get some kind of reward and most of the time that has to be financial. I can see a couple of projects there (…) which are quite successful, just because of the financial reward for the customers at the end of the day." **Interview 1**	
		"What do tokens change (…). Of course, while holding a token, to get either incentivized because of financials" **Interview 1**	
C6	**Provide incentive to gain traction and awareness**	"Personally, I think marketing wise, they are meaningful, and they are good." **Interview 3**	Include coding units that treat incentives as a means to create awareness or attract early adopters for the project
		"I think there are different options of kind of distributing or incentivizing early supporters and adopters and in general intending to gain attraction to your network. But Airdrops in my opinion is just the wrong the wrong way. I mean, it always depends what groups, if you own an NFT, and then there's the utility token coming and you get kind of an amount of a certain amount of utility tokens within that, for let's say that play to earn game or whatever. That's something else." **Interview 2**	
		"But yeah, so I think they're the learn and earn campaigns, the launchpads. They help to gain traction and to kind of grow knowledge about your project, compared to an airdrop, which is just dropped into unidentified wallet." **Interview 2**	
C15	**Long term incentive - Interaction**	"But if you kind of interact with people, if they learn about you, they know about you. So, they know what kind of, what the token does. And I think the connection then to the community, the connection of the community to the project itself is much bigger than just if you just drop a token into someone's wallet at that party that might not even see that token got dropped into their model." **Interview 2**	Include coding units that talk about the importance of an interaction of the user with a product or service as an important aspect for the effectiveness of token incentives
		"If you just airdrop funds, tokens, I mean, you don't get anything back, right? That's probably big difference as much as probably that's one of the largest or biggest differences." **Interview 2**	
		"But yeah, so I think they're the learn and earn campaigns, the launchpads. They help to gain traction and to kind of grow knowledge about your project, compared to an airdrop, which is just dropped into unidentified wallet." **Interview 2**	
		"So, for example, if you just want to bring in a lot of users to your game, which really works, then maybe you can incentivize the usage, right? Let them use it first, and then incentivize them afterwards." **Interview 3**	
		"Obviously, I had some airdrops which were nice. And others were not. But a sustainable or profitable, I don't know. Did it make me use the platform more? I don't think so. Airdropping tokens, creating tokens is by a fact a ponzy. (…) And the Ponzi scheme is basically a scam and the betrayal on users and this is usually used as a marketing strategy in web3, rather successfully for the projects and rather unsuccessfully for the users on a long term strategy, but it depends (laughs)." **Interview 3**	
C9	**Long term incentive - Preventing fraud schemes**	"(...) technically implemented in the contract which is no one can actually, or it is very difficult to elaborate if that's true or to verify that" **Interview 1**	Include coding units that talk about the importance of security and preventing fraud schemes such that exploits, 'rug pulls' or
		"Because first of all you want to avoid that people somehow exploit tokenomics, that some kind of exploit takes place, because otherwise you're directly down." **Interview 1**	
		"Because first of all you want to avoid that people somehow exploit tokenomics, that some kind of exploit takes place, because otherwise you're directly down." **Interview 4**	
C10	**Long term incentive - Fair Vesting schedule**	"And for network security, it's always good to have a lockup period. For us, it's more of a staking period. It's a two months staking period. So it helps kind of calculating at least security of the network. And to check it out, to figure out okay, probably like in two months time, or that's next month, maybe foundation needs to help out and delegate certain amount of certain tokens to a node to keep the node active and the network more secure." **Interview 2**	Include coding units that talk about the vesting schedule or lock-ups as an important aspect that protects network security, investors and participants and ensures long-term success of the project
		"Your token can only be used if you hold it for six months after release. Then at least this team has a six-month period to fulfil something on the roadmap and if they then see (...) all right, they are fulfilling the promises they made on their roadmap, hey I think the token is cool, then it could be worth even more. That's an option that says, yes, you just can't sell the token yet. Or the longer you hold it, at least six months, you get extended access to new features, whatever." **Interview 4**	
		"When you look at the allocation and the vesting, you should always see that the team can sell the tokens last" **Interview 1**	
		"The vesting schedule in terms of time for instance if the investors dump straight away, (…) people lose interest in the project." **Interview 1**	
		"But then maybe through this, through this vesting or a holding period, that they say, hey, as soon as you've held something in our community for so and so long, let's say minimum maybe or somehow only one token or minimum requirements of token, as soon as you hold something for so long, then you also get a vote token that is worth just as much as with other people. Because hey, you've been there for half a year now, your vote counts just as much now." **Interview 4**	
C11	**Long term incentive - Preventing price fluctuations**	"The vesting schedule in terms of time for instance if the investors dump straight away, then whole project or the whole marketcap falls and so price itself falls and most of the time the people lose interest in the project." **Interview 1**	Include coding units that talk about the price as an important part to keep the community, participants and various stakeholders engaged and motivated to stick to the network
		"It's hard to keep up the price. And people are just not aware of that. That's I think, again, then the community issue. They are then finding a project. Like all the smaller investors, they're seeing, oh, that project, everyone is fighting around, talking bad about the project, just because the price goes down." **Interview 2**	
		"(…) people want to invest in order to increase their investment. So, if the token dumps, they're frustrated. Obviously, price development plays a large role. And it is important not to destroy any value or investments of people" **Interview 4**	
		"(…) helps to keep the price rather stable than just having these -80 or 90% and people lose interest in the project even if it is great." **Interview 1**	
		"(…) people want to invest in order to increase their investment. So, if the token dumps, they're frustrated. Obviously, price development plays a large role. And it is important not to destroy any value or investments of people." **Interview 4**	
		"because if every platform will will make its own currency so to say then I there's a lot of instability that you introduce because then prices for somebody who doesn't have the token change constantly in function of demand and supply of the tokens themselves." **Interview 6**	
C12	**Long term incentive - Ongoing distribution**	"I would say the same amount of tokens always, linear vesting and provide people with the opportunity to stake. I think it is about get rewards by staking. That's most of the time the most successful type of project I am seeing right now." **Interview 1**	Include coding untis that talk about ongoing distribution methods like rewards that are received by participating in securing the network
		"Yeah, I think that's a great way to go. Give people in certain time periods (..) their tokens (…) and releasing tokens over time makes a lot of sense, yes." **Interview 1**	
		"But since they needed to stake them from the beginning, they were like, well, why should we take out a certain amount, because we get staking rewards, which is even better for us, because then they had kind of just gained and gained and gained new tokens." **Interview 2**	
C13	**Long term incentive - Prevent bad Tokenomics**	"So having a waterproof token model and tokenomics is important in the long run. You will not feel the benefits from it, maybe, but you will feel the threats of having a bad one. So, it's something you should prevent or, you should avoid having a bad one." **Interview 3**	Include coding units that speak of the token design or tokenomics as way to impact the effectiveness of a tokenincentive especially in ensuring the long-term value of
		"I mean, we had a PhD in economics, making that kind of figuring that out. We hired like an external guy for that. Because literally, that's, that's something which not everyone can do. So it's super important. It's super hard. It's probably the hardest part, kind of figuring out the token economics on the model, and the vesting schedule and the inflation." **Interview 2**	
		"What I love to see is that the projects can incentivize the people to stay in it for the long run and instead of just creating a buzz and then they bleed out over time which is simply due to bad tokenomics and bad utility of the token" **Interview 1**	
C14	**Long term incentive - Fair allocation**	"So yeah, the token allocation first of all. So, how much does the team hold, how much do investors hold, how much is public and private sale. This plays an important role in here." **Interview 1**	Include coding units that elaborate on the importance of a fair distribution and allocation of tokens to ensure fairness and the satisfaction of participants and token holders
		"Also, if you get the feeling that the team owns a too large amount of tokens themselves, that always rises critics. And of course, in the end of the day, you feel kind of rugged. So, it has to be fair." **Interview 1**	
		"But it is about having a fair launch and a fair allocation is the most important aspect for a successful project in the long run." **Interview 1**	
		"Because the early adopters, they normally hold a lot of tokens. (…)I mean, they could literally just sell everything at one part." **Interview 2**	

Figure 13: Citation table 2 of 2