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Less trust, more truth: Implications and design choices for business models and platform ecosystems in the age of Web3

Kilian Schmück [a,*], Magnus Schückes [b], Tobias Gutmann [c], Oliver Gassmann [a]

[a] Institute of Technology Management, University of St. Gallen, Dufourstrasse 40a, 9000 St. Gallen, Switzerland
[b] Institute for SME Research and Entrepreneurship, University of Mannheim, 68131 Mannheim, Germany
[c] EBS University of Business and Law, Gustav-Stresemann-Ring 3, 65189 Wiesbaden, Germany

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ABSTRACT

Business model literature, while insightful, primarily focuses on the Internet and Web 2.0 contexts. The emergence of pioneering digital technologies, especially the Web3 anchored by blockchain, necessitates reevaluating business model paradigms, particularly those of platform business models within related ecosystems. This study delves into blockchain's unique affordances, investigating how they mold novel Web3 business model patterns and integrate into specific platform ecosystems. We scrutinize the characteristics, trajectories, and synergies of value creation and capture. Using a mixed-methods approach involving 171 interviews and a subsequent sample of 126 Web3 ventures, we delineate a taxonomy of Web3 business model dimensions, clustering emergent decentralized platform ecosystems into pertinent archetypes. Our theoretical model delineates how blockchain affordances influence these configurations, emphasizing the dynamic between a platform's nucleus and its fringes. We highlight Web3 platform design choices leaning towards data sovereignty, emphasizing how the degree of blockchain integration within platform governance—leading to information symmetry and platform disintermediation—transitions digital trust to what we term as *digital truth*.

1. Introduction

Over two decades since Amit and Zott's (2001) foundational exploration of value creation in e-businesses centered around Web 2.0 or Web2, we seek to uncover the evolving characteristics of business models influenced by blockchain technologies within the context of Web3. We understand business models as interconnected, boundary-crossing activity structures that a company leverages to generate, disseminate, and accrue value catered to a specific consumer segment (Gassmann et al., 2014; Zott et al., 2011). The potency of such models in offering firms a competitive edge, especially in technology adoption scenarios, cannot be overstated (Chesbrough, 2010). The synergy between business models and information technology is striking, as evidenced both by the increase in scholarly articles in management domains (Ancillai et al., 2023; Baden-Fuller and Haefliger, 2013; Chesbrough and Rosenbloom, 2002; Foss and Saebi, 2017) and by the rise of companies capitalizing on information technologies for platform ecosystems (Cusumano et al., 2019; Parker et al., 2016). However, empirical examinations elucidating the repercussions of emergent digital innovations, like blockchain technology, on business models beyond traditional internet conventions are notably scarce (Nambisan et al., 2017; Steininger, 2019).

We understand blockchain technology as a foundational protocol that facilitates direct and unmediated digital transactions, spanning both informational and ownership domains. When set into networks and underpinned by pronounced network effects, it ushers in a Web3 platform ecosystem orientation. Intriguingly, through its distributed architecture and execution, blockchain technologies are characterized by distinctive features and affordances—defined as the action opportunities offered by an object in relation to a user (Autio et al., 2018; Zammuto et al., 2007)—from anonymized traceability and transparent transactions to inclusive consensus models, the facilitation of smart contracts, culminating in the emergence of decentralized applications (DApps) and decentralized autonomous organizations (DAOs). These capabilities present a marked departure from the intrinsic features of the Web2-era. Whereas the traditional internet has streamlined digital, unmediated, and automated information exchanges (Zott et al., 2011), blockchain technology and the Web3 paradigm amplify these functions to allow digital, direct, and automated transfers of ownership (Böhme et al., 2015). Crucially, in the Web2 model, business transactions always

* Corresponding author.
E-mail address: kilian@schmueck.ch (K. Schmück).

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necessitate a legal entity to assume responsibility and oversight, functioning as an institutional guarantor, especially since ownership transactions align with the accounting mechanisms of the business model operator. This entity serves a dual role, not only for accounting purposes but also as a bearer of liability and as a trusted intermediary in the system. Blockchain's unique affordances forge new avenues for data-level oversight, governance, and orchestration in the digital realm (Vergne, 2020), crucial for platform-based business models that have revolutionized inter and intra-organizational engagements, underpinning many of today's trailblazing companies (Amit and Han, 2017; Casadesus-Masanell and Zhu, 2013; Parker et al., 2016). While blockchain technology presents an opportunity to reshape established industry norms and enrich our comprehension of platform-centric business models and overarching business model designs (Autio et al., 2018; Nambisan et al., 2019), the extant literature has largely skirted the implications of these technologies on platform literature and business model design. Although initial research has begun to address these gaps by examining blockchain's impact on decentralized infrastructures and the reconfiguration of two-sided platforms (Pereira et al., 2019; Trabucchi et al., 2020), there remains a dearth of empirical studies that explore how such emergent digital innovations fundamentally alter the interplay between platform ecosystems and business model mechanisms. Further research is needed to investigate how blockchain technology disrupts conventional platform strategies and introduces novel pathways for value creation and capture within business models that go beyond traditional internet-based paradigms.

To bridge this gap, our research probes: "*How do blockchain affordances impact the characteristic features of digital business models and their configuration of associated platform ecosystems?*"

Building on a mixed-method study in which we identify Web3 business model dimensions and corresponding business model archetypes through a total of 171 interviews and a survey including 126 ventures, we construct a theoretical model of how restricting or loosening blockchain affordances influences business models with platform business models in particular, platform ecosystems and the interplay between a platform's core and its periphery. More specifically, we find that the integration of blockchain in platform ecosystems leads to increased transaction transparency and information symmetry, thereby impacting or even replacing the digital trust in a platform sponsor with *digital truth* inherent in the technology. We present two distinct types and design choices of platform ecosystems with associated business model archetypes. These types differ in their degree of blockchain integration (including whether they incorporate tokens) and thus in the extent to which they incorporate *digital truth*, with implications for value creation, value capture, and platform control. When fully integrated, *digital truth* can allow for self-sustaining platform ecosystems where aforementioned concepts are wrapped and incentivized by blockchain-native tokens, establishing new kinds of token and platform economics.

Building on the foundational contributions of Trabucchi et al. (2020) and Pereira et al. (2019), our research extends the discourse on platform ecosystems by developing a nuanced understanding of how varying degrees of blockchain integration influence platform business models and governance structures. We examine the multifaceted impact of blockchain affordances on value creation and capture mechanisms within platform ecosystems. We emphasize how these affordances transform traditional platform dynamics, enabling new archetypes that operate with greater transparency and reduced dependency on centralized control. Our study introduces a classification framework that maps the transition from centralized to decentralized governance models, elucidating how these shifts influence coordination and control within platform ecosystems. In doing so, we contribute to the literature by showcasing how digital technological affordances shape business model innovation (Autio et al., 2018), facilitating the emergence of self-sustaining ecosystems governed through DAOs and token-based economies. Our findings offer critical insights into the strategic implications of adopting decentralized design choices, addressing key challenges that practitioners face in aligning blockchain's technological potential with sustainable business models. By integrating these insights, we provide a comprehensive blueprint for leveraging blockchain technologies to create resilient, adaptive platform ecosystems that balance governance, transparency, and economic viability.[3]

This manuscript is structured to first acquaint readers with foundational literature on business models, segueing into an exposition on blockchain technology and Web3. Subsequent sections delve into our methodological blueprint, leading up to a culminating discussion that encapsulates our key discoveries.

2. Literature review

2.1. Platform business models and platform ecosystems

Triggered by the advent of the internet and information technologies, the concept of business models has received considerable attention in the literature (Massa et al., 2017; Zott et al., 2011). Information technologies have enabled not just new ways of doing business but the ability to transform industries (Amit and Zott, 2001; Chesbrough and Rosenbloom, 2002). The Web2 is evidence that technological innovations and business models are fundamentally interconnected as the economic value of technology only materializes through an appropriate business model (Chesbrough and Rosenbloom, 2002; Lehoux et al., 2014; Teece, 2010). By acting as a market device and mediator, the business model needs to be aligned with the value network in order to leverage technology successfully (Björkdahl, 2009). Business model design hence "determines the nature of complementarity between business models and technology and the paths to monetization" (Baden-Fuller and Haefliger, 2013, p. 422).

Due to their economic advantages, it is not surprising that digital markets and platform business models—enabled by information technology and the Web2—have become the center in many of today's business environments (Cusumano et al., 2019). These platforms channel information and facilitate transactions across distinct groups, thereby fostering business ecosystems and webs of interdependencies to emerge and pursue joint value propositions (Adner, 2017; Lingens et al., 2020; Shipilov and Gawer, 2020), but at the same time leading to complex relationships among platform ecosystems that orchestrate associated business models and organizational structures (Cennamo, 2019; Constantinides et al., 2018).

Of significant importance for digital and platform business models and their value creation is the associated platform architecture and ecosystem, typically consisting of a stable core (i.e., the platform itself) and a dynamic periphery (i.e., an organically growing ecosystem based on the platform) (Baldwin and Woodard, 2009; Baldwin and Clark, 2000). Platform ecosystems create economic structures and dependencies between formerly independent organizations and business models (Adner, 2017; Kretschmer et al., 2020).

In line with this, Trabucchi and Buganza (2022) identify the evolution of hybrid multi-sided platforms, highlighting the shift from traditional, centralized platform governance to more flexible, collaborative structures that facilitate co-creation and adaptation. Their study emphasizes how hybrid platforms leverage both centralized and decentralized elements to accommodate diverse stakeholder needs and increase platform resilience. This evolutionary perspective complements our theoretical exploration of blockchain-enabled ecosystems, where the integration of decentralized and hybrid governance structures fosters enhanced adaptability and the emergence of new, dynamic configurations within platform architectures.

[1] This article builds upon research previously presented in the doctoral thesis of one of the authors, where foundational concepts in the context of DLT affordances and decentralized platform ecosystems have been explored (Schmück, 2022).

A significant body of literature on platform ecosystems views platforms not just as technical infrastructures but as complex socio-technical systems where various actors interact to co-create value (Granstrand and Holgersson, 2020; Jacobides et al., 2018). The central actor in platform ecosystems is often referred to as the platform provider, owner, or sponsor, which sets the ecosystem's overall objectives and governance structures (Iansiti and Levien, 2004; Williamson and De Meyer, 2012). These key entities are responsible for designing the platform's architecture and maintaining the infrastructure that facilitates transactions between ecosystem participants. Once the basic platform structure is established, various actors, including complementors and users, join the platform to create and capture value (Ceccagnoli et al., 2012; Huang et al., 2013).

Complementors play a vital role in these ecosystems by offering complementary products and services, contributing to the platform's value proposition (Boudreau, 2012). The value of a platform is enhanced by the volume and variety of offerings from complementors, which can drive innovation and network effects (Boudreau, 2010; Eckhardt et al., 2018). However, the relationship between platform providers and complementors can be complex, as governance structures often impose constraints on complementors to ensure the platform's overall objectives are met (Gawer and Cusumano, 2002). Platform providers must carefully manage these relationships to balance complementor autonomy with the platform's need for governance, which can sometimes stifle innovation (Huang et al., 2022; Hurni et al., 2021).

In addition to traditional stakeholders, recent research introduces the concept of platform enhancers. These actors support platforms in their early stages by solving the "chicken-and-egg" problem, where the platform needs to attract multiple user groups simultaneously (Trabucchi et al., 2023a). Platform enhancers eventually transition into roles as complementors or new stakeholder types, playing a critical role in the initial and ongoing development of the platform ecosystem.

The value of a platform increases as its user base expands, driven by network effects or positive externalities (Eisenmann et al., 2006; Evans, 2003). Direct network effects occur when the value rises with more users from the same side (Katz and Shapiro, 1985), while indirect effects enhance value for users on the opposite side (Boudreau and Jeppesen, 2015). For instance, more developers attract more end-users, creating a reinforcing cycle. This dynamic often leads to a "winner-takes-all" scenario, where a dominant platform captures the majority market share (Eisenmann et al., 2006). However, as platforms grow, they may also introduce negative externalities like lock-in effects, reducing competition and leading to monopolistic structures that hinder market efficiency and innovation (Cutolo et al., 2021; Gawer, 2020; Zhu and Iansiti, 2012).

Transparency and trust are foundational to the functioning of platform ecosystems, particularly in how they influence user participation and engagement. Research shows that greater transparency in business models can enhance trust among platform participants, leading to increased service adoption (Betzing et al., 2019; Trabucchi et al., 2023b). Transparency mechanisms help reduce information asymmetry between platform providers and users, enabling more informed decision-making, especially regarding privacy and data sharing (Betzing et al., 2019). Furthermore, platforms that prioritize transparency in their governance structures often see higher user retention and trust (Hein et al., 2020).

The governance of platforms can be centralized or decentralized, with each model offering different advantages and challenges. Decentralized governance, often associated with blockchain-based platforms, allows for more distributed decision-making authority and reduces the control exerted by a single platform provider (Chen et al., 2020). Decentralized governance structures can foster greater trust by giving participants more control over platform rules and processes. However, balancing centralized control with decentralized governance is essential for maintaining platform efficiency while fostering inclusivity and trust among participants (Di Tullio and Staples, 2013).

2.2. Blockchain technology & Web3

Blockchain technologies constitute a novel digital infrastructure that underpins the development of the Web3. Blockchain technology enables a new form of technology-inherent digital trust—what we refer to as *digital truth*—through decentralized and transparent monitoring of transactions, automated contracts, and sophisticated consensus mechanisms allowing for disintermediated transfer of digital ownership (Buterin, 2014; Natarajan et al., 2017; Wood, 2014). At their core, blockchain protocols comprise a distributed network operation for the architecture of databases in which consensus about the state of the database can be reached in permissioned (require permission to join and participate) as well as permissionless (require no permission to join and interact) settings (Nakamoto, 2008). While we abstain from delving into the granular technicalities of blockchain technology, we will highlight its distinctive affordances that reshape the interplay between actors, objects, and entities, thereby characterizing the essence of Web3:

1. *Decentralization and data sovereignty.* Web3 mandates a decentralized consensus, which implies that participating actors in the system agree on a single description of a global state of the data set (Wood, 2016). Web3 networks, therefore, need to incentivize responsible and rigorous data entry among a community of actors and simultaneously ensure that the majority of actors agree on a single state. This is usually enacted through carefully designed consensus mechanisms such as Proof-of-Work (PoW) and Proof-of-Stake (PoS) (Biais et al., 2019). This allows for facilitating transactions through a decentralized peer-to-peer network, where data control and sovereignty are anchored with the data or resident.
2. *Automation and transactional transparency.* The advent of the Web3 network *Ethereum* paved the way for smart contracts. These are programs that automatically execute a digital contract once its object of agreement occurs (Buterin, 2014). Smart contracts allow automated execution of transactions within preemptively defined and immutable terms and conditions. A smart contract automates the transfer of digital ownership based on the state of the distributed ledger (Wood, 2014), allowing self-enforcing execution and creating transactional transparency while bypassing human actors as a source of unpredictability.
3. *Network alignment and tokenization.* Tokens and cryptocurrencies are inherent in public permissionless Web3 applications and are typically used as an incentive mechanism for facilitating rigorous data entry (Narayanan et al., 2016). Tokenization refers to the implementation of digital proxies that represent a previously amorphous unit of natural capital and essentially disciplines actors in the Web3 network to operate properly. Moreover, Web3-native tokens serve for aligning the network, either through incentivizing the consensus finding of the distributed network (Nakamoto, 2008) and/or as a voting tool when implemented as inherent functionality of the Web3 network (Wood, 2016).
4. *Disintermediation and information symmetry.* As transactions are recorded on a distributed ledger, all states of transactions are visible to all actors (dependent on the blockchain technology and its Web3 network settings) and immutable at all times, which also reduces the involvement of centralized institutions (Nakamoto, 2008), thereby ensuring that a network cannot be monopolized. Control is shared among independent actors, resulting in data sovereignty and a decrease of dependencies (Gu and Zhu, 2021; Iansiti and Lakhani, 2017). Since transactions can be viewed and verified by all actors, information symmetry is established throughout the network, allowing for novel openness mechanisms (Cong and He, 2019), where each participant and third party can capture value and create innovation.

In sum, whereas before actors had to place digital trust in the platform intermediary, blockchain affordances allow that trust to be transformed into a repository of *digital truth*—the technology essentially ensuring the old Russian proverb made famous by Reagan and Gorbachev at the end of the Cold War: *"Doveryai, no proveryai"* ("trust, but verify").

The implications stemming from these affordances are far-reaching and have significant consequences for economic and organizational theory (Lumineau et al., 2020). Schückes and Gutmann (2020) find evidence that the design of a venture's organizational arrangements often reflects the extent to which the underlying blockchain technology is integrated. Given the unique consequences of adopting blockchain technologies and their Web3 implementation, underpinning the set of digital technologies with novel business and operating models promises considerable payoffs, making them increasingly relevant across different streams of the literature and stimulating new ways of thinking about how to create value (George et al., 2020; Nambisan, 2017). This makes the development of new theorizing around a digital technology perspective on business models pressing (Nambisan et al., 2019), especially considering the heavy reliance of the current literature on the incongruent affordances of the internet.

And indeed, blockchain technology has emerged more recently within the context of platform literature, with scholars exploring its potential to transform traditional platform models. As their affordances suggest, blockchain-based platforms enable decentralized governance and distributed data infrastructure, which contrasts sharply with centralized platforms where platform sponsors control the core components and data (Pereira et al., 2019). Blockchain allows for the disintermediation of transactions, eliminating the need for a central authority or intermediary to authenticate and facilitate exchanges (Catalini and Gans, 2020). This disintermediation has significant implications for reducing transaction costs, mitigating risks related to data breaches, and enhancing transparency through immutable ledgers that are publicly accessible across the network (Davidson et al., 2018). In comparison, traditional platforms centralize governance, granting platform sponsors significant control over access, interactions, and value capture processes within the ecosystem (Jacobides et al., 2018).

One relevant dimension of blockchain-based platforms is their ability to shift the role of platform sponsors from central orchestrators to facilitators of decentralized networks. For instance, blockchain protocols such as Ethereum enable smart contracts, allowing for self-executing agreements that automatically trigger transactions when predefined conditions are met (Buterin, 2014). This automation reduces reliance on a central authority to oversee and validate transactions, fostering trust through technology rather than institutional reputation (Pereira et al., 2019). As blockchain-based platforms operate without centralized control, they might alter traditional power dynamics by distributing control to the broader community of platform participants. This shift is interesting as it creates novel incentives for community participation through tokenization mechanisms, which reward users for contributing to the validation and security of the platform (Trabucchi et al., 2020). In this regard, Trabucchi et al. (2020) argue that blockchain reshapes two-sided platforms by enhancing trust and addressing long-standing issues like the "chicken-and-egg" problem, where a platform must attract two

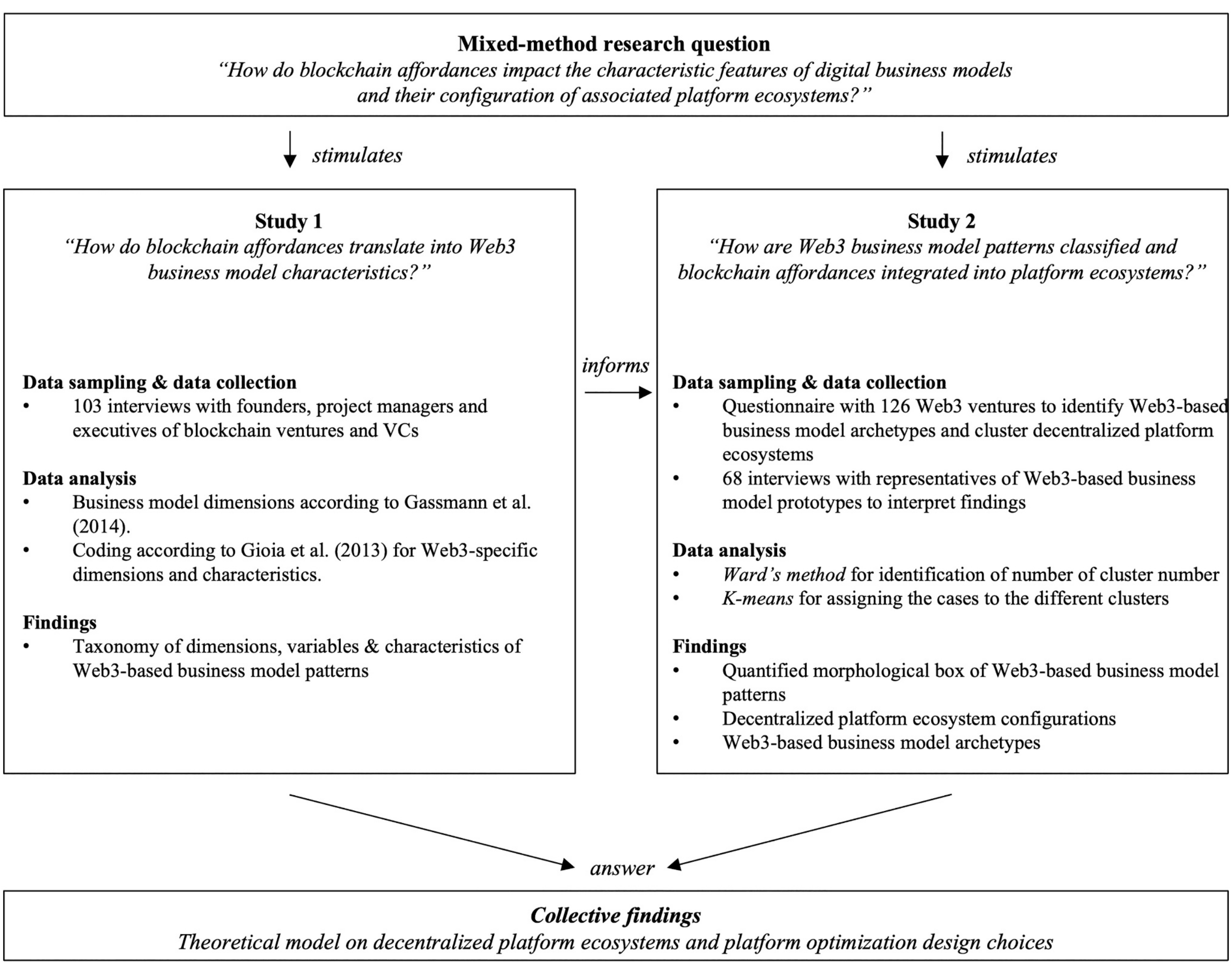

Fig. 1. Research design.

distinct groups simultaneously. As platforms become more decentralized, the traditional role of platform sponsors evolves into a service provider role, where they leverage blockchain infrastructure to facilitate interactions between users without controlling the core processes (Trabucchi et al., 2020).

3. Mixed-methods research design

To address our primary research question, "*how do blockchain affordances impact the characteristic features of web3 business models and their configuration of associated platform ecosystems?,*" we employed a sequential mixed-method research method as outlined by Creswell and Plano Clark (2017), depicted in Fig. 1. In line with our research design's intricacies, this overarching question is further dissected into two focused sub-questions.

In Study 1, we employed a qualitative research methodology to discern the salient dimensions, variables, and characteristics of Web3 business models. A total of 103 semi-structured interviews were conducted, encompassing executives and founders of Web3 ventures, as well as high-ranking officials and project managers from corporations and venture capital firms actively engaging with or leveraging blockchain innovations. Adopting the systematic analytical framework posited by Gioia et al. (2013), we inductively identified the fundamental dimensions of Web3 business models, discerning their variables and distinct characteristics, all in pursuit of addressing the specific research inquiry: *"How do blockchain affordances translate into Web3 business model characteristics?"*

In our subsequent Study 2, we transitioned to a quantitative methodology to validate the dimensions and characteristics elicited from Study 1. We administered a questionnaire to executives from 126 Web3 ventures, culminating in a structured compilation of Web3 business model patterns. Using this data, we consequently performed a cluster analysis using unsupervised machine learning algorithms to distinguish between types (Ketchen and Shook, 1996; Punj and Stewart, 1983; Short et al., 2008). We applied *Ward's method* and *k-means* consecutively and in tandem to authenticate the cluster count and categorize the 126 cases (see Block et al., 2015; Ketchen and Shook, 1996). These derived clusters crystallized as Web3 business model archetypes.

To provide depth to our findings, particularly four emergent archetypes, that showed a strong tendency towards platform ecosystem designs, we undertook 68 additional semi-structured interviews with representatives of firms exemplifying these archetypes. Through a comparative analytical lens, we delineated both theoretical insights and practical implications. Consequently, Study 2 is steered by our secondary research inquiry: *"How are Web3 business model patterns classified and blockchain affordances integrated into platform ecosystems?"*

4. Study 1: Web3 business model characteristics

4.1. Study 1: data sampling and data collection

We used theoretical sampling to identify a diverse set of Web3 ventures, which include start-ups, corporate spin-offs, joint ventures, and non-profit ventures (Yin, 2003). These ventures (1) had to be presently operating and offering services in the field of blockchain; (2) were clearly identified as an independent and separate organizational unit; (3) disclosed sufficient information in order to evaluate our sampling criteria and contact them (e.g., firms operating in 'stealth mode' were not taken into consideration). Using these criteria, we leveraged both crunchbase.com and industry-specific databases such as ICObench.com, which are increasingly used in Web3-related entrepreneurship studies (Bellavitis et al., 2020; Cumming et al., 2019; Momtaz, 2020), as starting points to identify relevant ventures. We further reached out to a multitude of European corporations that are particularly involved in digital technologies and data-based business models.

We relied on exploratory semi-structured interviews as our primary data source, through which we were able to reap the benefits of acquiring an emic understanding of the business models and their components from the interviewees themselves (Kvale and Brinkmann, 2009). Following Gassmann et al. (2014), we structured the interviews around the common conceptualization of a business model consisting of a customer relationship model, a value proposition, mechanisms for value creation, and mechanisms for value capture. The interview guide was therefore able to generate a common language for describing business models while remaining flexible, especially with regard to focusing on blockchain-induced components of the business model. The guide was initially tested with four pilot interviews and continuously adapted reflecting emerging themes and insights.

Between December 2017 and March 2018, we conducted a total of 103 interviews with founders, executives, and project managers of Web3-dealing ventures as well as experts such as consultants and venture capital investors active in the field. The interviews ranged from 15 to 121 min and took an average of 39 min. Upon completion, most interviews were transcribed within twenty-four hours, resulting in 1633 pages of double-spaced text. To reduce the risk of interviewer bias and to maximize replication logic, we established a common research orientation and research protocol.

4.2. Study 1: data analysis

We analyzed our qualitative data according to the methods by Gioia et al. (2013), thereby building on established procedures for inductive research aimed at theory building (Glaser and Strauss, 2017). To ensure intercoder reliability and guard against individual biases, the data were coded by three researchers individually and the codes were subsequently compared to settle on a final interpretation (Lofland and Lofland, 1971). Overall, we iterated between the developing model and the data until we achieved a viable set of first-order codes, second-order themes, and aggregated dimensions. We stopped when we reached theoretical saturation (Glaser and Strauss, 2017). For the sake of clarity, we present our analysis in three sequential steps that are captured in our data structure shown in Fig. 2.

Step 1: Initial data coding. To delineate, denominate, and evolve theoretical concepts, we embarked on pinpointing primary codes through "open coding" (Corbin and Strauss, 2014), dissecting the components of business model dimensions (Gassmann et al., 2014). Each researcher segmented the data autonomously, subsequently converging to align and refine our categorizations. In alignment with Corley and Gioia (2004), individual data segments—comprising coherent, research-focused statements (Weber, 1990)—were designated and systematically classified into exhaustive primary codes. These codes crystallize into the Web3 business model characteristics unearthed in Study 1 (Gioia et al., 2013).

Step 2: Second-order themes. Progressing from these initial codes, our objective was to perceive overarching patterns by amalgamating fragmented data. Transitioning from open to axial coding (Corbin and Strauss, 2014), relationships among primary codes facilitated the distillation of secondary themes. These themes form the backbone of the business model variables presented in Study 1 (Gioia et al., 2013).

Step 3: Theory induction through aggregation. Furthering the abstraction level, we amalgamated the secondary themes (Gioia et al., 2013), culminating in the synthesis of the foundational components of Web3 business models for Study 1. Our emphasis was on the novelties induced by Web3, leading to the identification of nine principal aggregated dimensions framing business model configurations. These consolidated dimensions, along with secondary themes and primary concepts, underpin our taxonomy's structure, highlighting the cardinal facets of a business model: (1) target customer, (2) value proposition, (3) value creation, and (4) value capture.

During this process, we spent considerable time both discussing and interpreting the data. We also discussed our emerging data structure with colleagues from academia who were not involved in the study with

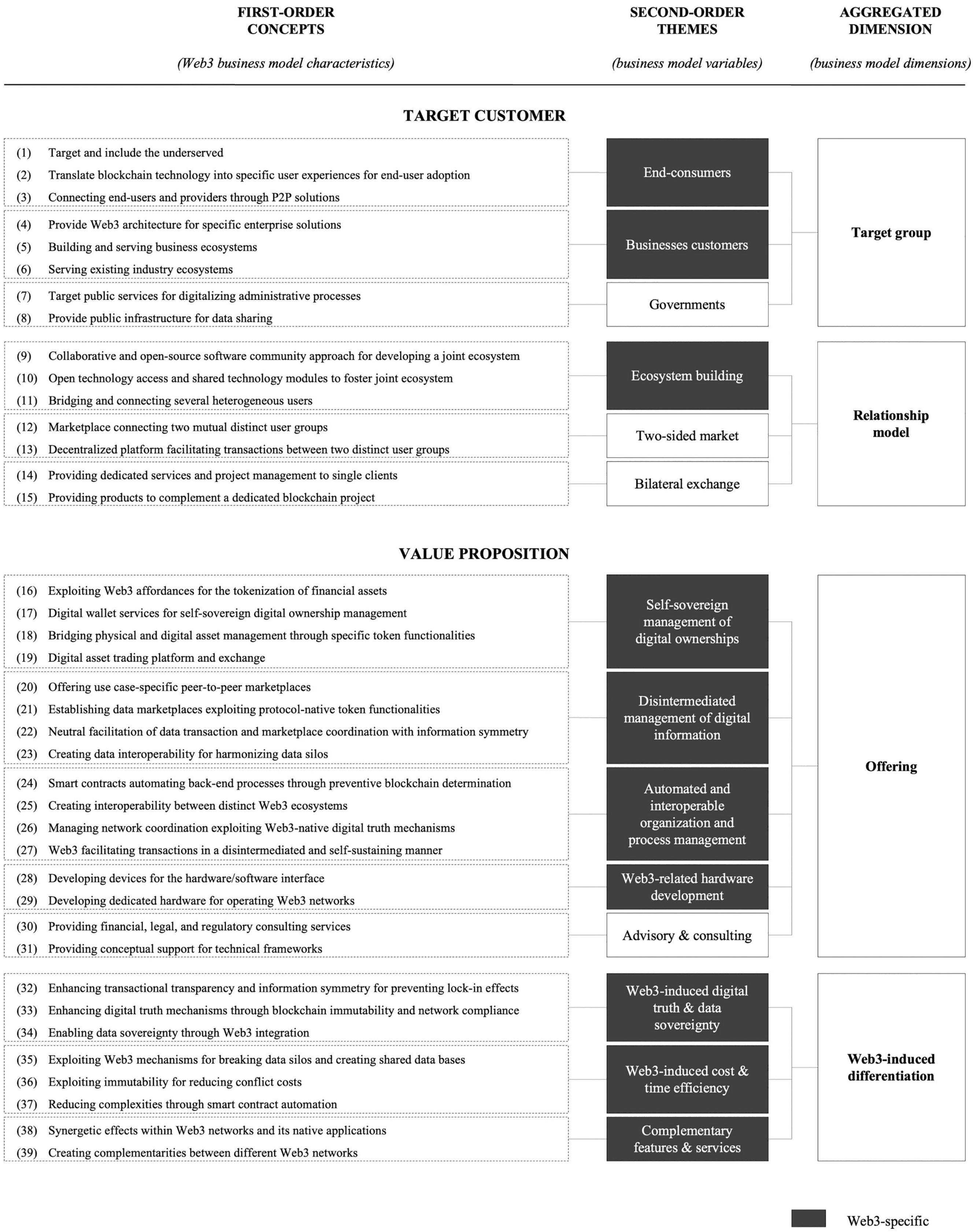

Fig. 2. Data structure – aggregate dimensions, variables, and characteristics of Web3 business models.
Data structure – aggregate dimensions, variables, and characteristics of Web3 business models.

FIRST-ORDER CONCEPTS (Web3 business model characteristics)	SECOND-ORDER THEMES (business model variables)	AGGREGATED DIMENSION (business model dimensions)
VALUE CREATION		
(40) Venturing team with a specific industry background (41) Spin-off or project from incumbent with deep industry expertise	Specific industry knowledge	**Knowledge allocation**
(42) Venturing team with a dedicated Web3 expertise (43) Venture is based on a scientific Web3 research (44) Venturing organization is exploiting previously conducted Web3 R&D	Sophisticated Web3 expertise	**Knowledge allocation**
(45) Venture is leveraging its network into the Web3 and start-up community (46) Venture is leveraging its access to specific industry networks	Business network	**Knowledge allocation**
(47) Directly building on top of prevailing blockchain protocols (48) Building on top of prevailing blockchain protocols but adapting features to own needs (49) Forking an existing blockchain protocols for own needs	Leveraging prevailing Web3 developments	**Web3 development**
(50) In-house development to initiate open-source blockchain protocols (51) Open-source co-creation for curating prevailing blockchain protocols (52) Open-source co-development of complementary Web3 modules	Contributing to blockchain or module developments	**Web3 development**
(53) Providing services without using a technological layer (54) Developing hardware for blockchain deployment	No Web3 developments	**Web3 development**
(55) Token enables and realizes coordination and governance of decentralized networks (56) Token model and consensus mechanisms provide network and incentive alignment (57) Token integration and distribution creates network robustness	Token has inherent network functionality	**Token integration**
(58) Token integration is omitted due to existing regulatory and jurisdictional restrictions (59) Token integration is omitted due to insurmountable business model and corporate culture tensions (60) Token integration is omitted due to data control and data protection concerns	Business requirements lead to token omission	**Token integration**
VALUE CAPTURE		
(61) Token sale kickstarts Web3 development & fosters community adoption (62) Token is adopted into future business model (63) Token adoption is influencing token valuation thereby incentivizing Web3 curation	Token distribution	**Adoption mechanism**
(64) Community is highly engaged in OSS developments and adoption through token incentives (65) Reputation within the Web3 community is immutable tracked and creates legitimacy	Community engagement & legitimacy	**Adoption mechanism**
(66) Using social media marketing channels (67) Create digital buzz through online advertisements	Online marketing	**Adoption mechanism**
(68) Partner with renowned institutions and corporations to launch Web3 initiative (69) Leverage own reputation and network to foster business model adoption	Leveraging reputation	**Adoption mechanism**
(70) Client recommendations increase business model adoption (71) Engaging in high-visibility projects to obtain organic referrals	Referrals	**Adoption mechanism**
(72) Charge a commission fee for usage of module or application (73) Transaction fee is leveraged for compensating blockchain validators and operators	Commission/Transaction fees	**Revenue generation**
(74) Charging fees for dedicated hardware usage (75) Charging fees for software unit usage	Pay-per-use	**Revenue generation**
(76) Charging cyclical subscription fees for membership (77) Charging technology licensing fees for proprietary Web3 services or modules	Subscription model	**Revenue generation**
(78) Charging one-off payments and project-based remuneration	One-off payments	**Revenue generation**
(79) Asking user base for donations and voluntary payments to keep Web3 service alive (80) Attracting developer and contributors to volunteer in Web3 ventures (81) Receiving government or foundation grants	Donations	**Revenue generation**

Web3-specific (dark-shaded themes): Sophisticated Web3 expertise; Leveraging prevailing Web3 developments; Contributing to blockchain or module developments; Token has inherent network functionality; Token distribution; Commission/Transaction fees.

Fig. 2. (*continued*).

the aim of ensuring the reliability of the coding (Guba and Lincoln, 1994).

4.3. Study 1: findings

In this section, we present our analysis of our findings from study 1. Our analysis reveals a multi-layered taxonomy (Fig. 2) which includes idiosyncratic characteristics of Web3 business models structured along the main variables and dimensions relevant for the description of a firm's business model. We present the taxonomy (including its different dimensions, variables, and corresponding characteristics) by moving from the holistic business model configuration to its constitutive elements. For the sake of brevity, we focus on particularly noteworthy technological and Web3-enabled aspects and their interplay.

4.3.1. Target customer: addressing manifold and heterogeneous users through P2P marketplaces

Ventures with Web3 business models largely target "underserved" end-consumers that have not yet had access to basic commodities or are not satisfied by current product or service standards and penetrate a "forgotten" or unpopular segment of the market. These firms leverage peer-to-peer (P2P) platform solutions and focus on a user base that was previously considered unappealing to incumbent firms, thereby filling an institutional void in their industry. Web3 business models also enable some ventures to reap the benefits of particular Web3 components governing cross-business-ecosystems, such as establishing *digital truth* through immutable traceability and transactional transparency across industries and organizations:

> *"People have lost trust in the food supply chain due to transparency gaps and data silos within the ecosystem. (…) Many of the food incumbents are very aware of this shift and want to find technologies that solve that problem through interoperability across data silos in a sustainable way."*
>
> (CEO, Case 6)

Thus, end-consumers (B2C) are included in the value chain by solving B2B data sharing obstacles; thereby fostering B2B2C or peer-to-peer approaches through the transparency induced by the blockchain technologies. A significant portion of these ventures leverage Web3 features to create two-sided markets or ecosystem models through which they facilitate exchange and transactions by eliminating the *"trust problem for true sharing"* (CEO, Web3 mobility venture). Accordingly, business-to-business (B2B) firms are largely focused on designing and providing a Web3 infrastructure that lays the groundwork for enterprise solutions and unifying ecosystems that at their core bind multiple heterogeneous stakeholder groups. A plethora of firms provide third parties access to their technological layers and extend joint Web3 platforms through complementary modules, thereby profiting from a multiplicity and complexity of interactions. As one respondent explained,

> *"We build protocol-level solutions that allow others to easily plug their system into [our product] and leverage our infrastructure. By making use of the augmented information layer, we envision that attaching data to individual transactions or public key identities would finally become easy. We want to enable developers to use our blockchain by creating new applications on top of our architecture."*
>
> (CEO, Case 45)

This open-source software development and open innovation approach is accompanied by a community model featuring core and third-party developers who work on or leverage a horizontal technological layer with generic use cases.

4.3.2. Value proposition: providing novel offerings in asset management and advancing data management

Web3 ventures' value propositions focus extensively on Web3-induced functionalities and features such as combining data sovereignty and transactional transparency with tokenization. Firms focusing on self-sovereign management of digital ownership deploy the Web3-inherent affordance of digital ownership transfer across the platform network to provide ownership-specific offerings without mediating intermediaries or platform companies. These offerings leverage creating liquidity through tokenization of financial assets or establishing digital asset trading and exchange platforms:

> *"Our marketplace aims to advance the tokenization of real estate. In this way, it will become possible for everyone to invest in shares of real estate even with smaller amounts. From a holistic market perspective, this creates much more liquidity and efficiency in the real estate sector."*
>
> (CEO, Case 7)

The distinguishing feature of Web3-based asset management is said to lie in Web3-induced cost and time efficiencies as a result of establishing digital marketplaces for orchestrating digital asset ownership—using the blockchain affordances for automated and fine-grained tracking, accounting, and bundling of micro-transactions.

By comparison, disintermediated management of digital information differs in its focus on exploiting blockchain affordances in the handling and orchestrating of data. Blockchain technologies can disintermediate the internet's ability to transfer information, automating platform functionalities for data transfer while ensuring *digital truth* and providing information symmetry across platform ecosystems. Consequently, Web3 foster the creation of use case-specific peer-to-peer marketplaces based on data sovereignty that interviewees often described as "neutral platform(s)" (CEO, Web3 travel venture) that facilitate transactions and governance in ecosystems:

> *"Our value proposition is really a platform for building social trust, empowering people to offer an economical service that's accepted or not accepted peer-to-peer in a trustworthy and accountable way."*
>
> (CEO, Case 7)

Since data management is based on transactional transparency and consistent data interoperability, employing Web3 allows these business models to break down data silos while harmonizing heterogeneous and distinct data sources.

Automated and interoperable organization and process management offerings correspond primarily to platform operation and the network layer of platform ecosystems, where Web3-inherent features are leveraged, and the platform transactions are effectively executed. For example, platform transaction automation is established by providing smart contracts that are automatically executed in a decentralized fashion according to the fulfillment of preventively defined conditions:

> *"[A smart contract] operates in a fully transparent and known formula and executes automatically as soon as the necessary conditions are met. With our platform, this happens each time someone wants to buy a token. The smart contracts that we have developed then issue these accordingly."*
>
> (CEO, Case 9)

The open and explicitly formalized boundaries and conditions under which transactions occur without an orchestrated curation are based on *digital truth*. As a result of data complementarity, common consensus mechanisms, and mutually compatible design of Web3 modules through open source software development approaches, data and asset handling is said to be processed more efficiently since redundancies are disincentivized through the Web3 business model:

> *"A major driver for Polkadot is the belief that instead of there being a single blockchain, there will be different technologies for different purposes. However, both permissioned and permissionless ledgers should be able to coexist somehow under the same roof. Among those, communication and transaction in trustless environments have to be carried out without the necessity of an intermediary. It is about interoperability and shared finalization mechanisms."*
>
> (CCO, Case 75)

4.3.3. Value creation: implementing a token model for self-sustaining platform coordination or technology adoption

Enabled by blockchain affordances, multiple business models leverage a Web3-native token in order to create self-sustaining coordination mechanisms within their ecosystems. These tokens are further supposed to incentivize the usage and the promotion of joint, neutral, and Web3 platform ecosystems, thereby kickstarting community and network effects through their adoption: *"For some kinds of networks you really need that coin. There is no other option. How will you start a decentralized business without the ICO?"* (CEO, Web3 infrastructure venture). Community involvement and spreading the word are perceived as two sides of the same coin in which ventures are expected to constantly interact with the development community. The community in turn is contributing value creation through an open source software development approach, which is crucial in order create trust into the technology:

> *"The reason for selecting the open source software approach and why it is so attached to blockchain technology is the ability to put more trust in a piece of open source software than in a piece of proprietary software."*
>
> (Director, Case 57)

For these models, tokens serve as a novel and required incentive mechanism undergirding such approaches, where *"the tokens are very powerful in creating and setting incentives, especially when network effects have to be fostered—at the value creation as well as the value capture side"* (Director, non-profit open source software consortium). In such cases, a token serves as a multi-purpose instrument that can entail a financial, technical, or governing function beyond the business model, allowing for network and incentive alignment across stakeholders as well as robustness. But in other instances, where stakeholders simultaneously operate and leverage an associated core business model through the shared platform ecosystem, the additional incentive of a token is omitted by business models:

"And other types of networks do not necessarily need that [token] incentive, because those incentives exist already in other ways, where network effects have already been established" (Director, non-profit open source software consortium). Regulatory and jurisdictional reasons or tensions with the corporate culture and the incumbent business models were also frequently named for omitting a token within Web3 networks as the following respondent outlines:

> *"Is the token considered a digital asset? Or a currency? Or a utility? How do we need to treat the token in fiscal terms? How can we manage token utilization from a corporate perspective without compromising our compliance and reputation? Of course, all these matters can be resolved if required and desired in the organization. But it is currently not requested to reconcile this with the current business models and the derived requirements of our operational businesses."*
>
> (Manager Finance, Case 82)

4.3.4. Value capture: realizing value through efficient transaction fees and balanced ecosystem incentives

Except for firms that are leveraging bilateral relationships, most Web3 business models capture value through commission or transaction fees as a continuous revenue generation mechanism: *"Our blockchain collects small fees like most other online platforms. This is done automatically by the blockchain. So, we make money by taking a percentage of the value transferred by the users"* (CEO, Web3 gaming venture). Since the integration of Web3 into platform ecosystems reduces lock-in effects for single entities and promotes data portability, the transaction fees tend to reflect efficient market prices that align with the cost of self-sustainability, that are often *"relatively negligible compared to traditional platforms"* (CEO, Web3 fintech venture). The token can play a crucial role by serving as the sole value capture mechanism while transaction costs are shared across the entire value-creating ecosystem:

> *"All partners have joint performance-based revenue-sharing models that we have aligned and mutually committed to whenever we consider the shared infrastructure."*
>
> (CDO, Case 78)

5. Study 2: Web3 business model archetypes

5.1. Study 2: data sampling and data collection

Building upon study 1, the second step of our mixed-method research design aimed at validating our initial data structure by developing a morphological box of Web3 business model configurations as well as identifying respective archetypes. To generate the morphological box, we sampled Web3 ventures by leveraging the crunchbase.com database. We identified the 1000 highest ranked ventures using the keywords "blockchain", "distributed ledger technologies" and "Web3" respectively. We filtered out ventures which we considered to be insufficiently related to distributed ledger technologies or for which we could not find sufficient secondary information, and then used the same three selection criteria as employed in study 1. The resulting sample represented ventures from various industries, market segments, and regions. We sent a survey consisting of multiple choice questions based on our data structure to each of the remaining 558 ventures aimed at identifying configurations of business models. We received 126 completed responses representing a response rate of 23 %, which is above a typically reported response rate for surveys that are mailed to executives (e.g. Hannen et al., 2019; Patel et al., 2013).

Our sample has a global distribution with a concentration in Europe (57.89 %), North America (25.44 %), and Asia (11.40 %). 15.79 % of the ventures in our sample are located in Switzerland, possibly due to favorable regulation. The ventures in the sample received an average funding amount of $65 m, with the funding types ranging among ICOs, grants, seed money, series A-C, and corporate rounds. 95 % of the ventures operate for-profit. The high average funding amount for ventures was partly driven by extreme outliers and can further be explained by the recent ICO hype (cp. Fisch, 2019).

As a control mechanism, we tested for response bias by conducting a *t*-test in which we compared respondents to nonrespondents. Because of the nature of ventures in our sample, we designated the total funding amount as a predictor. We extracted funding statistics from the crunchbase.com database. This comparison revealed that the total funding amount did not emerge as a significant predictor ($t = 1.681$, $df = 71$, p-value $= 0.097$) of inclusion in our final sample (coded "1" for respondent), indicating that ventures included in our sample are unlikely to differ systematically from ventures that did not respond.

In Fig. 3 we present this morphological box of Web3 business model patterns. The structure is based on the business model dimensions, variables, and Web3-specific characteristics from study 1 and is supplemented by the corresponding quantified information gleaned through the questionnaire.

5.2. Study 2: data analysis

We conducted a cluster analysis to determine distinct Web3 business model archetypes. Clustering is a widely used method in the information systems literature (Bapna et al., 2004; Guo et al., 2017; Kohli and Melville, 2019; Malhotra et al., 2005). One of the challenges lies in identifying cases with similar organizational configurations that display individual and mutually multidimensional characteristics (Meyer et al., 1993; D. Miller and Mintzberg, 1983). Organizational configurations, typologies (Miles et al., 1978), taxonomies (Meyer et al., 1993), or archetypes (Danny Miller and Friesen, 1978) can be researched based on generic information about data on an aggregated level of individual observations (Aggarwal and Zhai, 2012). The goal of such an analysis is to identify clusters that exhibit a high degree of heterogeneity between

Business model dimensions	Sub-dimensions	Business model variables					
Target customer	*Target group*	End-consumers (28.70%)	Businesses customers (53.36%)	Governments (17.94%)			
	Relationship model	Ecosystem building (60.32%)	Two-sided market (18.25%)	Bilateral exchange (21.43%)			
Value proposition	*Offering*	Self-sovereign mgmt. of digital ownerships (27.40%)	Disintermediated management of digital information (35.10%)	Automated and interoperable org. & process mgmt. (23.08%)	Web3-related hardware development (1.92%)	Advisory & consulting (12.50%)	
	Web3-*induced differentiation*	Web3-induced digital truth & data sovereignty (26.36%)	Web3-induced cost & time efficiency (37.21%)	Complementary features & services (36.43%)			
Value creation	*Knowledge allocation*	Specific industry knowledge (48.07%)	Sophisticated Web3 expertise (37.57%)	Business network (14.36%)			
	Web3 *development*	Leveraging prevailing Web3 developments (64.57%)	Contributing to blockchain or module developments (27.56%)	No Web3 developments (7.87%)			
	Token integration	Token has inherent network functionality (52.38%)	Business requirements lead to token omission (47.62%)				
Value capture	*Adoption mechanism*	Token distribution (23.24%)	Community engagement & legitimacy (27.83%)	Online marketing (24.77%)	Leveraging reputation (19.88%)	Referrals (4.28%)	
	Revenue generation	Commission/ Transaction fees (40.20%)	Pay-per-use (18.09%)	Subscription model (21.61%)	One-off payments (12.56%)	Donations (5.03%)	Not yet decided (2.51%)

n = 126

Fig. 3. Web3 business model patterns: a morphological box.

clusters and at the same time a high degree of homogeneity within the cluster (Ketchen and Shook, 1996).

Ketchen and Shook (1996) recommend a two-step cluster analysis approach combining hierarchical and non-hierarchical methods. The former serves to determine the number of clusters, while the latter is subsequently employed to assign the cases to the identified clusters. We employed two machine learning algorithms. We first used *Ward's method* (Leask and Parker, 2007), a widely accepted and frequently applied hierarchical algorithm of agglomerative clustering that produces clusters of roughly equal size. Effective identification of the number of clusters is achieved by visualization using a dendrogram (Fig. 4). Two clusters with a Euclidean distance of 13.10 were identified. Among each

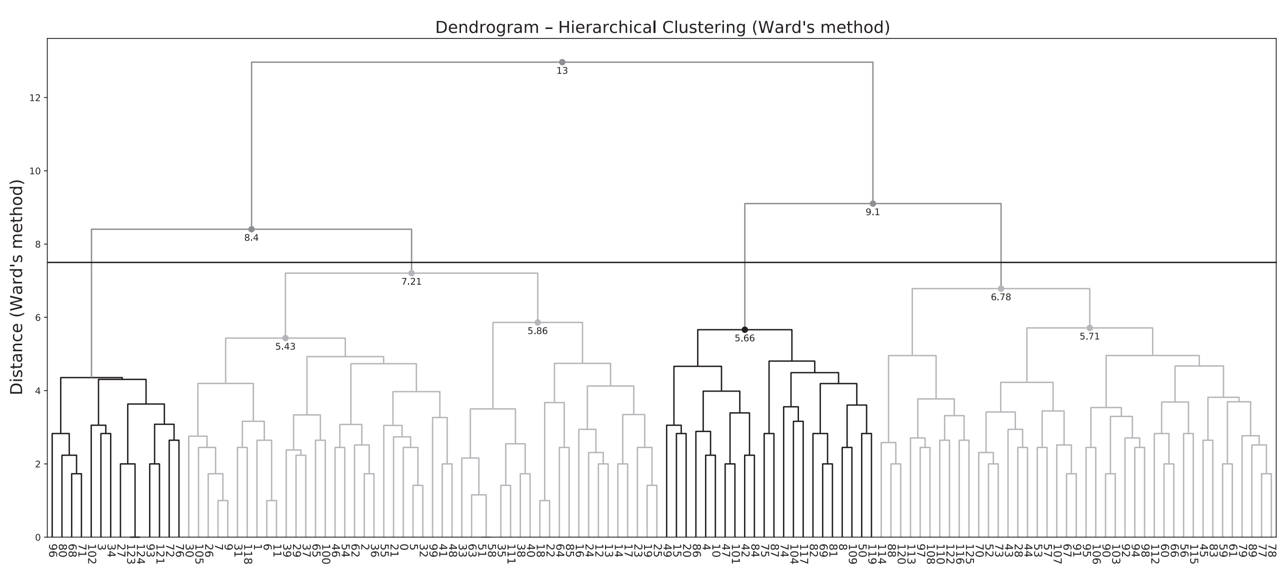

Fig. 4. Dendrogram – Ward's method.

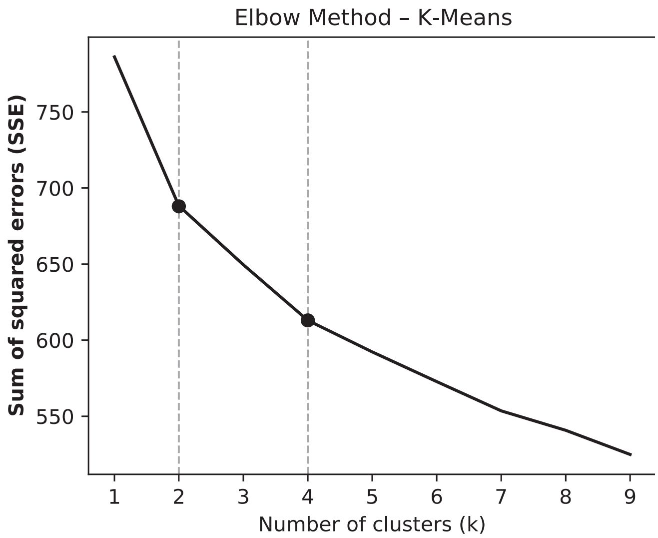

Fig. 5. Elbow method – K-means.

of those classes, two further clusters were found with Euclidean distances of 8.40 and 9.27.

We subsequently used *k-means* as a non-hierarchical clustering algorithm (Fig. 5). The *k-means* algorithm partitions the data set accordingly and allocates the data among the clusters (Goodfellow et al., 2016). Any potential influence of outliers is compensated through the iterative character of *k-means* (Ketchen and Shook, 1996). Using *k-means*, we first assigned our data set to the first two clusters to draw a first overall classification $(k = 2)$. Subsequent clustering into four clusters $(k = 4)$ still reveals a relatively large heterogeneity between the clusters with sufficient homogeneity within the clusters. The assigned cases for each cluster reflect a concentration profile in the morphological box, while the individual cases represent prototypes that collectively define the archetype.

To help interpreting the identified archetypes, we conducted additional 68 interviews with representatives (e.g., founders, executives) of prototypical ventures between November 2018 and February 2021. In contrast to the qualitative data collection from study 1, we took a deep dive on the prototypes' respective business models in these interviews, not only trying to understand the single business model components but their interrelations with each other, allowing us to identify two decentralized platform ecosystems with two archetypes within each. The interviews ranged from 29 to 79 min and lasted an average of 49 min, resulting in an additional 1362 pages of double-spaced text.

5.3. Study 2: findings

Through the cluster analysis, we identified four archetypes that are grouped within two clusters. Within the first cluster, which we call *Federated Platform Ecosystems*, we found two archetypes: *Platform Consortium* and *Web3 as a Service*. From the second cluster we identified, which we call *Web3 Platform Ecosystems*, we identified two archetypes: *Web3 Ecosystems* and *Decentralized Applications (DApps)*. In what follows, we elaborate on each archetype to further describe the decisive business model characteristics of each.

5.3.1. Cluster 1: Federated Platform Ecosystems

The *Federated Platform Ecosystem* class comprises two archetypes: (1) *Platform Consortium* and (2) *Web3 as a Service*. A jointly shared digital marketplace, network layer and governance model are at the core of the *Platform Consortium*, which is shaped and operated mostly by incumbents of an existing market and initiated either by a single orchestrator or by a consortium initiative. In this archetype, the **blockchain affordances** are deployed in service of the prevailing business models of the market incumbents through private Web3 networks. The cluster is **characterized** by a demand-pull initiation (referring to an adjustment of technology affordances to market conditions). A Web3-native token is omitted due to regulatory hurdles, insurmountable business model tensions, or a desire to keep control rights over the platform ecosystem. Nor are tokens required to incentivize participation; adoption occurs instead by leveraging the existing reputation of the market incumbents of the *Platform Consortium*. The *Web3 as a Service* archetype is designed to support the required open source technology frameworks (such as a blockchain protocols) on which the platform ecosystem is based. By jointly maintaining the *Federated Platform Ecosystem* through a coopetition approach, negative platform externalities such as monopolistic market structures are avoided while benefiting from the positive externalities of a digital marketplace to leverage the existing non-platform business models.

5.3.2. Archetype 1: Platform Consortium

The *Platform Consortium* represents a business ecosystem that jointly builds and operates a platform ecosystem to address through a shared digital marketplace a joint value proposition that serves a specific customer or market need. It draws on the brand reputation of incumbent firms (demand pull). The Web3 network provides transparency and data sovereignty among the business ecosystem partners and within the platform ecosystem to avoid information asymmetry. To achieve this goal, it builds on an existing technological infrastructure that does not integrate a Web3-native token.

> *"We are a listed company with a shareholder structure with governance requirements that we must meet. Thus, a token integration may not infringe the interests of our shareholders in a legal sense. This sometimes restricts us from leveraging technology potentials."*
>
> (Head of Department, Case 84)

The *Platform Consortium* deliberately employs private-permissioned Web3 networks, as they allow limited, selected, and controlled network access, thereby reflecting the business model logic and corporate culture of the incumbents. This allows the network to operate with consensus mechanisms that are pragmatically limited to the core incumbents, which positively impacts transaction performance.

The *Platform Consortium* is initiated and built either by an authorized orchestrator, in the form of a consortium, or by both. In all such cases, a separate legal entity manages the control mechanisms for the platform ecosystem. Revenue generation is achieved through transaction fees; however, often these serve largely to just cover the operating costs. The *Platform Consortium*'s goal is to strengthen the core business of the participants by benefiting from a platform ecosystem, but without suffering from information asymmetry in favor of a platform sponsor:

> *"We have a common unifying goal consisting of two streams, where the technology is needed as an infrastructure for that purpose: First, as a defensive element against the threat of single corporate-managed identity systems and the gang of hyperscalers—centralized and monopolistic platform ecosystems that impose a negative long-term lock-in for us. Second, as an offensive element with innovation opportunities, especially for the asset-driven industries and Europe: decentralized data and identity management resolve the current hurdles of several industries to share data, thus, boosting innovation. These two streams are the motivation to build the network and the consortium together: to use the common, decentralized, and democratic platform for each partner's existing business models and to enable innovation."*
>
> (Director, Case 16)

5.3.3. Archetype 2: Web3 as a Service

The second and related archetype within the *Federated Platform Ecosystem* is *Web3 as a Service*. This archetype complements the *Platform*

Consortium archetype by providing the necessary Web3 expertise and customized Web3 infrastructure and architecture through open source technology frameworks.

> *"IBM wanted its blockchain module Fabric to be widely adopted, and thus housed it as a code in a nonprofit organization—the Hyperledger Foundation—where it is provided with some legitimacy and where enterprises have a certain level of comfort with it."*
>
> (Director, Case 55)

Subsequently, conceptual consulting, services, and infrastructural development are offered through open source business models by the prototypes of this archetype, and in return they receive a service fee.

> *"If Hyperledger Fabric becomes then the new standard for how you run a private-permissioned blockchain network, and enterprises are looking for support in setting up those networks, IBM would be a compelling choice to go to: They can legitimately say, 'We created Fabric in the beginning, we are Fabric experts, we know more about Fabric than anyone else: Come to us, and we will help you.' Open source business models are about trying to establish something that is widely adopted in the standard, and you are subsequently going to benefit from it."*
>
> (Director, Case 55)

5.3.4. Cluster 2: Web3 Platform Ecosystems

The *Web3 Platform Ecosystem* class comprises two archetypes: A (3) *Web3 Ecosystem* and manifold (4) *DApps*. As with the *Federated Platform Ecosystem*, the core of this class is a governance model and the network layer, but this time aligned and designed to depend on a native open source software innovation platform that exploits **blockchain affordances** to their fullest extent—with access and decision-rights to all participants through a public Web3 network. The platform ecosystem is **characterized** by a technology-push initiation with on-chain governance models being implemented, marking full decentralization in platform ownership and control rights. The Web3-native tokens wrap different core functionalities and serve as a coordination and incentivization instrument within and across the platform ecosystem while allowing for self-sustaining platform governance. The token value subsequently fosters a token adoption and generates network effects.

DApps address end-consumer and business needs with technologically harmonized and standardized transaction platforms connected to the *Web3 Ecosystem*, which together create the *Web3 Platform Ecosystem*. While the stakeholders of the *Web3 Ecosystem* primarily focus on inhouse Web3 developments for contributing to blockchain protocols or modules in an open source software manner, *DApp* providers leverages these developments. Driven by technological affordances in data sovereignty, interoperability, and transparency, thus creating information symmetry, *digital truth* is being established throughout the whole platform ecosystem.

5.3.5. Archetype 3: Web3 Ecosystem

The core of the *Web3 Ecosystem* is a public, permissionless blockchain protocol such as *Bitcoin*, *Ethereum*, *Tezos*, or *Polkadot*, which serves—-when implemented subsequently to a permissionless Web3 network—as a focal and common platform core. They are initiated through a Web3-native token sale or ICO, which serves as a crowdfunded financing vehicle to fund an independent entity, typically a dedicated non-profit foundation. This entity subsequently organizes the initial governance model as well as the launch of the associated blockchain protocol. With the distribution of the Web3-native token to the network, the maintenance, development, and coordination function of the entity becomes distributed to the network, allowing third parties to connect and enabling their core competencies to be made available for the common good. A consensus-aligned blockchain protocol leads to greater network adoption with an accompanying greater token demand, which increases the value of the token. The token subsequently serves as a voting and incentivization mechanism within the emerging platform ecosystem. The governance model of the blockchain protocol addresses the network's coordination of development strategies and sets the boundaries, while the Web3-native token and its value provide the incentive as well as the means for implementing the governance throughout the network.

> *"The future will bring summated, decentralized, autonomous networks, which belong to no individual authority, decentralized governed and developed; and these open, very liquid, dynamic ecosystems will then organically grow. However, by holding tokens, shares of the generated value can individually be captured, profiting from the future value, from the value impressions, and thus the value gain of these tokens."*
>
> (CCO, Case 75)

The Web3-inherent on-chain governance model (sometimes accompanied by off-chain governing mechanisms) is then the basis for self-governing the network, where third parties can openly connect their business models, thus forming a decentralized, publicly available, and self-regulating *Web3 Ecosystem*. Governance models vary considerably depending on their application extent: the *Bitcoin* protocol permits only financial transactions relying on limited governance adaption potentials, whereas *Ethereum* was created to enable industrial applications through smart contracts, requiring for a broader governance adaption. In order to reduce the risk of network forking, others like *Polkadot* and *Tezos* include sophisticated on-chain governance mechanisms that also combine economic and quasi-parliamentary aspects in network voting using the Web3-native token as voting tool.

> *"With Polkadot, you need to create a proposal, add some code that enables this upgrade, put it in on the governance platform on Polkadot, and see if people vote for that with their coins in time. It's transparent. You can see what's going on; you can see the direction of the network—where it's going—before it's even making those upgrades."*
>
> (Board Member, Case 1)

5.3.6. Archetype 4: Decentralized Applications (DApps)

The *Web3 Ecosystem* serves as the basis and infrastructure for various *DApps* that grow on top of it and fulfill specific end-customer needs. These *DApps* must be interoperably linked to its related *Web3 Ecosystem*, as it inclusively addresses end-consumers and businesses largely through value proposition-specific two-sided markets, thereby establishing transaction platforms while simultaneously executing the required transactions on the infrastructure of its *Web3 Ecosystem*.

However, this means that *DApps* cannot profit from collected data as it belongs to the data originator; they only profit from a countable and associated service creation. The revenue models of *DApps* are implicated by the fact that transactions are transparent and accessible to all parties, preventing information asymmetry in favor of a single party. Like traditional transaction platforms, transaction fees are still charged; however, due to the non-existent lock-in effects caused by information symmetry, these fees are significantly lower and are thought to better reflect efficient market prices. From a business model perspective, this means that value capture is highly linked to value creation without the interference of market power or platform monopolies.

> *"We address real ride-sharing, peer-to-peer without a central entity. So, there are no credit card fees, and there are no centralized policies. Our DApp aims to reinvent the sharing economy by combining the power of blockchain technology, open source development, platform 'cooperativism', and a decentralized 'swarm' organizational model open to everyone."*
>
> (COO, Case 7)

In some cases, when a *DApp* is conceptualized as a DAO, it also issues a *DApp*-native token through a token generation event (TGE). This allows also for the crowdfunding mechanisms to incentivize the initial developments, with the token subsequently serving as the governing element of the DAO.

6. Collective findings and theoretical model

Based on our findings from study 1 and 2, we derive a theoretical model which captures blockchain affordances and their implications on platform ecosystems and associated business models as well as their inherent characteristics by illustrating the relations and interdependencies between distinct actors (Fig. 6).

In study 1, we identified Web3-induced business model dimensions that are directly tied and derived from its technology affordances. Web3 provides data sovereignty for the effective data owner or resident and can create information symmetry through transactional transparency for all network participants. As a result, Web3 business models create value offerings enabled by inherent technological characteristics. While these characteristics can create a more pronounced effect for value propositions of ventures, Web3 can also offer opportunities for value creation and value capture.

While the focus of this study was on Web3 business models, we also observe implications for platform ecosystems, which we identified via a cluster analysis in study 2.

In *Federated Platform Ecosystems* (cluster 1), blockchain affordances are constrained to the use of private Web3 networks by core incumbents for the purpose of steering its orientation towards fostering the associated business models. Decentralized governance of the platform ecosystem is enacted indirectly by personal coordination through a consortium-controlled legal entity. These platform ecosystems are typically formed by a demand-pull initiation by incumbents of existing

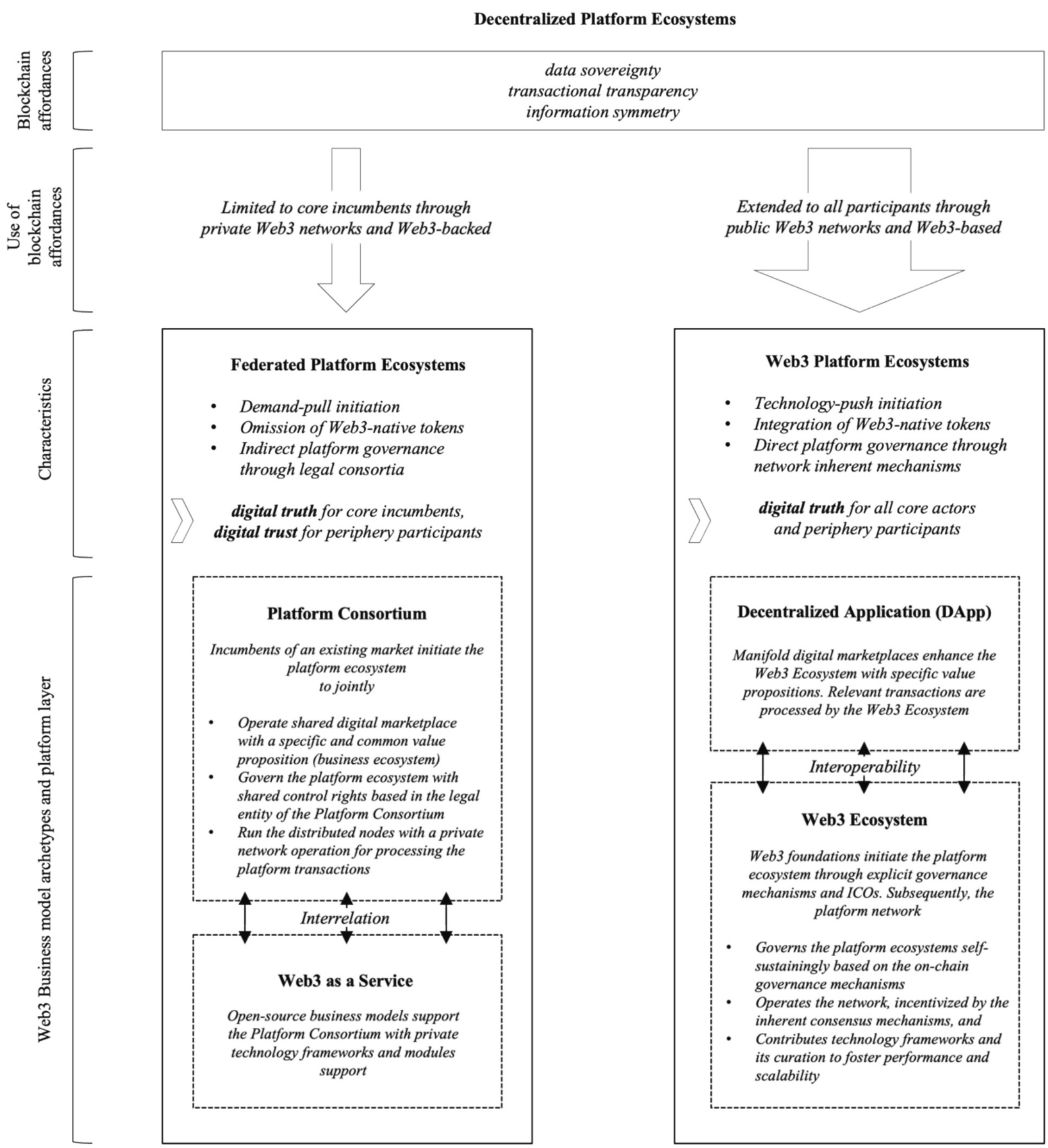

Fig. 6. Theoretical model of blockchain affordances and implications on Web3-integrating platform ecosystems.

markets and industries, whose goal is to jointly exploit the advantages of platform ecosystems and positive externalities, creating digital marketplaces for their prevailing platform-independent or complementary core business models. The incumbents attempt to free themselves from prevailing centralized platform ecosystems and overcome corresponding negative platform externalities (such as lock-in effects) that pose a threat to existing business models. Web3-native tokens are omitted due to regulatory reasons as well as the requirements of the incumbent's business models. The incumbents' prevailing reputation provides the required digital trust to the platform periphery for an effective platform operation, while ensuring *digital truth* for the core incumbents. Hence, the *Platform Consortium* (archetype 1) is located at the application, the governance, and the network layer. However, its initiation is supported by *Web3 as a Service* (archetype 2) providers that generate the underlying infrastructure, consisting of a required, customized, and private Web3 networks. Dependent on the technical demands, the required functionalities are assembled utilizing complementary software modules. The business model of the *Web3 as a Service* comprises conceptual and technical development and advisory activities on the value creation side and is hence strongly interrelated to the eventual *Platform Consortium*.

In contrast, we refer to *Web3 Platform Ecosystems* (cluster 2) when blockchain affordances are integrated to their fullest extent into platform ecosystems through public Web3 networks, resulting in business models that are driven by new ventures and have a disruptive character. In this case, the disintermediated platform ecosystem is self-regulating and requires democratic platform governance anchored directly in the Web3 network (on-chain). With *Web3 Platform Ecosystems* there is a public network that every participant can access, write, and read given the governance model. Enabled through the crowdfunding of the token sale, sustainable and long-term oriented development activities are incentivized, allowing *Web3 Platform Ecosystems* to originate from a technology-push initiation. Thus, the token provides a coordination and incentivization functionality within the platform ecosystem—for value creation as well as value capture mechanisms and especially for open source contributions. The blockchain affordances are exploited consistently and technology-inherently across the entire network, thus providing full transparency, information symmetry and establishing *digital truth* across the ecosystem. Due to the full use of blockchain affordances, negative externalities are entirely and sustainably eliminated in *Web3 Platform Ecosystems* at a data level. Technologically interoperable *DApps* (archetype 4) couple with the *Web3 Ecosystem* (archetype 3) and provide an end-customer specific value proposition with dedicated digital marketplaces while exploiting the technological functionalities of the *Web3 Ecosystem*. Accordingly, *DApps* similarly exploit positive platform externalities, such as transparency and reduced transaction costs while averting lock-in effects. However, this also leads to more competition, which drives the amount of commission fees towards an efficient market price.

In both cases, blockchain affordances are being used to democratize platform ecosystems. In doing so, two distinct approaches are employed. The extent of blockchain affordances (including Web3-native tokens) divides decentralized platform ecosystems into two "idealistic" camps, which not only assign different business models, but also different meanings, functions, and implications to the technology. On the one hand, *Federated Platform Ecosystems* leverage only parts of blockchain affordances for a democratized coordination within the business ecosystem to strengthen its associated business models—and are Web3-backed. Coordination and incentivization are achieved through analog and conventional means within the consortium. On the other hand, *Web3 Platform Ecosystems* fully leverage blockchain affordances and encapsulate the Web3-native token as the essential and central vehicle to accomplish the digital and public ecosystem coordination and incentivization—and are Web3-based. However, both approaches incorporate digital marketplaces aiming for positive platform externalities and blockchain affordances are utilized in both cases for dissolving negative externalities as well as for aligning the platform ecosystem governance towards democratized configurations. As Gavin Wood, former CTO of the *Ethereum Foundation,* and founder of *Polkadot*, stated 2017 during a *Parity Technologies* coding retreat:

> *"We have this great new technology that is allowing us to automate one of the sorts of very fundamental aspects of an economy, which is trust."*
> (Gavin Wood, Web3 Foundation)

Hence, blockchain affordances transform the kind of trust the platform economy relies on into *digital truth*, with fundamental implications for value creation and value capture within platform ecosystems along with disintermediation effects.

Fig. 7 represents the optimization and design choices provided by Web3 for platform ecosystems in contrast to prevailing centralized platform ecosystems enabled by the internet and the Web2. By facilitating the transfer of information, centralized platform ecosystems leverage monopolistic market structures to create cost efficiencies across the platform ecosystem. The transfer of ownership is controlled by the platform ecosystem's platform sponsor, which in turn generates the desired cost efficiencies when orchestrating transactions. Digital trust in the platform ecosystem is hence a precondition.

Web3 platform ecosystems in contrast, accept economic disadvantages to optimize for data sovereignty. Both the transfer of information and the transfer of ownership are processed decentrally by employing blockchain affordances, thereby establishing *digital truth* across the entire network. Due to the high degree of decentralization dictated by a sophisticated and democratized platform governance, disintermediation is achieved, leading to increased coordination efforts within the ecosystem. The Web3-backed *Federated Platform Ecosystems* attempt to balance both cost efficiency and data sovereignty. *Digital truth* is established within the operating consortium, whereas digital trust must be present for external parties to execute transactions effectively.

7. Discussion

Our manuscript makes significant contributions to the literature on platform business models, platform ecosystems, and the evolving landscape of Web3.

7.1. Theoretical contributions

Building on the work by Trabucchi et al. (2020), which explores how blockchain technology reshapes traditional two-sided platforms, we extend their findings by providing an in-depth classification of Web3 platform models based on varying degrees of blockchain integration. The authors highlight the transformational role of blockchain in enabling new types of cross-side network externalities and enhancing trust. Our research builds on this by illustrating how blockchain affordances, such as tokenization and decentralized consensus mechanisms, enable distinct value creation and capture mechanisms, leading to the emergence of new platform governance structures and role distributions among participants. While Trabucchi et al. (2020) primarily emphasize the role change of platform sponsors transitioning from orchestrators to service providers, we delve deeper into how this transition can result in novel platform dynamics and entirely new business model archetypes. We provide a theoretical framework that demonstrates how these new dynamics influence platform governance, leading to varying levels of decentralization and empowering community-driven decision-making processes through mechanisms like DAOs.

In this regard, our study also extends to the work of Pereira et al. (2019), who analyze blockchain-based platforms through the lens of decentralized infrastructures and their boundary conditions. The authors identify three key boundary dimensions—transaction costs, technology costs, and community involvement—that influence the adoption of blockchain platforms. Our research provides empirical evidence to their framework by offering a more granular view of how these

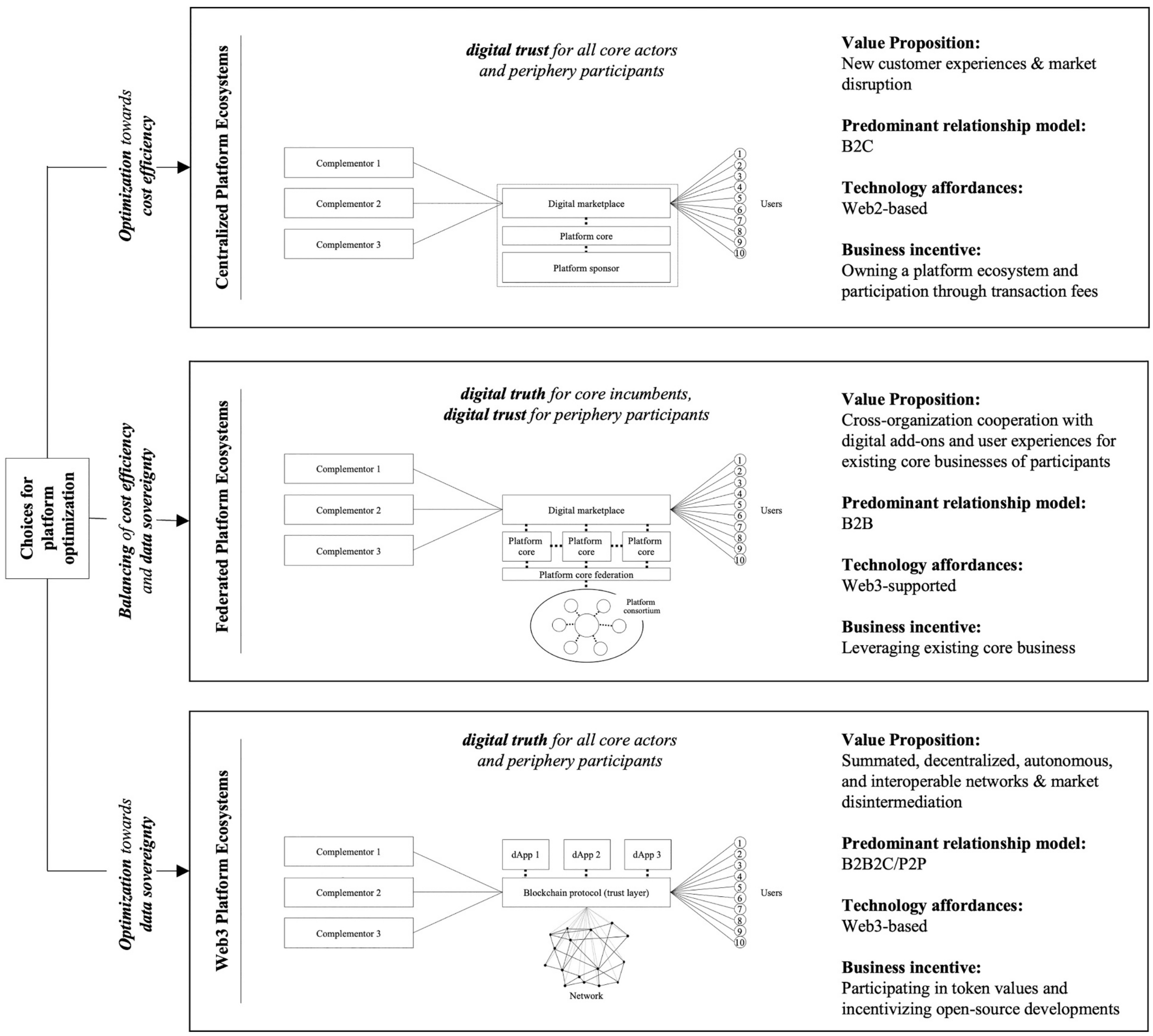

Fig. 7. Platform optimization design choices.

boundary conditions evolve with different configurations of blockchain integration.

Our manuscript extends the understanding of platform ecosystems by analyzing the interplay between emerging digital technologies, such as blockchain, and platform governance structures. We contribute to Gastaldi et al. (2024) by highlighting how evolving relationships between platform sponsors and complementors, as observed in decentralized platform ecosystems, diverge from traditional power dynamics within digital platforms. Specifically, we demonstrate how complementors' roles can evolve from mutualistic to commensalistic, depending on the degree of blockchain integration and governance decentralization. This transition is facilitated using blockchain-native tokens, which alter the conventional balance of control and influence among ecosystem participants, providing empirical evidence to support theoretical models of evolving complementor dynamics.

Furthermore, our research complements the findings of Trabucchi et al. (2023a) by examining how platform enhancers contribute to the early development phases of decentralized platforms, supporting the growth of network effects and overcoming the initial challenges of establishing liquidity. Our empirical analysis illustrates the shifting nature of platform enhancers and their long-term impact on platform growth and governance stability.

We also provide insights related to transparency in Web3-based ecosystems, as discussed in Trabucchi et al. (2023b) and Betzing et al. (2019), by empirically examining how varying levels of transparency in smart contract design and token governance affect user trust and adoption in decentralized settings, establishing *digital truth*. This nuanced view of transparency and its influence on ecosystem dynamics enriches the discourse on trust mechanisms in digital platforms as posited by Hein et al. (2020).

Moreover, our research makes a novel contribution to the literature on platform business models by analyzing how Web3-native tokens facilitate the emergence of decentralized and open-source platforms, fundamentally altering the mechanisms of value creation and value capture. We emphasize the role of tokenization in aligning incentives between stakeholders and enhancing community participation, thereby extending the discussion initiated by Cong et al. (2020) on tokenized economies. This extension is crucial for understanding the dual role of tokens as both governance tools and value distribution mechanisms, which can foster community-led innovation and platform sustainability without the need for central oversight (Lian and Van Ryzin, 2021). By examining how tokenization affects business models and governance structures, our findings reveal that tokens can redefine the nature of value flows in platform ecosystems, creating new pathways for innovation and growth that are not achievable within traditional centralized platform settings.

Finally, our study addresses the need for a stronger emphasis on digital technology affordances in business model innovation, as articulated by Autio et al. (2018). We demonstrate how blockchain-enabled features, such as data sovereignty, transactional transparency, and information symmetry, contribute to what we define as technology-inherent *digital truth*. This *digital truth* allows for disintermediated execution of platform functionalities, significantly reducing information asymmetry and dependency on intermediaries (Gu and Zhu, 2021; Iansiti and Lakhani, 2017). These affordances not only reshape value creation dynamics but also introduce new constraints and opportunities for organizations operating within decentralized platform ecosystems. Our findings advocate for an increased focus on the interplay between technology and governance, urging scholars and practitioners to consider how technology-driven governance can unlock new potential for business models and ecosystem design.

7.2. Managerial implications

Our research also provides interesting insights for practitioners.

While B2C platforms are often characterized by high-volume, low-value transactions, B2B platforms exhibit the opposite pattern with low-volume, high-value interactions. These contrasting dynamics imply fundamentally different requirements for the orchestration and design of platform ecosystems. The behavior and expectations of stakeholders also differ markedly. While end-consumers may not scrutinize Terms and Conditions in detail, business customers typically conduct thorough reviews of these documents through their legal departments before deciding to participate in a platform ecosystem. Moreover, B2B stakeholders often perceive a higher risk that direct market competitors could leverage a digital platform to achieve monopolistic control, thereby disrupting the physical market. This hesitancy to join digital platforms has led to the emergence of siloed, low-liquidity platforms in the B2B context. However, through decentralized design choices, managers could co-create platforms in a way that ensures liquidity and monopolistic market structure, while simultaneously democratizing access to the platform and its correlation to stakeholders' core business models. This, in turn, helps overcome the traditional hurdles of B2B platform participation.

Managers must also be prepared to adjust their business model expectations when engaging with decentralized platforms. Traditional platform business models that rely on significant revenue generation through transaction fees (sometimes as high as 30 %) and network effects cannot be easily replicated in decentralized settings due to the lack of strong strategic control points for individual firms. Thus, managers need to recalibrate their expectations, recognizing that decentralized platforms are unlikely to yield disproportionately high profits. Instead, decentralized platforms enable fair pricing dynamics based on market principles, leading to typical profit margins. The primary objective in such ecosystems is to use the platform as a defensive mechanism to protect existing, predominantly non-digital business models from new entrants. This is particularly relevant for Federated Platform Ecosystems that do not possess a native token. In such scenarios, decentralized platforms are typically built to complement an already profitable business model outside the platform, serving as a digital extension rather than the primary business model.

Business models that aim to operate independently on a decentralized platform and generate profits without relying on an external, complementary business model must incorporate a native token. This token must hold value for a broad range of stakeholders—whether as an investment vehicle, a governance tool, or a utility token. The presence of a native token is essential for establishing a sustainable and autonomous business model based on Web3 principles. However, the challenge lies in ensuring that the native token possesses inherent value and can withstand external scrutiny. The widespread criticism of unregulated token schemes, often labeled as speculative bubbles or even Ponzi schemes, highlights the difficulty of convincing a broader audience of the token's value. Many existing coins and tokens lack inherent worth and are highly susceptible to fluctuations in global fiat currency regulations and interest rate changes. Therefore, managers must ensure that the value proposition of their native token is robust, transparent, and supported by sound economic principles. Only a well-structured and comprehensible value proposition can sustain long-term profitability for Web3-based platform ecosystems.

In essence, managers must approach the integration of blockchain technology and decentralized platforms with a nuanced understanding of the unique characteristics of B2B ecosystems, adapt their business models to align with the capabilities and constraints of decentralized governance, and ensure that the tokenomics underpinning their platforms are built on a solid foundation to achieve sustainable and scalable growth in the digital economy.

7.3. Limitations and future research

Our study presents several limitations that also offer avenues for future research. First, while our work provides a conceptual framework for understanding blockchain-enabled platform ecosystems, the fast-evolving nature of Web3 and blockchain technology means that our findings may become quickly outdated. Future research should consider adopting a longitudinal approach to capture the dynamic evolution of these ecosystems over time, exploring how emergent technological affordances, such as advanced consensus mechanisms and cross-chain interoperability, reshape platform governance and business model configurations.

Second, our study primarily focuses on the macro-level governance and structural configurations of decentralized platforms but does not delve deeply into micro-level mechanisms such as user behavior, power dynamics, and inter-organizational relationships. Examining how authority and control are distributed and maintained within blockchain-based ecosystems would provide deeper insights into the stability and long-term sustainability of these models. Additionally, research could investigate the role of social capital and reputation in influencing participation and compliance in decentralized ecosystems, an area that remains largely unexplored in the context of Web3.

Another limitation of our study is the lack of empirical examination of the economic implications of adopting blockchain-native tokens as a governance and value distribution tool. While we highlight the importance of tokens in aligning stakeholder incentives, further research should analyze the financial sustainability of tokenized ecosystems, particularly under volatile market conditions. Understanding the impact of token value fluctuations on ecosystem stability and participant engagement would provide valuable insights for both researchers and practitioners.

Finally, regulatory uncertainties surrounding blockchain and decentralized finance present a critical area for future research. As governments and regulatory bodies increasingly scrutinize digital currencies and decentralized governance models, research should explore how regulatory changes influence platform strategies and business models. Investigating the interplay between regulation, platform governance, and technological affordances could provide a holistic view of the constraints and opportunities facing decentralized platforms, offering a clearer pathway for navigating this complex and evolving landscape.

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Financial support from Siemens is gratefully acknowledged. This funding was provided to allow for research on blockchain affordances to one of authors' university department. This research was conducted independently, backed by the code of conduct of our universities. Siemens' goal was to understand eventual business model configurations based on decentralized business architectures in order to foster internal decision-making and know-how transfer across the organization. Our

investigation on decentralized platform ecosystems and their business models is not related to Siemens.

CRediT authorship contribution statement

Kilian Schmück: Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Validation, Visualization, Writing – original draft, Writing – review & editing. **Magnus Schückes:** Conceptualization, Data curation, Formal analysis, Methodology, Validation, Writing – original draft, Writing – review & editing. **Tobias Gutmann:** Data curation, Formal analysis, Methodology, Project administration, Supervision, Validation, Writing – review & editing. **Oliver Gassmann:** Conceptualization, Investigation, Resources, Supervision, Validation, Writing – review & editing.

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Appendix 1. Data sample

Case	Location of company	Type of company	Focus	Financing stage	Primary data				Pages of secondary data
					# Interviews	Minutes	Pages	Role of interviewee	
1	Switzerland	Foundation	Non-profit	ICO	1	60	25	Board Member	40
2	USA	Startup	For Profit	ICO	1	40	16	CEO	18
3	Canada	Startup	For Profit	ICO	1	15	6	Co-Founder	20
4	Czech Republic	Startup	For Profit	VC	1	42	17	Co-Founder	5
5	Singapore	Startup	For Profit	ICO	1	40	16	CEO	25
6	Switzerland	Startup	For Profit	ICO, VC	2	45	18	Co-Founder	18
7	USA	Startup	For Profit	ICO	2	69	28	COO	17
8	Germany	VC firm	For Profit	n/a	1	21	9	CEO	3
9	Switzerland	Startup	For Profit	ICO, VC	1	30	12	CEO	60
10	USA	Startup	For Profit	ICO, VC	1	28	11	Co-Founder	21
11	China	Startup	For Profit	VC	1	44	18	Founder	33
12	Switzerland	Startup	For Profit	ICO	1	30	12	Co-Founder	2
13	Germany	VC firm	For Profit	n/a	1	30	12	Venture Partner	1
14	Switzerland	Startup	For Profit	VC	1	60	25	CEO	6
15	Netherlands	Startup	For Profit	ICO	2	33	14	CTO	17
16	Germany	Corporate	For Profit	Corporate-backed	2	120	49	Director	74
17	USA	Startup	For Profit	ICO	1	40	16	Co-Founder	19
18	Gibraltar	Startup	For Profit	ICO, VC	1	32	13	Head of Investor Relations	28
19	Switzerland	CVC	For Profit	n/a	1	37	15	Investment Manager	2
20	Switzerland	Advisory firm	For Profit	n/a	1	30	12	Partner	5
21	Switzerland	VC firm	For Profit	n/a	1	32	13	CEO	3
22	UK	Startup	For Profit	VC	1	66	27	Co-Founder	9
23	Ireland	Startup	For Profit	ICO	1	29	12	CTO	17
24	Switzerland	Startup	For Profit	VC	1	30	12	Co-Founder	3
25	Switzerland	Startup	For Profit	VC	1	30	12	CEO	2
26	Switzerland	Foundation	Non-profit	ICO	1	28	11	CEO	16
27	Switzerland	Startup	For Profit	Undisclosed	1	60	25	CEO	8
28	USA	Startup	For Profit	Undisclosed	1	30	12	Founder	12
29	Russia	Startup	For Profit	ICO	1	40	16	COO	23
30	Switzerland	VC firm	For Profit	n/a	1	30	12	Managing Partner	9
30	Switzerland	Startup	For Profit	VC	1	47	19	CTO	22
32	Switzerland	Startup	For Profit	Undisclosed	1	45	18	Co-Founder	36
33	Germany	Startup	For Profit	VC	1	44	18	CEO	34
34	UK	Startup	For Profit	VC	1	60	25	Co-Founder	15
35	Germany	VC firm	For Profit	n/a	1	21	9	Investment Analyst	19
36	Germany	Corporate	For Profit	n/a	2	120	49	Innovation Manager	37
37	USA	Startup	For Profit	ICO, VC	1	32	13	CEO	27
38	United Kingdom	Startup	For Profit	VC	1	44	18	CEO	6
39	Canada	Startup	For Profit	ICO, VC	1	38	16	Founder and CEO	9
40	Singapore	Startup	For Profit	ICO	1	48	20	CEO	14
41	Germany	Corporate	For Profit	Corporate-backed	1	53	22	Director	12
42	Switzerland	Foundation	Non-profit	ICO	1	27	11	Core Developer	3
43	Germany	Startup	For Profit	ICO	1	26	11	Founder	14
44	USA	Startup	For Profit	VC	2	90	37	Co-Founder	3
45	Germany	Startup	For Profit	VC	1	44	18	CEO	9
46	Slovenia	Startup	For Profit	ICO	1	38	16	CEO and Co-Founder	14
47	Slovenia	Startup	For Profit	ICO	1	38	16	CEO and Co-Founder	11
48	Germany	CVC	For Profit	n/a	1	23	9	General Partner	8

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Case	Location of company	Type of company	Focus	Financing stage	Primary data				Pages of secondary data
					# Interviews	Minutes	Pages	Role of interviewee	
49	USA	Foundation	Non-profit	Undisclosed	1	30	12	Project Manager	6
50	Slovenia	Startup	For Profit	VC	1	27	11	COO	2
51	Singapore	Startup	For Profit	VC	1	25	10	Co-Founder and COO	11
52	Germany	Corporate	For Profit	n/a	1	45	18	Venture Architect	44
53	Germany	Startup	For Profit	VC	1	22	9	CEO	6
54	Germany	Startup	For Profit	VC	1	28	11	CEO and Founder	5
55	USA	Foundation	Non-profit	Undisclosed	1	28	11	Director	38
56	Germany	VC firm	For Profit	n/a	1	20	8	Investment Manager	29
57	Israel	Startup	For Profit	ICO	1	32	13	CEO	16
58	Switzerland	Startup	Non-profit	VC	2	90	37	Director	29
59	Germany	corporate	For Profit	Corporate-backed	1	60	25	Manager	5
60	unknown	Startup	For Profit	Undisclosed	1	45	18	Founder	3
61	Germany	Corporate	For Profit	Corporate-backed	1	27	11	Director	7
62	Switzerland	Startup	For Profit	VC	1	30	12	Co-Founder	21
63	USA	Startup	For Profit	VC	1	44	18	CEO	10
64	Switzerland	Startup	For Profit	Undisclosed	1	60	25	CEO	8
65	Liechtenstein	Startup	For Profit	ICO	1	44	18	Partner	21
66	Caiman	Startup	For Profit	ICO	1	72	30	Co-Founder	17
67	USA	Startup	For Profit	Undisclosed	1	60	25	CEO	9
68	China	Startup	For Profit	ICO	1	31	13	Managing Director	11
69	Germany	CVC	For Profit	n/a	1	46	19	Director	13
70	Switzerland	Foundation	Non-profit	ICO	1	40	16	COO	21
71	Singapore	Startup	For Profit	VC	1	30	12	CEO	4
72	Switzerland	Startup	For Profit	ICO, VC	1	41	17	CEO	26
73	Canada	Startup	For Profit	ICO, VC	1	38	16	Founder	31
74	Switzerland	Startup	For Profit	ICO	1	38	16	CEO	15
75	UK	Startup	For Profit	ICO	1	44	18	CCO	12
76	Austria	Startup	For Profit	VC	1	54	22	Manager	11
77	USA	Startup	For Profit	ICO	1	36	15	Co-Founder	10
78	Switzerland	Corporate	For Profit	Corporate-backed	1	30	12	CDO	22
79	Switzerland	Startup	For Profit	ICO	1	45	18	CEO	28
80	UK	Corporate	For Profit	Corporate-backed	1	30	12	Co-Founder	4
81	Germany	Startup	For Profit	VC	3	120	49	CEO	5
82	Germany	Corporate	For Profit	N/a	1	30	12	Manager Corporate Finance	54
83	USA	Startup	For Profit	VC	1	45	18	Co-Founder	10
84	Germany	Corporate	For Profit	Corporate-backed	1	45	18	Head of Department	32
85	Finland	Startup	For Profit	VC	1	45	18	CEO	20
86	Switzerland	Startup	For Profit	Undisclosed	1	60	25	CEO	4
87	USA	Startup	For Profit	ICO	1	45	18	CEO	10
88	Canada	Startup	For Profit	ICO	1	90	37	Founder	8
89	USA	Startup	For Profit	ICO	1	39	16	CEO and Co-Founder	11
90	USA	Startup	For Profit	Undisclosed	1	45	18	CEO	9
91	Germany	VC firm	For Profit	n/a	1	25	10	Investment Manager	5
92	Canada	Startup	For Profit	VC	1	29	12	CEO	7
93	Switzerland	Startup	For Profit	Undisclosed	2	68	28	CEO	12

Appendix 2. Data structure with representative data

Business model dimension	Aggregate dimension	2nd-order themes	1st-order codes	Representative data
Target customer	Target group	End-consumers	Target and include the underserved	The core mission of [our venture] is about financial inclusion. People around the world will be able to send, receive, and spend their money, enabling a more inclusive global financial system. (Director, Case 58)
			Translate blockchain technology into specific user experiences for end-user adoption	I guess, where [our venture] began was essentially the concept of being able to have a production ready blockchain, which could support fair gaming for games - our end-consumers. And so, with that, we created a blockchain which had a tournament bracket along with a basic proof of concept of a real time game built into the blockchain, which was rock,

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Business model dimension	Aggregate dimension	2nd-order themes	1st-order codes	Representative data
				paper, scissors. So, we needed to have something that was very universal and something that we could develop inside of half a year that would be something that everybody could use and work with. (Founder, Case 73)
			Connecting end-users and providers through P2P solutions	We address real ridesharing, peer-to-peer without a central entity. So, there are no credit card fees, and there are no centralized policies. We aim to reinvent the sharing economy by combining the power of blockchain technology, open-source development, platform cooperativism, and a decentralized 'swarm' organizational model open to everyone. (COO, Case 7)
		Business customers	Provide Web3 architecture for specific enterprise solutions	Currently, our business is mainly B2B based, and current clients are BMW, Jaguar-Land Rover, which is one of our investors, Renault, Nissan, Mitsubishi, and more. (Co-Founder, Case 34)
			Building and serving business ecosystems	We have a common unifying goal. We require the technology merely as an infrastructure for this purpose and as a defensive element against the threat of Apple ID, Google ID, etc., -central and monopolistic platform ecosystems. That is also the motivation to build the network and the consortium with its organization together: to exploit the joint platform for each partner's existing business models. (Venture Manager, Case 16)
			Building and serving business ecosystems	The problems for food and pharmaceuticals are related but slightly different. In the case of food, the issue is that people have lost trust in the food supply chain. There have been increasing events of food scandals where food has been mislabeled or not adequately stored. Especially the younger generations want something real and sustainable. So, from that perspective, many of the food incumbents are very aware of this shift, and they want to find technologies that would help them be competitive long-term. (Co-Founder, Case 6)
		Governments	Target public services for digitalizing administrative processes	There are several use cases for [our product]. One is, it can be used as a distributed ledger. In this case, our target customers are governments as well as big enterprises. And they usually seek to have the opportunity or ability to share the data among themselves the trustless way. (CEO, Case 14)
			Provide public infrastructure for data sharing	One case that we worked on with the state government [an area in] India which wanted a decentralized way to track the vehicle life cycle. So, we have 4 [product] nodes: one for the car dealer, one for the registration office, one for the police, and one for the car owner. And with the blockchain, you can set up user roles and access right for each one of them. (CTO, Case 15)
	Relationship model	Ecosystem building	Collaborative and open-source software community approach for developing a joint ecosystem	[Our foundation] doesn't have clients as such; it has members. These members are enterprises ranging from big names like Deloitte, IBM, Accenture, Intel, Cisco, Oracle, and smaller players startups like DotQ and IntellectU. It goes into all industries like healthcare, supply chain, trade finance, financial technologies, etc. (Project Manager, Case 49)
			Open technology access and shared technology modules to foster joint ecosystem	Our next step was to build a wallet, the actual browser, to navigate the DLT ecosystems. However, we didn't design our wallets solely around coins but around consistent user management, including identities, logins, messaging, and so on. We are contributing infrastructural modules that are required and exploited by use case-specific applications later on. These modules represent shared services, which we refer to as micro-services. (CCO, Case 75)
			Bridging and connecting several heterogeneous users	In general, applications of DLTs are meaningful whenever multiple agents are involved. Especially, an increasing complexity of processes causes a more significant advantage of the technology deployment. (Innovation Manager, Case 36)
		Two-sided market	Marketplace connecting two mutual distinct user groups	And that's what we thought: it would be great to build up an Uber-like platform where [Case 50] is the blockchain-based software provider connecting trading experts who really know about cryptocurrencies with "normal" users who want to invest but who are sure where to. (COO, Case 50)
			Decentralized platform facilitating transactions between two distinct user groups	We create a marketplace without the risks of monopolization. That's our core motivation. The competitive advantage that we see is that [our company] is the first neutral piece to go in the middle of the travel ecosystem to facilitate communication, facilitate bookings, facilitate governance, and facilitate all of that, which today is completely gridlocked. (CEO, Case 93)

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Business model dimension	Aggregate dimension	2nd-order themes	1st-order codes	Representative data
		Bilateral exchange	Providing dedicated services and project management to single clients	We have legal experts, experts in trust and foundation. We have financial experts and project managers. We also utilize our net worth. In the end, what we offer is an ICO from A to Z: We will do the project management for our customers so that they can concentrate on their business. We will make sure that the token economics is done to perfection. (Partner, Case 20)
			Providing products to complement a dedicated blockchain project	We develop dedicated and crypto-optimized hardware modules for our customers. These include crypto tags, but also the middle ware, drivers and specific blockchain stacks (Manager, Case 76)
Value proposition	Offering	Self-sovereign management of digital ownerships	Exploiting Web3 affordances for the tokenization of financial assets	[Case 86] aims to drive tokenization of real estate. In other words, you can buy shares in real estate. For example, you buy ten percent of an apartment using blockchain. And subsequently you automatically and transparently receive revenue or sales income for this ten percent. (CEO, Case 86)
			Digital wallet services for self-sovereign digital ownership management	By providing a wallet, you expect to generate some revenues out of the wallet. The wallet is built on [our wallet] but is entirely out of [our protocol] itself. It's providing a good service, and at some point, you can expect to charge some fees for the service you are providing. (COO, Case 58)
			Bridging physical and digital ownership through specific token functionalities	This technique, blockchain technique, can be used to solve this, what they call, the double spend. With digital assets you can basically make many copies at the highest fidelity. So, for us what we can use it for, we can use it for in-game currency, and we can also use it for digital assets. So, if you think of a character, in World of Warcraft, as an example. How it works with a company like [Case 2]: You go on their game, into their servers, you create a character, and that character exists in their world. And so, what blockchain lets you do, is to take that character and pull it out of the [Case 2] universe and you can put it into the blockchain. So now you have a character that lives in the blockchain, and games can reference that character. So now you can plug in that character into many different games. And many different universes. That's how we use it. (CEO, Case 2)
			Digital ownership trading and exchange	We have already launched two products of the ecosystem: our wallet and our terminal, and now we're working on the third product, which is the exchange called [Case 24], and we're hoping to have it up and running by the first half of December. (CEO, Case 24)
		Disintermediated management of digital information	Offering use case-specific peer-to-peer marketplaces	I would argue that [Case 7] is really a platform for building social trust, empowering people to offer an economical service that's accepted or not accepted peer-to-peer in a trustworthy and accountable way. (COO, Case 7)
			Establishing data marketplaces exploiting protocol-native token functionalities	The ecosystem consists of people who are selling and buying data in exchange for the platform-inherent token and people who are inquisitive in providing health-related services in exchange for this token. (Co-Founder, Case 44)
			Neutral facilitation of data transaction and marketplace coordination with information symmetry	The competitive advantage that we see is that [Case 93] is the first neutral piece to go in the middle of the travel ecosystem to facilitate communication, facilitate bookings, facilitate governance, and facilitate all of that, which today is completely gridlocked. (CEO, Case 93)
			Creating data interoperability for harmonizing data silos	We are focusing on the challenge of how to use decentralized approaches for solving the roaming issue, the lack of interoperability between charging station operators and mobility providers. (CEO, Case 81)
		Automated and interoperable organization and process management	Smart contracts automating back-end processes through preventive blockchain determination	It operates in a fully transparent and known formula and executes automatically as soon as the necessary conditions are met. At [Case 9], this happens each time someone wants to buy a token. The smart contracts that we have developed then issue these accordingly and vice versa. (CEO, Case 9)
			Creating interoperability between distinct Web3 ecosystems	A major driver for Polkadot is our belief that instead of there being a single blockchain, there will be different technologies for different purposes. However, both permissioned and permissionless ledgers should be able to coexist somehow under the same roof. Among those, trustless communication and transaction have to be carried out without the necessity of an intermediary. The network is supposed to do all. It is about interoperability and shared finalization mechanisms, and that is what Polkadot takes care of. (COO, Case 1)
			Managing network coordination exploiting Web3-native digital truth mechanisms	In Polkadot, we don't have miners but validators since we use Proof-of-Stake as a consensus mechanism. Our ecosystem has different actors: There are exchanges and dApps; there are

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Business model dimension	Aggregate dimension	2nd-order themes	1st-order codes	Representative data
				service providers; there are developers. They are all a different kind of actor, but they are all DOT-holders, and that's what you also see transparently on-chain. They are all DOT-holders, but they may be incentivized in different ways. And that's what you don't see on-chain. But it all comes down to them using their DOTs for participating in the governance, which means that you require DOTs in coordinating Polkadot. (CCO, Case 75)
			Web3 facilitating transactions in a disintermediated and self-sustaining manner	At its core, Bitcoin is about operating a peer-to-peer network for financial transactions that is self-sustaining and backed by complex consensus mechanisms to prevent double-spending. (CEO, Case 2)
		Web3-related hardware development	Developing devices for the hardware/ software interface	With our hard wallet, we safeguard the analog-digital interface, so we develop and implement oracles. (Manager, Case 76)
			Developing dedicated hardware for operating Web3 networks	[Case 11] is focused on computing chips with a vision of realizing an even more beautiful digital world. In the blockchain mining area, [Case 11] has shipped billions of ASICs, accounting for 75 % of the global market. (Founder, Case 11)
		Advisory & consult	Providing financial, legal, and regulatory consulting services	We go from the white paper draft all the way to the ICO. We will need to hire other teams that are part of our network and transfer that cost to the clients. So, we will make sure because we've designed the white paper, so we know precisely what we want to see and how to communicate it. (CEO, Case 67)
			Providing conceptual support for technical frameworks	What [Case 49] does is it brings the enterprises together and helps them with the PR and Marketing as well as legal infrastructure to work with an open-source community and open-source frameworks, as well as the blockchain in general. (Project Manager, Case 49)
	Web3-induced differentiation	Web3-induced digital truth & data sovereignty	Enhancing transactional transparency and information symmetry for preventing lock-in effects	DLTs are a very interesting approach to avoid lock-in effects and dominant platforms. (Venture Manager, Case 16)
			Enhancing digital truth mechanisms through blockchain immutability and network compliance	We realized pretty quickly that [our product] offers excellent advantages because it is organized in a decentralized manner. Thus, there is no honeypot for data storage; instead, you own and manage your identity yourself. This solves all the issues around data privacy in the digital environment. You don't have anyone who can unintentionally build up any metadata, profiles, or information from your data. And that is one of the values of DLTs. (Manager, Case 59)
			Enabling data sovereignty through Web3 integration	For industrial applications, where several cross-business parties have to be interlinked, for IoT and cyber security, we need something decentralized. The primary focus here is on data sovereignty. The idea here is to design data access in such a way that confidentiality lies with the data resident, who can protect it to the extent that only selective access to this data is permitted. (Head of Innovation, Case 82)
		Web3-induced cost & time efficiency	Exploiting Web3 mechanisms for breaking data silos and creating shared data bases	The business value proposition that we are offering? We compete with superior operating economics because we're not demanding the centralized overhead that several and mutual siloed centralized platforms require. (COO, Case 7)
			Exploiting immutability for reducing conflict costs	It has become apparent that various industry players see value and benefit in the technology applying it in an environment where there are cross-business processes. In this case, some processes need to be mapped in a trustworthy manner, which blockchain technology inherently enables. These processes are then envisioned, defined, and implemented in such a way they create common rules. The technology then enforces the rules and guarantees that no party can act outside of those rules. […] And the economic value of the technology is the immutable traceability. For example, if there is a claim ten years later, untraceable tracking can lead to disputes between the parties with enormous costs. (CCO, Case 75)
			Reducing complexities through smart contract automation	We're being more environmentally conservative, physically efficient in the way we move physical goods but we're enabling trusted transactions in a digital way. We've made a network of transactions much more complex but more efficient and the blockchain can do that. (CEO, Case 72)
		Complementary features & services	Synergetic effects within Web3 networks and its native applications	Ethereum provides the much-needed transparency that a crowd economy needs to succeed and provides incentives for its growth. Therefore, we use Ethereum as our compute engine while using the Inter Planetary File System (IPFS) as our storage machine. The nature of Ethereum allows for an

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Business model dimension	Aggregate dimension	2nd-order themes	1st-order codes	Representative data
				organic fitting to our project. We envision Indorse as a decentralized and transparent layer, with its own ecosystem of dApps that feed into and rely on the platform. (Co-Founder and COO, Case 51)
			Creating complementarities between different Web3 networks	[Case 49] is in that way unique that we offer an open-source platform, so there are no technical barriers to contribute and supplement with further platform modules. (Project Manager, Case 49)
Value creation	Knowledge allocation	Specific industry knowledge	Venturing team with a specific industry background	I joined in May last year to set up all that is needed to be set up from the association's perspective and to be able to launch the [Case 58] Blockchain […] For the last 12 years at [a major financial company], I've been leading engineering teams across the world, who are in charge of developing, maintaining, and operating the lowest level pike. Those are the software layers that allow communicating with all the payment or financial partners that [that company] is dealing with worldwide. (Director, Case 58)
			Spin-off or project from incumbent enterprises with deep industry expertise	Why did we decide to found and support [Case 52] back then? Well, of course, it was a product of our own company, at that time still a limited liability company. (Venture Architect, Case 52)
		Sophisticated Web3 expertise	Venturing team with a dedicated Web3 expertise	The original name of [Case 75] was formerly [old name Case 75]. The company was founded roughly between 2015 and early 2016. The background was that one of our founders, Dr. Gavin Wood, had been previously one of the founders of the Ethereum project founders as well as the CTO of the Ethereum Foundation, writing the technical specification for this system and the initial implementations. (CCO, Case 75)
			Venture is based on a scientific Web3 research	[Case 76] was founded by someone, who had been involved with digital cash since the late 90s. Coming from a radio broadcasting background and being very hardware affine himself, he began very early to explore how to link the cryptographically secured world of data on the blockchain with the industrial world and, thus inevitably, the world of physical processes. When he started working on hardware applications in 2011 or 2012, nobody was working on this. So before [Case 76] was established as a GmbH (limited liability company) at the end of 2016, there had already been three or four years of preliminary work to develop a crypto-optimized hardware module in the first place. (Manager, Case 76)
			Venturing organization is exploiting previously conducted Web3 R&D	[Case 84] employs whole research departments that research and develop individual fields of technology on a large scale. In this context, we have proclaimed the so-called company core technologies. These are precisely the initiatives that keep us moving forward. These are the spearheads that are leading the way ahead. Subsequently, individual and reasonable use cases are further developed together with the business units. In the blockchain area, we have collaborated quite intensively with tech startups such as Parity Technologies and authorities like TÜV Rheinland, for instance, to self-audit power plants digitally and continuously through blockchain. (Head of Department, Case 84)
		Business network	Venture is leveraging its network into the Web3 and start-up community	If we need an audit for a smart contract, we would go to [Case 25], who you probably know. If we need PR, we will go to [Blockchain Media Agency], so we're all connected and working together and referencing each other whenever needed. (CEO, Case 67)
			Venture is leveraging its access to specific industry networks	Hyperledger is an industry-wide cross-domain community focusing on developing a suite of stable frameworks, tools, and libraries for enterprise-grade blockchain deployments. It's an open-source community that applies blockchain technology to enterprises. (Project manager, Case 49)
	Web3 development	Leveraging prevailing Web3 developments	Directly building on top of prevailing blockchain protocols	We started using and building on top of the Ethereum blockchain. Currently, we are moving towards other types of blockchains because we don't think we will be able to scale up use cases with Ethereum (Co-Founder, Case 12)
			Building on top of prevailing blockchain protocols but adapting features to own needs	We have started with an Ethereum type blockchain development because it was the best type of technology available. But like I said, we were the first to go into the Proof-of-Authority mechanism and created our own structure and our own protocols on top of the blockchain, making it more valuable to energy and its applications that are based on blockchain. (CEO, Case 26)
			Forking an existing blockchain protocols for own needs	We started with a copy of the Bitcoin code and have been modifying it from there. So, it's a public, permissionless

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Business model dimension	Aggregate dimension	2nd-order themes	1st-order codes	Representative data
				blockchain with its own native cryptocurrency called [Case 39]. Yes, it has a feature set to meet the business case for issuers, investors, brokers, and exchanges. (Founder and CEO, Case 39)
		Contributing to blockchain or module developments	In-house development to initiate open-source blockchain protocols	[Our foundation] addresses two issues in the course of the initiation and the launch of the Tezos protocol: On the one hand, we have to create the initial technological design, the roadmap, and the first implementations that are driving our vision. And on the other hand, we have to build, support, and incentivize our community and the network to either contribute directly to the protocol with their own developments or contribute additional modules or applications. (COO, Case 70)
			Open-source co-creation for curating prevailing blockchain protocols	[Case 75] was initially founded to develop and contribute additional implementations for Ethereum, which provided more advancement and innovation for the ecosystem. But not under the [Case 42] Foundation's umbrella, which had funded the protocol developments until then, and its own developers. We independently contribute advancements for the protocol as well as complementary features and modules, such as [our wallet] or messaging implementations. Currently, we are contributing to Polkadot which we co-developed with the [Case 1] Foundation. (CCO, Case 75)
			Open-source co-development of complementary Web3 modules	Fundamentally, the [Case 9] protocol came to solve is the kind of chicken-and-egg problem of liquidity within the Ethereum ecosystem. (CEO, Case 9)
		No Web3 developments	Providing services without using a technological layer	I'm currently writing a white paper, including a memorandum. It all fits together: A white paper is not just a fancy word of business planning. A white paper is an offering memorandum; it's a legal document. And we are the [Case 20] business people; we are coming from that side; we're not crypto people. (Partner, Case 20)
			Developing hardware for blockchain deployment	The important thing is data security, end-to-end. So not only within the blockchain but also in combination with the hardware modules. From the Oracle all the way to the smart contract. That is the critical route that is being taken. For this, we provide the hardware components. (Manager, Case 76)
	Token integration	Token has inherent network functionality	Token enables and realizes coordination and governance of decentralized networks	Whereas with Polkadot, you need to create a proposal, add some code that enables this upgrade, put it in on the governance platform on Polkadot, and see if people vote for that with their coins in time. It's transparent. You can see what's going on; you can see the direction of the network where it's going before it's even making those upgrades. (COO, Case 1)
			Token model and consensus mechanisms provide network and incentive alignment	So we already have technologies such as Bitcoin and Ethereum, which are able to, in some sense disintermediate many of the middlemen, many of the institutions and authorities, and remove the need for much of the trust in society. But what we currently have is a patchwork of, if you like, independent and isolated, legal systems of the Internet. And this is problematic, because it creates many different groups who, although they share the same vision, have misalignment in how they wish to achieve. (COO, Case 1)
			Token integration and distribution creates network robustness	With the token, there is also the aspect that the ownership shares should be distributed across the network. Of course, it is issued on a central basis in the beginning, and that provides you with more coordinative flexibility. But subsequently, the risk of when and how you distribute the token across the network has to be balanced. For Proof-of-Stake networks, a wide distribution implies a distribution of coordination, though it also means more network stability. (COO, Case 70)
		Business requirements lead to token omission	Token integration is omitted due to existing regulatory and jurisdictional restrictions	[Case 82] is also two banks. If we were to integrate a token, we would face enormous regulatory problems imposed by the BaFin. That has to be regulated first. However, if a token integration is settled from a regulatory point of view, there are certainly opportunities, especially in the machine economy. (Manager Corporate Finance, Case 82)
			Token integration is omitted due to insurmountable business model corporate culture tensions	We could only use the token because this project was set up as a research project. But as soon as we would have to deal with it in a business context, we would have to answer several questions, such as accounting questions: Is the token to consider as a digital asset? Or as a currency? How do we deal with the highly volatile price fluctuations? How do we have to treat it fiscally? All can be solved if required and wanted in the organization. But it's currently difficult to reconcile with

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Business model dimension	Aggregate dimension	2nd-order themes	1st-order codes	Representative data
				our culture and our management (Manager Corporate Finance, Case 82)
			Token integration is omitted due to data control and data protection concerns	Another point is data protection and data security: it is often easier to use the central solution: there, you know how data is managed and how data protection can be ensured without entrepreneurial risk. The decentralized approach with tokens is still new territory, so it is easier to observe how this works. (Manager Corporate Finance, Case 82)
Value capture	Adoption mechanism	Token distribution	Token sale kickstarts Web3 development & fosters community adoption	Token sales are a very effective way for us to fundraise. They allowed us to hire top-notch engineers and top-notch executives without diluting rights like company equity. It gave us global access to people who believed in persistent and decentralized data handling. (CEO, Case 87)
			Token is adopted into future business model	For us, as [Case 61], tokenization is becoming a fundamental part of the business model. In the not-too-distant future, we will have digital assets that we will then have to process in digital form. If we couldn't process them digitally, we would lose assets in custody and experience a disproportionate margin decline. (Director, Case 61)
			Token adoption is influencing token valuation thereby incentivizing Web3 curation	In general, we pursue the vision of Web3. From a business perspective, we also hold suitable tokens and are thus invested in various blockchain projects. One crucial element for us is that both the entrepreneurial vision and the business incentives are aligned. Once alignment is achieved, we are willing to invest in further developing and implementing the ecosystem regardless of explicit revenues, thereby contributing value creation into the ecosystem. (CCO, Case 75)
		Community engagement & legitimacy	Community is highly engaged in OSS developments and adoption through token incentives	The future is summed, decentralized, autonomous networks that belong to no one and everyone, that are decentrally governed and evolving. Those open, highly liquid, and dynamic ecosystems will continuously expand and grow. By providing tokens, the community can capture a portion of the newly created value themselves. By holding them, you can benefit from potential value increases. And from this perspective, these new technologies and projects are interesting for the community. (COO, Case 1)
			Reputation within the Web3 community is immutable tracked and creates legitimacy	Yeah, the developers have a very interesting slew of incentives. So, some people will work almost for free on principal. They refuse to take any money, and they have acquired a kind of weird culture where they're kind of like Tibetan monks or something, and they live an aesthetic lifestyle doing work nobly. (CEO, Case 2)
		Online marketing	Using social media marketing channels	Social Media is therefore also more of a compulsory task. It's about letting the social network work for you. The more you post, the better. (Manager, Case 76)
			Create digital buzz through online advertisements	We try to target also newcomers as they are a very fast-growing segment in the crypto-trading market. We proactively reach out to them with our ads. (CEO, Case 79)
		Leveraging reputation	Partner with renowned institutions and corporations to launch Web3 initiative	It is opportunity and risk together, particularly with Hyperledger, that a situation similar to the Hyperledger and Maersk case may arise. Hyperledger was very strongly branded with IBM, which eventually led to everyone talking only about the IBM-Maersk project, which was then no longer connoted as decentralized and was no longer the theme it could have constituted. On the other hand, it fostered project communication. (Venture Manager, Case 16)
			Leverage own reputation and network to foster business model adoption	It was clear to us that we needed partners for digital identity management, and, above all, we also required relevant partners. When it comes to digital identities, politics and the economy have to work together because, after all, it's government sovereignty. And here, the Bundesdruckerei (Federal Printing Office) is in charge. Accordingly, it was essential to us when it became clear that the Bundesdruckerei would also be involved in [our consortium]. (Director, Case 41)
		Referrals	Client recommendations increase business model adoption	Today, we are already active in various industries with our services. Here we have visibility through our customers, which we use to generate new leads. (Manager, Case 76)
			Engaging in high-visibility projects to obtain organic referrals	At the time, we had worked with [Case 75] to develop a payment solution based on Ethereum for a UN refugee camp in Yemen. Thus, blockchain technology could massively reduce the costs of food administration in the camp. And for us, this was an excellent use case that presented blockchain

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Business model dimension	Aggregate dimension	2nd-order themes	1st-order codes	Representative data
				applications and their potentials in a media-effective way to promote adoption. (CEO, Case 33)
	Revenue generation	Commission/ Transaction fees	Charge a commission fee for usage of module or application	We still charge commission fees, but one thing is essential to mention: When it comes to blockchain, transaction fees are relatively negligible compared to traditional platforms. For instance, when you consider the cryptocurrency exchanges right now - forget Bitcoin because obviously, that's a different story sometimes. Still, typically when you're making a cryptocurrency trade on a Bitrix or a Binance, you're not paying a very high transaction fee. (CEO, Case 85)
			Transaction fee is leveraged for compensating blockchain validators and operators	And so, our main revenue stream is us staking our own tokens. So, the more volume our platform has, the more revenue we earn through staking. (CEO, Case 71)
		Pay-per-use	Charging fees for dedicated hardware usage	We'll charge you per shipment, and the hardware and software are included in that first shipment pricing. (CEO, Case 72)
			Charging fees for software unit usage	Yes, so you basically pay for megabytes, and you also pay for bandwidth, so you don't pay for like uploading files to the network. Still, anytime you read it, a file, or you write to it, you are paying a small amount of bandwidth there, which is also only a third of the costs of traditional services. (CEO, Case 87)
		Subscription model	Charging cyclical subscription fees for membership	We charge our members who pay an annual fee to the foundation, and the amount is based on the size of the company in terms of the number of employees. (Project Manager, Case 49)
			Charging technology licensing fees for proprietary Web3 services or modules	So there is the revenue in the supply chain itself, whatever business they're conducting. And in this case, there will be some technology licensing fee from [Case 83], so that's how [Case 83], will get the revenue. (Co-Founder, Case 83)
		One-off payments	Charging one-off payments and project-based remuneration	We often use a mixed revenue model. On the one hand, we participate in our clients' tokens and receive a share. On the other hand, we also have a traditional contractual relationship. This is important: The token gives us skin-in-the-game, which means we are incentivized for a much more extended period of time. Through the contractual relationship, where we are paid for specific services, and our client can claim and enforce the compliance of these services. In this way, we have a healthy, bilateral relationship. (CEO, Case 21)
		Donation	Asking user base for donations and voluntary payments to keep Web3 service alive	We don't have any revenue model. So [Case 55], itself, as a platform, is a 100 % open-source project. Contributions are pretty much all voluntary. There are different kinds of donations, sometimes in crypto, sometimes by development contribution, but there aren't any contracts or official job relationships. (CTO, Case 55)
			Attracting developer and contributors to volunteer in Web3 ventures	Anyone who is a contributing may call himself a Core Developer and can participate in these Magician calls. (Core developer, Case 42)
			Receiving government or foundation grants	We formed a consortium, we made sure we were complementary to one another. We also had to meet specific criteria set by the German Federal Ministry of Economics, which provided financial grants to the consortium. If we succeed, they will profit from our digital identity network. (Director, Case 59)

Data availability

Data will be made available on request.

References

Adner, R., 2017. Ecosystem as structure: an actionable construct for strategy. J. Manag. 43 (1), 39–58. https://doi.org/10.1177/0149206316678451.

Aggarwal, C.C., Zhai, C., 2012. Mining Text Data. Springer Science & Business Media. https://doi.org/10.1007/978-1-4614-3223-4.

Amit, R., Zott, C., 2001. Value creation in e-business. Strateg. Manag. J. 22 (6–7), 493–520. https://doi.org/10.1002/smj.187.

Amit, Raphael, Han, X., 2017. Value creation through novel resource configurations in a digitally enabled world. Strateg. Entrep. J. 11 (3), 228–242. https://doi.org/10.1002/sej.1256.

Ancillai, C., Sabatini, A., Gatti, M., Perna, A., 2023. Digital technology and business model innovation: a systematic literature review and future research agenda. Technol. Forecast. Soc. Chang. 188, 122307. https://doi.org/10.1016/j.techfore.2022.122307.

Autio, E., Nambisan, S., Thomas, L.D.W., Wright, M., 2018. Digital affordances, spatial affordances, and the genesis of entrepreneurial ecosystems. Strateg. Entrep. J. 12 (1), 72–95. https://doi.org/10.1002/sej.1266.

Baden-Fuller, C., Haefliger, S., 2013. Business models and technological innovation. Long Range Plan. 46 (6), 419–426. https://doi.org/10.1016/j.lrp.2013.08.023.

Baldwin, Carliss Y., Woodard, C.J., 2009. The architecture of platforms: a unified view. In: Gawer, Annabelle (Ed.), Platforms, Markets and Innovation. Edward Elgar.

Baldwin, Carliss Young, Clark, K.B., 2000. Design Rules: The Power of Modularity. MIT Press.

Bapna, R., Goes, P., Gupta, A., Jin, Y., 2004. User heterogeneity and its impact on electronic auction market design: an empirical exploration. Miss. Q. 28 (1), 21–43. https://doi.org/10.2307/25148623.

Bellavitis, C., Cumming, D.J., Vanacker, T.R., 2020. Ban, boom, and echo! Entrepreneurship and initial coin offerings. Entrep. Theory Pract. https://doi.org/10.2139/ssrn.3608978.

Betzing, J.H., Tietz, M., vom Brocke, J., Becker, J., 2019. The impact of transparency on mobile privacy decision making. Electron. Mark. https://doi.org/10.1007/s12525-019-00332-3.

Biais, B., Bisiere, C., Bouvard, M., Casamatta, C., 2019. The blockchain folk theorem. Rev. Financ. Stud. 32 (5), 1662–1715. https://doi.org/10.1093/rfs/hhy095.

Björkdahl, J., 2009. Technology cross-fertilization and the business model: the case of integrating ICTs in mechanical engineering products. Res. Policy 38 (9), 1468–1477. https://doi.org/10.1016/j.respol.2009.07.006.

Block, J.H., Fisch, C.O., Hahn, A., Sandner, P.G., 2015. Why do SMEs file trademarks? Insights from firms in innovative industries. Res. Policy 44 (10), 1915–1930. https://doi.org/10.1016/j.respol.2015.06.007.

Böhme, R., Christin, N., Edelman, B., Moore, T., 2015. Bitcoin: economics, technology, and governance. J. Econ. Perspect. J. Am. Econ. Assoc. 29 (2), 213–238. https://doi.org/10.1257/jep.29.2.213.

Boudreau, K., 2010. Open platform strategies and innovation: granting access vs. devolving control. Manag. Sci. 56 (10), 1849–1872. https://doi.org/10.1287/mnsc.1100.1215.

Boudreau, K.J., 2012. Let a thousand flowers bloom? An early look at large numbers of software app developers and patterns of innovation. Organ. Sci. 23 (5), 1409–1427. https://doi.org/10.1287/orsc.1110.0678.

Boudreau, K.J., Jeppesen, L.B., 2015. Unpaid crowd complementors: the platform network effect mirage. Strateg. Manag. J. 36 (12), 1761–1777. https://doi.org/10.1002/smj.2324.

Buterin, V., 2014. A Next-generation Smart Contract and Decentralized Application Platform. Ethereum Foundation.

Casadesus-Masanell, R., Zhu, F., 2013. Business model innovation and competitive imitation: the case of sponsor-based business models. Strateg. Manag. J. 34 (4), 464–482. https://doi.org/10.1002/smj.2022.

Catalini, C., Gans, J.S., 2020. Some simple economics of the blockchain. Commun. ACM 63 (7), 80–90. https://doi.org/10.1145/3359552.

Ceccagnoli, M., Forman, C., Huang, P., Wu, D.J., 2012. Cocreation of value in a platform ecosystem! The case of enterprise software. MIS Q. 36 (1), 263–290. https://doi.org/10.2307/41410417.

Cennamo, C., 2019. Competing in digital markets: a platform-based perspective. Acad. Manag. Perspect. 35 (2). https://doi.org/10.5465/amp.2016.0048.

Chen, Y., Pereira, I., Patel, P.C., 2020. Decentralized governance of digital platforms. J. Manag. 47 (5), 1305–1337. https://doi.org/10.1177/0149206320916755.

Chesbrough, H., 2010. Business model innovation: opportunities and barriers. Long Range Plan. 43 (2), 354–363. https://doi.org/10.1016/j.lrp.2009.07.010.

Chesbrough, H., Rosenbloom, R.S., 2002. The role of the business model in capturing value from innovation: evidence from Xerox Corporation's technology spin-off companies. Ind. Corp. Chang. 11 (3), 529–555. https://doi.org/10.1093/icc/11.3.529.

Cong, L.W., He, Z., 2019. Blockchain disruption and smart contracts. Rev. Financ. Stud. 32 (5), 1754–1797. https://doi.org/10.1093/rfs/hhz007.

Cong, L.W., Li, Y., Wang, N., 2020. Tokenomics: dynamic adoption and valuation. Rev. Financ. Stud. 34 (3), 1105–1155. https://doi.org/10.1093/rfs/hhaa089.

Constantinides, P., Henfridsson, O., Parker, G.G., 2018. Introduction—platforms and infrastructures in the digital age. Inf. Syst. Res. 29 (2), 381–400. https://doi.org/10.1287/isre.2018.0794.

Corbin, J., Strauss, A., 2014. Basics of Qualitative Research: Techniques and Procedures for Developing Grounded Theory. SAGE Publications.

Corley, K.G., Gioia, D.A., 2004. Identity ambiguity and change in the wake of a corporate spin-off. Adm. Sci. Q. 49 (2), 173–208. https://doi.org/10.2307/4131471.

Creswell, J.W., Plano Clark, V.L., 2017. Designing and Conducting Mixed Methods Research. SAGE Publications.

Cumming, D., Meoli, M., Vismara, S., 2019. Investors' choices between cash and voting rights: evidence from dual-class equity crowdfunding. Res. Policy 48 (8), 103740. https://doi.org/10.1016/j.respol.2019.01.014.

Cusumano, M.A., Gawer, A., Yoffie, D.B., 2019. The Business of Platforms: Strategy in the Age of Digital Competition, Innovation, and Power. Harper Business.

Cutolo, D., Hargadon, A., Kenney, M., 2021. Competing on platforms. MIT Sloan Manag. Rev. 62 (3), 22–30.

Davidson, S., de Filippi, P., Potts, J., 2018. Blockchains and the economic institutions of capitalism. J. Inst. Econ. 14 (4), 639–658. https://doi.org/10.1017/s1744137417000200.

Di Tullio, D., Staples, D.S., 2013. The governance and control of open source software projects. J. Manag. Inf. Syst. 30 (3), 49–80. https://doi.org/10.2753/MIS0742-1222300303.

Eckhardt, J.T., Ciuchta, M.P., Carpenter, M., 2018. Open innovation, information, and entrepreneurship within platform ecosystems. Strateg. Entrep. J. 12 (3), 369–391. https://doi.org/10.1002/sej.1298.

Eisenmann, T., Parker, G., Van Alstyne, M.W., 2006. Strategies for two-sided markets. Harv. Bus. Rev. 84 (10), 92.

Evans, D.S., 2003. Some empirical aspects of multi-sided platform industries. Rev. Netw. Econ. 2 (3). https://doi.org/10.2202/1446-9022.1026.

Fisch, C., 2019. Initial coin offerings (ICOs) to finance new ventures. J. Bus. Ventur. 34 (1), 1–22. https://doi.org/10.1016/j.jbusvent.2018.09.007.

Foss, N.J., Saebi, T., 2017. Fifteen years of research on business model innovation: how far have we come, and where should we go? J. Manag. 43 (1), 200–227. https://doi.org/10.1177/0149206316675927.

Gassmann, O., Frankenberger, K., Csik, M., 2014. The Business Model Navigator: 55 Models That Will Revolutionise Your Business. Pearson UK.

Gastaldi, L., Appio, F.P., Trabucchi, D., Buganza, T., Corso, M., 2024. From mutualism to commensalism: assessing the evolving relationship between complementors and digital platforms. Inf. Syst. J. 34 (4), 1217–1263. https://doi.org/10.1111/isj.12491.

Gawer, A., Cusumano, M.A., 2002. Platform Leadership: How Intel, Microsoft, and Cisco Drive Industry Innovation. Harvard Business School Press, Boston, MA.

Gawer, Annabelle, 2020. Digital platforms' boundaries: the interplay of firm scope, platform sides, and digital interfaces. Long Range Plan. https://doi.org/10.1016/j.lrp.2020.102045.

George, G., Merrill, R.K., Schillebeeckx, S.J.D., 2020. Digital sustainability and entrepreneurship: how digital innovations are helping tackle climate change and sustainable development. Entrep. Theory Pract. https://doi.org/10.1177/1042258719899425.

Gioia, D.A., Corley, K.G., Hamilton, A.L., 2013. Seeking qualitative rigor in inductive research: notes on the Gioia methodology. Organ. Res. Methods 16 (1), 15–31. https://doi.org/10.1177/1094428112452151.

Glaser, B.G., Strauss, A.L., 2017. Discovery of Grounded Theory: Strategies for Qualitative Research. Routledge. https://doi.org/10.4324/9780203793206.

Goodfellow, I., Bengio, Y., Courville, A., Bengio, Y., 2016. Deep Learning. MIT press Cambridge.

Granstrand, O., Holgersson, M., 2020. Innovation ecosystems: a conceptual review and a new definition. Technovation 90–91 (102098), 102098. https://doi.org/10.1016/j.technovation.2019.102098.

Gu, G., Zhu, F., 2021. Trust and disintermediation: evidence from an online freelance marketplace. Manag. Sci. 67 (2), 794–807. https://doi.org/10.1287/mnsc.2020.3583.

Guba, E.G., Lincoln, Y.S., 1994. Competing paradigms in qualitative research. In: Handbook of Qualitative Research, 2(163–194), p. 105.

Guo, X., Tsinghua University, Wei, Q., Chen, G., Zhang, J., Qiao, D., Tsinghua University, Tsinghua University, Renmin University of China, Tsinghua University, 2017. Extracting representative information on intra-organizational blogging platforms. Miss. Q. 41 (4), 1105–1127. https://doi.org/10.25300/misq/2017/41.4.05.

Hannen, J., Antons, D., Piller, F., Salge, T.O., Coltman, T., Devinney, T.M., 2019. Containing the not-invented-here syndrome in external knowledge absorption and open innovation: the role of indirect countermeasures. Res. Policy 48 (9), 103822. https://doi.org/10.1016/j.respol.2019.103822.

Hein, A., Schreieck, M., Riasanow, T., Setzke, D.S., Wiesche, M., Böhm, M., Krcmar, H., 2020. Digital platform ecosystems. Electron. Mark. 30 (1), 87–98. https://doi.org/10.1007/s12525-019-00377-4.

Huang, P., Ceccagnoli, M., Forman, C., Wu, D.J., 2013. Appropriability mechanisms and the platform partnership decision: evidence from enterprise software. Manag. Sci. 59 (1), 102–121. https://doi.org/10.1287/mnsc.1120.1618.

Huang, P., Lyu, G., Xu, Y., 2022. Quality regulation on two-sided platforms: exclusion, subsidization, and first-party applications. Manag. Sci. 68 (6), 4415–4434. https://doi.org/10.1287/mnsc.2021.4075.

Hurni, T., Huber, T.L., Dibbern, J., Krancher, O., 2021. Complementor dedication in platform ecosystems: rule adequacy and the moderating role of flexible and benevolent practices. Eur. J. Inf. Syst. 30 (3), 237–260. https://doi.org/10.1080/0960085X.2020.1779621.

Iansiti, M., Lakhani, K.R., 2017. The truth about blockchain. Harv. Bus. Rev. 95 (1), 118–127.

Iansiti, M., Levien, R., 2004. Strategy as ecology. Harv. Bus. Rev. 82 (3), 68–78, 126.

Jacobides, M.G., Cennamo, C., Gawer, A., 2018. Towards a theory of ecosystems. Strateg. Manag. J. 39 (8), 2255–2276. https://doi.org/10.1002/smj.2904.

Katz, M.L., Shapiro, C., 1985. Network externalities, competition, and compatibility. Am. Econ. Rev. 75 (3), 424–440. http://www.jstor.org/stable/1814809.

Ketchen, D.J., Shook, C.L., 1996. The application of cluster analysis in strategic management research: an analysis and critique. Strateg. Manag. J. 17 (6), 441–458. https://doi.org/10.1002/(SICI)1097-0266(199606)17:6<441::AID-SMJ819>3.0.CO;2-G.

Kohli, R., Melville, N.P., 2019. Digital innovation:areview and synthesis. Inf. Syst. J. 29 (1), 200–223. https://doi.org/10.1111/isj.12193.

Kretschmer, T., Leiponen, A., Schilling, M., Vasudeva, G., 2020. Platform ecosystems as meta-organizations: implications for platform strategies. Strateg. Manag. J. https://doi.org/10.1002/smj.3250.

Kvale, S., Brinkmann, S., 2009. Interviews: Learning the Craft of Qualitative Research Interviewing. SAGE.

Leask, G., Parker, D., 2007. Strategic groups, competitive groups and performance within the U.K. pharmaceutical industry: improving our understanding of the competitive process. Strateg. Manag. J. 28 (7), 723–745. https://doi.org/10.1002/smj.603.

Lehoux, P., Daudelin, G., Williams-Jones, B., Denis, J.-L., Longo, C., 2014. How do business model and health technology design influence each other? Insights from a longitudinal case study of three academic spin-offs. Res. Policy 43 (6), 1025–1038. https://doi.org/10.1016/j.respol.2014.02.001.

Lian, Z., Van Ryzin, G., 2021. Optimal growth in two-sided markets. Manag. Sci. https://doi.org/10.1287/mnsc.2020.3832.

Lingens, B., Miehé, L., Gassmann, O., 2020. The ecosystem blueprint: how firms shape the design of an ecosystem according to the surrounding conditions. Long Range Plan. 54 (2). https://doi.org/10.1016/j.lrp.2020.102043.

Lofland, J., Lofland, L.H., 1971. Analyzing Social Settings. Wadsworth Publishing Company.

Lumineau, F., Wang, W., Schilke, O., 2020. Blockchain governance—a new way of organizing collaborations? Organ. Sci. 32 (2), 500–521. https://doi.org/10.1287/orsc.2020.1379.

Malhotra, A., Gosain, S., Sawy, O.A.E., 2005. Absorptive capacity configurations in supply chains: gearing for partner-enabled market knowledge creation. Miss. Q. 29 (1), 145–187. https://doi.org/10.2307/25148671.

Massa, L., Tucci, C.L., Afuah, A., 2017. A critical assessment of business model research. Annals 11 (1), 73–104. https://doi.org/10.5465/annals.2014.0072.
Meyer, A.D., Tsui, A.S., Hinings, C.R., 1993. Configurational approaches to organizational analysis. Acad. Manag. J. 36 (6), 1175–1195. https://doi.org/10.5465/256809.
Miles, R.E., Snow, C.C., Meyer, A.D., Coleman Jr., H.J., 1978. Organizational strategy, structure, and process. Acad. Manag. Rev. Acad. Manag. 3 (3), 546–562. https://doi.org/10.2307/257544.
Miller, D., Mintzberg, H., 1983. The case for configuration. In: M. G. (Ed.), Beyond Method. Sage, CA.
Miller, Danny, Friesen, P.H., 1978. Archetypes of strategy formulation. Manag. Sci. 24 (9), 921–933. https://doi.org/10.1287/mnsc.24.9.921.
Momtaz, P.P., 2020. Entrepreneurial finance and moral Hazard: evidence from token offerings. J. Bus. Ventur. https://doi.org/10.1016/j.jbusvent.2020.106001.
Nakamoto, S., 2008. Bitcoin: A Peer-to-peer Electronic Cash System.
Nambisan, S., 2017. Digital entrepreneurship: toward a digital technology perspective of entrepreneurship. Entrep. Theory Pract. 41 (6), 1029–1055. https://doi.org/10.1111/etap.12254.
Nambisan, S., University of Wisconsin-Milwaukee, Lyytinen, K., Majchrzak, A., Song, M., Case Western Reserve University, University of Southern California, Xi'an Technological University, 2017. Digital innovation management: reinventing innovation management research in a digital world. MIS Q. 41 (1), 223–238. https://doi.org/10.25300/misq/2017/41:1.03.
Nambisan, S., Wright, M., Feldman, M., 2019. The digital transformation of innovation and entrepreneurship: progress, challenges and key themes. Res. Policy 48 (8), 103773. https://doi.org/10.1016/j.respol.2019.03.018.
Narayanan, A., Bonneau, J., Felten, E., Miller, A., Goldfeder, S., 2016. Bitcoin and Cryptocurrency Technologies: A Comprehensive Introduction. Princeton University Press.
Natarajan, H., Krause, S., Gradstein, H., 2017. Distributed Ledger Technology and Blockchain. World Bank, Washington, DC. https://doi.org/10.1596/29053.
Parker, G., Van Alstyne, M., Choudary, S.P., 2016. Platform Revolution: How Networked Markets Are Transforming the Economy and How to Make Them Work for You. W. W. Norton & Company.
Patel, P.C., Messersmith, J.G., Lepak, D.P., 2013. Walking the tightrope: an assessment of the relationship between high-performance work systems and organizational ambidexterity. Acad. Manag. J. 56 (5), 1420–1442. https://doi.org/10.5465/amj.2011.0255.
Pereira, J., Tavalaei, M.M., Ozalp, H., 2019. Blockchain-based platforms: decentralized infrastructures and its boundary conditions. Technol. Forecast. Soc. Chang. 146, 94–102. https://doi.org/10.1016/j.techfore.2019.04.030.
Punj, G., Stewart, D.W., 1983. Cluster analysis in marketing research: review and suggestions for application. JMR, J. Mark. Res. 20 (2), 134–148. https://doi.org/10.1177/002224378302000204.
Schmück, K., 2022. Less trust, more truth: affordances of distributed ledger technologies for decentralized platform ecosystems (Doctoral dissertation, Universität St. Gallen).
Schückes, M., Gutmann, T., 2020. Why do startups pursue initial coin offerings (ICOs)? The role of economic drivers and social identity on funding choice. Small Bus. Econ. https://doi.org/10.1007/s11187-020-00337-9.
Shipilov, A., Gawer, A., 2020. Integrating research on interorganizational networks and ecosystems. Annals 14 (1), 92–121. https://doi.org/10.5465/annals.2018.0121.
Short, J.C., Payne, G.T., Ketchen Jr., D.J., 2008. Research on organizational configurations: past accomplishments and future challenges. J. Manag. 34 (6), 1053–1079. https://doi.org/10.1177/0149206308324324.
Steininger, D.M., 2019. Linking information systems and entrepreneurship: a review and agenda for IT-associated and digital entrepreneurship research. Inf. Syst. J. 29 (2), 363–407. https://doi.org/10.1111/isj.12206.
Teece, D., 2010. Business models, business strategy and innovation. Long Range Plan. 43 (2), 172–194. https://doi.org/10.1016/j.lrp.2009.07.003.
Trabucchi, D., Buganza, T., 2022. Landlords with no lands: a systematic literature review on hybrid multi-sided platforms and platform thinking. Eur. J. Innov. Manag. 25 (6), 64–96. https://doi.org/10.1108/ejim-11-2020-0467.
Trabucchi, D., Moretto, A., Buganza, T., MacCormack, A., 2020. Disrupting the disruptors or enhancing them? How blockchain re-shapes two-sided platforms. J. Prod. Innov. Manag. https://doi.org/10.1111/jpim.12557.
Trabucchi, D., Falcone, C., Gastaldi, L., Buganza, T., Corso, M., 2023a. Platform enhancers: collaborating in the early stages of transactional platform development. J. Eng. Technol. Manag. 70 (101779), 101779. https://doi.org/10.1016/j.jengtecman.2023.101779.
Trabucchi, D., Patrucco, A.S., Buganza, T., Marzi, G., 2023b. Is transparency the new green? How business model transparency influences digital service adoption. Technovation 126 (102803), 102803. https://doi.org/10.1016/j.technovation.2023.102803.
Vergne, J.P., 2020. Decentralized vs. distributed organization: blockchain, machine learning and the future of the digital platform. Organ. Theory 1 (4). https://doi.org/10.1177/2631787720977052.
Weber, R.P., 1990. Basic Content Analysis. SAGE.
Williamson, P.J., De Meyer, A., 2012. Ecosystem advantage: how to successfully harness the power of partners. Calif. Manag. Rev. 55 (1), 24–46. https://doi.org/10.1525/cmr.2012.55.1.24.
Wood, G., 2014. Ethereum: A Secure Decentralised Generalised Transaction Ledger, Vol. 151. Ethereum Foundation, pp. 1–32. https://ethereum.github.io/yellowpaper/paper.pdf.
Wood, G., 2016. Polkadot: Vision for a Heterogeneous Multi-chain Framework. Web 3 Foundation. https://polkadot.network/PolkaDotPaper.pdf.
Yin, R.K., 2003. Designing case studies. In: Qualitative Research Methods. Sage publications, London, UK.
Zammuto, R.F., Griffith, T.L., Majchrzak, A., Dougherty, D.J., Faraj, S., 2007. Information technology and the changing fabric of organization. Organ. Sci. 18 (5), 749–762. https://doi.org/10.1287/orsc.1070.0307.
Zhu, F., Iansiti, M., 2012. Entry into platform-based markets. Strateg. Manag. J. 33 (1), 88–106. https://doi.org/10.1002/smj.941.
Zott, C., Amit, R., Massa, L., 2011. The business model: recent developments and future research. J. Manag. 37 (4), 1019–1042. https://doi.org/10.1177/0149206311406265.

Kilian Schmück is a Research Fellow at the Institute of Technology Management at the University of St. Gallen. He pursued his Ph.D. at the University of St. Gallen, specializing in decentralized platform ecosystems, Blockchain, Web3, and Decentralized Governance, with further research at the Questrom School of Business, Boston University. He obtained his bachelor's and master's degree in mechanical engineering from RWTH Aachen University (Germany).

Magnus Schückes is a PhD student at the Chair of SME Research and Entrepreneurship at the University of Mannheim. He is also affiliated with the Center for Doctoral Studies in Business (CDSB) at the Graduate School of Economic and Social Sciences (GESS). He obtained his master's degree from Copenhagen Business School (Denmark), and his bachelor's degree from Maastricht University (Netherlands) spending an exchange semester at Università commerciale Luigi Bocconi, Milan (Italy). His research interests focus on digital technologies, corporate venturing, and entrepreneurial finance.

Tobias Gutmann is Associate Professor at EBS Business School, specializing in the intersection of strategic innovation management, technology management, and entrepreneurship. He co-leads the Institute for Technology, Innovation & Customer Centricity (TICC) and directs the Siemens Product Innovation Lab. With a background in Electrical Engineering, Information Technology, and International Management, Tobias earned his Ph.D. from HHL Leipzig Graduate School of Management. He was a visiting scholar at the Copenhagen Business School and UC Berkeley.

Oliver Gassmann is Professor of Technology and Innovation Management at the University of St. Gallen, Switzerland. His-research interests include technology, business model innovation, open innovation, and innovation patterns. His-articles have been published in journals such as Journal of Management, Research Policy, Long Range Planning, Strategic Entrepreneurship Journal, Journal of Product Innovation Management, R&D Management, and others.