

On Challenges in Navigating Ecosystems: A Collection of Articles

PhD dissertation

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To Бронислава and Alois

“This album is dedicated to all the teachers that told me I'd never amount to nothing...”

Christopher George Latore Wallace

“Don't try.”

Henry Charles Bukowski, Jr.

Acknowledgements

Herning

April 8, 2024

Dear Reader,

This piece is already quite wordy; so, for the sake of both of us, I will take the liberty of cutting to the chase right away.

If you know my story, you might find it absurdly bizarre to see me in this position. Yet, if you think about it, it also somehow makes a perfect sense. The road has been long and winding, and as it usually is, my case is also a case of massive team effort. While the following lines stand zero chance to embrace everyone to who helped me to reach this destination, I promise to try and type my best.

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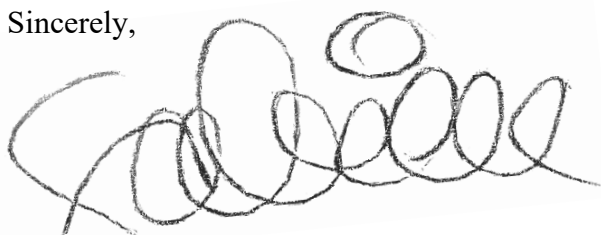
anything. I adore you more than corgi butts. Thank you for being the sous-chef of this thing; you may be equally competent to defend it as I am at this point. You are the strongest and the best-smelling person I know. My unbreakable crutch, my deranged raccoon, my personal epicentre of contagious positivity. The miracle of your existence will never cease to inspire me, and I shall forever cherish the privilege of orbiting around you. None of this would make any sense without you being mine, I hope you know that. No need to read the whole thing though, do not worry.

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Obviously, the outcome does not float my boat; yet here we are. I learned the ropes and counted my blessings. Now it is time to take it on the chin and move on.

Sincerely,

A handwritten signature in black ink, appearing to be 'Emilie', written in a cursive style with large loops and flourishes.

Abstract - English

For decades, organizations have been understood as open systems affected by contingencies in their external environment. Being reliant on resources controlled by others, their prosperity is conditioned by their ability to manage a complex tangle of organizational interdependencies. With the advent of digital transformation, value chains became increasingly modular, barriers to entry almost diminished, and the connectivity of products increased. Consequently, in addition to traditional networks, companies began manoeuvring through these highly digitalized spaces by forming ecosystems – sets of actors with varying degrees of multilateral, non-generic complementarities that are not fully hierarchically controlled.

The emergence of ecosystems has impacted the way business is done on many fronts, creating a variety of challenges for companies to deal with. Taking the shape of a collection of articles, this dissertation seeks to understand what some of these challenges are and how companies can tackle them. More specifically, it comprises three selected works delving into areas of open innovation, business models, and disruptive innovation. The first presented article is a multiple-case study of large multinational technology-intensive orchestrators and unpacks how they govern the interplay of interorganizational relationship mechanisms in open innovation projects across ecosystems. The second article is a conceptual piece that adopts an ecosystem angle to discuss how companies can propose, create, deliver, and capture value while protecting privacy in a sustainable way. The third and the last article of this collection is an abductive single-case study positioned in the context of the UK insurtech ecosystem and reveals how entrants use trust to mitigate tensions with incumbents in ecosystem-level disruption.

Ultimately, this dissertation offers an insight into how the emergence of ecosystems as a new form of managing organizational interdependencies affects the focal research streams and discusses the implications of such developments in the context of managerial practice.

Resumé – dansk

I årtier er organisationer blevet opfattet som åbne systemer, der påvirkes af tilfældigheder i deres omgivelser. Da de er afhængige af ressourcer, som andre regulerer og råder over, er deres succes betinget af deres evne til at håndtere et komplekst virvar af organisatoriske, indbyrdes afhængigheder. Med den digitale transformations indtog blev værdikæder mere og mere modulære, adgangsbarrierer forsvandt næsten, og produkters opkoblingsmuligheder blev flere og flere. Som en konsekvens heraf begyndte virksomheder også at manøvrere i disse stærkt digitaliserede omgivelser, og ikke blot i de traditionelle netværk, ved at danne økosystemer i form af grupper af aktører med varierende grader af multilaterale, ikke-generiske komplementariteter, som ikke er fuldstændig hierarkisk kontrolleret.

Fremkomsten af økosystemer har på mange fronter påvirket den måde, hvorpå man driver forretning, hvilket har skabt en række udfordringer, som virksomhederne skal håndtere. Gennem en samling af artikler søger denne afhandling at skabe klarhed om, hvad nogle af disse udfordringer er, og hvordan virksomheder kan tackle dem. Mere specifikt består afhandlingen af tre artikler om følgende emner: åben innovation, forretningsmodeller og disruptiv innovation. Mere præcist er den første artikel et multi-casestudie af store multinationale teknologi-intensive aktører, og gennem artiklen belyses det, hvordan de styrer samspillet mellem inter-organisatoriske relationsmekanismer i åbne innovationsprojekter på tværs af økosystemer. Den anden artikel er mere teoretisk, og via en økosystem-vinkel klarlægges det, hvordan virksomheder kan tilbyde, skabe, levere og akkumulere værdi, mens de samtidig beskytter data på en bæredygtig måde. Den tredje og sidste artikel er et abduktivt enkelt-casestudie i konteksten af det britiske insurtech-økosystem, og studiet viser, hvordan nye aktører bruger tillid til at mindske spændinger med mere etablerede aktører i disruptioner på økosystem-niveau.

Grundlæggende giver denne afhandling indsigt i, hvordan fremkomsten af økosystemer, der medfører en ny form for håndtering af organisatoriske afhængigheder, påvirker de centrale forskningsområder. Som følge heraf diskuterer den konsekvenserne af denne udvikling i konteksten af ledelsespraksis.

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Introduction

1. Research topic

It has been almost five decades since Pfeffer and Salancik published one of the most cited social science contributions, a seminal book called “The External Control of Organizations” (1979). Building on the theory of social exchange (e.g., Homans, 1961; Levine and White, 1961; Emerson, 1962, 1964, 1972a, 1972b, 1976; Blau, 1964), and works of Selznick (1949) and Thompson (1967), the authors laid foundations for an extraordinarily influential approach of interorganizational analysis (Mizruchi and Yoo, 2002), widely known as resource dependence theory. The principal premise of this perspective is that organizations should be understood as open systems dependent on contingencies in the external environment. Viewed as elementary units of analysing intercorporate relations, organizations are constrained by resources (e.g., financial, physical, information) that are not necessarily controlled endogenously, making them embedded in a plethora of interdependencies with other actors. These interdependencies can arise from collective action or technological advancements, but can disappear when the underlying resources, technologies, or markets become irrelevant. When organizations collaborate with other organizations that possess complementary resources, technologies, or market access, their performance can improve. Neglecting these interdependencies, however, can cause their performance to suffer (cf. Pfeffer and Salancik, 1978).

Considering the corresponding level of uncertainty arising from the limited autonomy, the prosperity of organizations partially hinges on the actions of others. Pressured to collectively adapt to their external environment (Hawley, 1986), their ability to manage the reciprocal and often indirect dependencies with their external environment constitutes not just a crucial success factor but also a core substance of their survival (e.g., Oliver, 1991; Biermann, 2008, 2014; Harsch 2015; Astley and Fombrun, 1983). After all, we have been witnessing firms

forming alliances, joint ventures, or buyer-supplier relationships for decades (e.g., Powell, 1990; Nohria and Eccles, 1992). Essentially, regardless the industry, steering the interplay of contracts and relationships to create value in networks has been a standard way of doing business (Cao and Lumineau, 2015). In recent years, however, the upswing of digital technologies has shaken the domain of interorganizational dependencies in its foundations (Iansiti and Lakhani, 2014). What began as a release of the first electronic large-scale general-purpose digital computer (Atanasoff, 1984; Rezac, 2020) has gradually developed into an upheaval of society-wide proportions. Not to be confused with digitization (i.e., encoding analog information into a digital format processable and transmittable by computers) or digitalization (i.e., using information or digital technologies to alter existing business processes), digital transformation, a phenomenon characterized by the adoption of new business models enabled by information and communications technologies has blurred the geographic, industrial, and organizational boundaries, and left organizations confronted with new opportunities and threats of existential character (Verhoef et al., 2021; Furr et al., 2022).

As aptly discussed by Furr, Ozcan, and Eisenhardt (2022), traditionally, firms have been operating as individual entities interacting in rather controllable, linear value chains, consisting of predominantly bilateral relationships. With the advent of digital transformation, however, the relationship between organizations and their environment became progressively dynamic and increasingly fluid – value chains became more modular, barriers of entry diminished, and connectivity of products increased (Sturgeon, 2021; Yoo et al., 2010; Casadesus-Masanell and Yoffie, 2007; Ozcan and Yakis-Douglas, 2020). As a consequence, in addition to collaborating via the traditional networks, we now see companies manoeuvring through these highly digitalized spaces by forming ecosystems – sets of actors with varying degrees of multi-lateral, non-generic complementarities that are not fully hierarchically controlled and cannot be

decomposed into an aggregation of bilateral interactions (Jacobides, 2019; Shipilov and Gawer, 2020; Adner, 2017).

Ecosystems have been around since the early 1990s (Moore, 1996; Iansiti and Levien, 2004), so their sole existence does not necessarily cause an upheaval; it is the recent swift expansion in their prevalence that is considered to be remarkable. Managing interorganizational dependencies by the means of ecosystems has been seen as a gamechanger, if not an imperative (cf. Daymond et al., 2023; Aarikka-Stenroos and Ritala, 2017). In the words of Michael G. Jacobides, the “meteoric rise” of these “new configurations for firms to collaborate and combine as they seek to create and capture value” can be considered as “one of the most important developments in the past few years” (2022, p. 99). It has been even argued that ecosystems have been changing the very nature of competition and rewriting the rules of strategy (Jacobides, 2019; Birkinshaw, 2019). In navigating this uncharted, dynamic territory, companies find themselves facing a variety of unparalleled challenges related to different areas of their business operations, which makes this phenomenon an exceptionally attractive topic of scholarly interest (e.g., Ihrig and Macmillan, 2017; Fuller et al., 2019; Radziwon and Bogers, 2019; Ozcan and Hannah, 2020; Pidun et al., 2021; Agarwal and Kapoor, 2023; Baldwin et al., 2024) and, ultimately, a cornerstone of this dissertation. Given these circumstances, this collection of articles hence strives to understand what some of the specific challenges are and how the organizations can tackle them. More precisely, it focuses on three issues in particular¹.

The first explored issue is rooted in the literature on open innovation, which has been linked to literature on organizational interdependencies for years (e.g., Vanhaverbeke, Van de Vrande, and Chesbrough, 2008; Alexy et al., 2013; West et al., 2014), mainly due to the well-

¹ This sub-section provides only a concise outline of the individual problems. For a more detailed overview, please refer to sub-section “4. Summary of the articles”.

established fact that “open innovation emphasizes the interdependence of complementary resources of firms to develop and launch the innovation in the marketplace” (Vanhaverbeke and Cloudt, 2014, p. 255). In this realm, the central point of interest is the interplay of interorganizational relationship governance mechanisms in open innovation projects across ecosystems. To elaborate, more and more self-interested companies are organizing themselves in ecosystems while jointly creating superior value by engaging in open innovation projects. Besides aligning the heterogeneous actors towards focal value proposition, it is also crucial for the orchestrators of such arrangements to manage their interorganizational relationships by navigating the interplay of contractual and relational governance mechanisms. Despite the relevance of understanding how contracts and relational governance co-evolve in different environments, knowledge on the interplay of interorganizational relationship governance mechanisms in the context open innovation projects that are being carried out by multinational ecosystem orchestrators is still missing. This gap is addressed in Article 1, by the means of a multiple-case study of large multinational technology-intensive companies. The study proposes a sequential, closed-loop model consisting of three sequential phases of interorganizational relationship governance in business-to-business open innovation projects across ecosystems (i.e., ex-ante, co-development, and ex-post) which can be respectively explained by different aggregated dimensions (i.e., evaluating prerequisites, establishing foundations, shifting mindset, jointly creating and capturing value, launching interorganizational spinoffs).

The second issue is positioned in the area of business models. More precisely, reflecting the massive global digitalization-enabled shift towards ecosystems, there has been a massive growth of business models of decentralized nature which rely on data and information – key resources that inherently lie outside of organizational boundaries (Snihur and Markman, 2023; Jiang et al., 2022). These business models are based on cross-border exchanges and involve an increasing number of actors that are dependent on each other (Nambisan et al., 2019). Despite

a great amount of value created in such ecosystems, the society at large has been suffering from a critical externality threatening one of the fundamental human rights – the right to privacy (United Nations, 1945, 1948). On the one hand, companies have been engaging in an excessive, unethical exploitation of personal data and information. On the other, restricting and controlling flows of data and information hampers the processes that lead to social well-being. This burning paradox remains so far unaddressed, and the knowledge on how to jointly propose, create, deliver, and capture value while protecting privacy in a way that would be sustainable both for firms and society remains lacking. Article 2 sheds light on this issue by identifying and bridging the gap between business models for sustainability and contextual integrity, proposing a novel angle on how these theories intersect and impact one another in the context of ecosystems. Besides articulating and stressing the relevance of privacy protection in the context of sustainable business development, this synthesis paper puts forward two propositions. First, it posits that the theory of contextual integrity needs to be revised. Second, it argues that the research stream on sustainable research modelling needs to pay more attention to the externalities caused by the increasing dependency of businesses on sharing and processing resources such as data and information. Ultimately, by linking two distinct yet interrelated and rigorously developed research streams, a heuristic framework for privacy and sustainability in business models is drawn up as a system of key considerations for managers to apply in assessing and planning business operations.

The third issue taps into the area of disruptive innovation, with a particular focus on ecosystem disruption (Cozzolino and Geiger, 2024). From an ecosystem-level perspective, the discourse dedicated to incumbents has been receiving extensive attention; however, only little is known about the challenges faced by entrants, particularly in relation to gaining support of the very same incumbent ecosystem they seek to disrupt. Facing this paradox known as “disruptor’s dilemma” (Ansari et al., 2016), the entrants are confronted with various forms of

incumbent resistance. Several researchers explored how the resulting tensions could be mitigated (e.g., Snihur et al., 2018; Gurses and Ozcan, 2015); nonetheless, the extant literature fails to address a factor that have been consistently proving itself crucial in developing and maintaining effective interorganizational relationships – trust (e.g., Villena et al., 2019). This gap is elaborated upon and addressed by the means of Article 3, which unfolds in two phases – an exploratory pilot and an instrumental in-depth single-case study (i.e., the case being a bounded phenomenon of entrants using trust to mitigate tensions with incumbents in ecosystem-level disruption) with multiple embedded subunits of analysis (i.e., the subunits being the individual entrants representing particular roles within the UK insurtech ecosystem) (Stake, 2000; Yin, 2018). Resultingly, the study posits that that entrants indeed use trust to mitigate tensions with incumbents in order to achieve ecosystem-level disruption. To gain the trust of said incumbents, the entrants need to nurture it on two levels – with the established ecosystem and with customers. On both of the levels, the antecedents comprise of cognitive and affective components. On the incumbent side, the entrants engage in signalling homogeneity and reframing innovation. On the customer side, the entrants take part in signalling legitimacy and reframing of the ecosystem’s value proposition. The customer and incumbent trust simultaneously reinforce one another; therefore, the trust of customers plays a crucial role in gaining trust of incumbents and vice versa. The dynamic has been encapsulated within in a detailed framework portraying the role of trust in ecosystem-level disruption.

In summary, this dissertation leans on the presumption that organizations are reliant on resources controlled by others. Their prosperity is conditioned by their ability to manage an intricate tangle of organizational interdependencies, which, with the advent of digital transformation became increasingly complex – value chains became increasingly modular, barriers to entry almost diminished, and the connectivity of products increased. Resultingly, in addition to traditional networks, companies began manoeuvring through these highly

digitalized spaces by forming ecosystems. Organizations aspiring to excel in an environment defined by varying degrees of multi-lateral, non-generic complementarities that are not fully hierarchically controlled need to master the art of navigating an array of challenges spanning different areas, including open innovation, business models, and disruptive innovation. To cumulatively address some of the arising research gaps, this dissertation takes shape of a collection of articles that seeks to understand what some of the critical challenges are and how companies can tackle them. More specifically, as elaborated in the following sub-section, the first presented article is a multiple-case study of large multinational technology-intensive orchestrators, which aims to unpack how they govern the interplay of interorganizational relationship mechanisms in open innovation projects across ecosystems. The second article is a conceptual piece that adopts an ecosystem angle sets out to discuss how companies can propose, create, deliver, and capture value while protecting privacy in a sustainable way. The third and the last article of this collection is an abductive single-case study positioned in the context of the UK insurtech ecosystem that strives to reveal how entrants use trust to mitigate tensions with incumbents in ecosystem-level disruption.

The subsequent parts of this collection hence unpack the research topic as follows. First, the remaining sub-sections of the Introduction outline the theoretical grounding of ecosystems as a common fulcrum of the individual articles and delve into respective concepts underpinning the self-standing studies as such. After introducing the key theoretical footholds and adumbrating the related issues further problematized in the corresponding articles, the document moves onto summarizing the explored research questions, reflecting on the research process (including the somewhat divergent nature of the work), and contemplating the adopted philosophical lens. Thereafter, the section culminates by foreshadowing the employed methodological approaches and, summarizing the findings, it transitions into the actual main

body of the document – Articles 1, 2, and 3. The last section of this dissertation then concludes the work by condensing the contributions, limitations, and avenues for future research.

2. Theoretical outline

While the respective articles include fully-fledged problematizations and standalone literature reviews, it is necessary to position the key concepts by instituting their theoretical foundations from a perspective bit wider than a traditional journal article allows for. Setting the scene for the individual contributions, the next paragraphs are hence dedicated to establishing common vocabulary, providing a conceptual anchoring, and narrowing down the emergent problems by outlining the addressed research gaps. First, the focus will be drawn to the analogical “independent variable” of the whole collection – a reoccurring theme of ecosystems – and its difference from the traditional networks. Next, the focus will be put on the research domains that have been impacted by the emergence of ecosystems – open innovation, business models, and disruptive innovation, respectively. This sub-section introduces the respective theories, positions them in the context of the ecosystems, and draws up the problems being addressed by the individual articles. Finally, the sub-section then concludes by summarizing the outlined research gaps that will be addressed via the respective papers.

2.1. Difference between networks and ecosystems

While it may seem like it, ecosystems did not replace the traditional concept of networks. On the contrary, organizations are typically embedded simultaneously in both. The terms are, nonetheless, often mistakenly misapplied, creating a great amount of confusion and bias. In this work, both of these concepts appear recurrently; therefore, drawing a distinction between them is essential.

Networks and ecosystems represent two distinct research traditions rooted in the same theoretical premise. Researchers often tend to approach these two concepts in isolation, creating the potential for them to appear identical, unrelated, or even mutually exclusive. This void, though perhaps unintentionally created, not only prevents researchers from generating greater empirical insights, but also creates a misguided disarray in the underpinning rigor of research on strategy and organizations. Following the steps of Shipilov and Gawer (2020), this dissertation understands networks and ecosystems as two different but inherently related manifestations of how organizations manage their dependency on other entities. The purpose of the next paragraphs is thus to elaborate on their common grounding, outline their respective nuances, and delineate their differences.

As open systems made up of different interest groups, organizations operate within economic and technological landscapes that are influenced by interdependencies between resources, markets, or technologies, often controlled by other others (Astley and Fombrun, 1983). These interdependencies can arise from collective action or technological advancements, but can disappear when the underlying resources, technologies, or markets become irrelevant. When organizations collaborate with other organizations that possess complementary resources, technologies, or market access, their performance can improve. However, neglecting these interdependencies can cause their performance to suffer (cf. Pfeffer and Salancik, 1978). As a result, organizations adapt collectively to their external environment and shape their surroundings in the process (Hawley, 1986). The perspectives of ecosystems and networks both acknowledge this dynamic relationship between organizations and their environment, and respectively emphasize different ways of managing it.

To cite Gulati, Nohria, and Zaheer (2000), networks are “composed of interorganizational ties that are enduring, are of strategic significance for the firms entering them, and include strategic alliances, joint ventures, long-term buyer-supplier partnerships, and

a host of similar ties” (p. 203). Research on interorganizational networks builds on the theory of networks (i.e., theory focused on processes that determine why networks have the structures they do) and the network theory (i.e., theory focused on consequences of network processes and structures), which are both rooted in graph theory (Borgatti and Halgin, 2011). Graph theory then dates back to the Euler’s fabled Seven Bridges of Königsberg (1953). From this perspective, a network can be viewed as consisting of nodes (i.e., actors) joined by lines (i.e., ties between the actors) (cf. Wasserman and Faust, 1994, p. 94). A company is thus understood as an agent controlling its embeddedness in the interorganizational relationships, which has impact on its opportunities and inhibitions. Geared towards exploitation of mutual complementarities (Gulati, 1995), these interorganizational relationships are governed by an interplay of contractual and relational mechanisms. Contractual governance is implemented through written, legally binding contracts that spell out the duties and responsibilities of the involved parties (e.g., Williamson, 1985; Poppo and Zenger, 2002). Relational governance is then based on informal self-enforcement of those involved and is deployed via shared norms and social relations (Poppo et al., 2008; Zhou and Xu, 2012). From a broader perspective, as elaborated in Article 1, the field of governance research in interorganizational relationships is then positioned at the intersection of transaction cost theory, relational exchange theory, and social exchange theory (Cao and Lumineau, 2015), and scholars contributing to this tradition are interested in a particular firm (i.e., its performance and consequences of its position) or a dyad (i.e., formation and disintegration of ties).

The concept of ecosystems, on the other hand, was introduced to strategic management by Moore (1993). Inspired by Bateson (1979) and the teachings of Gould (Shermer, 2002), he suggested that “a company [should] be viewed not as a member of a single industry but as part of a business ecosystem that crosses a variety of industries. In a business ecosystem, companies co-evolve capabilities around a new innovation: they work cooperatively and competitively to

support new products, satisfy customer needs, and eventually incorporate the next round of innovations” (Moore, 1993, p. 76). Since then, the field has undergone a considerable development and branched into several sub-streams which respectively orbit around different aspects of the general phenomenon, including research on platform ecosystems (i.e., focused on how actors organize around a platform), business ecosystems (i.e., focused on firm and its environment), or innovation ecosystems (i.e., focused on new value proposition or innovation and the set of actors bringing it to life) (see Table 1 for an illustration of respective definitions). Universally, however, it can be assumed that ecosystems are composed of “a set of actors with varying degrees of multi-lateral, non-generic complementarities that are not fully hierarchically controlled” (Jacobides, Cennamo, and Gawer, 2018, p. 2264).

Sub-stream	Exemplary articles	Definition
Business ecosystem	Iansiti and Levien, 2004, p. 68	<i>“[Business ecosystems are] loose networks of suppliers, distributors, and outsourcers; makers of related products or services; providers of relevant technology; and other organizations that affect, and are affected by, the creation and delivery of a company's own offering.”</i>
	Teece, 2007, p. 1325	<i>“The community of organizations, institutions, and individuals that impact the enterprise and the enterprise's customers and suppliers.”</i>
Platform ecosystem	Shipilov and Gawer, 2020, p. 101	<i>“The anchoring point for the literature on platform-based ecosystems is not the value proposition for end-users, but rather the platform itself, which is a core technology onto which complementors can connect their complementary products and services, often via standardized or open interfaces.”</i>
	Tiwana, Konsynski, and Bush, 2010, p. 676	<i>“[Platform ecosystem is] the collection of the platform and the modules specific to it.”</i>
Innovation ecosystem	Adner, 2006, p. 2	<i>“[Innovation ecosystems are] collaborative arrangements through which firms combine their individual offerings into a coherent, customer-facing solution.”</i>
	Kapoor, 2018, p. 2	<i>“An ecosystem encompasses a set of actors that contribute to the focal offer's user value proposition.”</i>

Table 1. Overview of main ecosystem research sub-streams

Ecosystems emerge thanks to modularity (i.e., “building a complex product or process from smaller subsystems that can be designed independently yet function together as a whole”, Baldwin and Clark, 1997, p. 84) which allows for coordination of actors that are independent yet interdependent. These actors create a joint customer value proposition which is superior to the value proposition that any of them would be able to achieve in individually (Lingens et al., 2021). The complementarities within an ecosystem can be of either unique (i.e., A requires B to function, or A is maximized with B) or supermodular (i.e., Edgeworth – more of A makes B more valuable) nature and can be found in production as well as in consumption. A relationship of two actors is hence dependent on the relationships of all other actors, and actors interdependent in a similar way are usually subject to similar rules of governance (Jacobides et al., 2018).

For value to be created, the relationships in an ecosystem need be aligned and have a specific structure. This requires joint decision making orchestrated by a central actor. Depending on the terminology used in different literature streams, such an actor can be called an orchestrator (e.g., Furr and Shipilov, 2018), a focal actor (e.g., Adner, 2017), a hub firm (e.g., Masucci et al., 2020), or a keystone organization (Iansiti and Levien, 2004). Furthermore, a component critical for the performance of an ecosystem is a bottleneck (i.e., “[a point] of value creation and capture in any complex man-made system”, Baldwin, 2015, p. 5). Bottlenecks can be either technical (e.g., outdated infrastructure) or strategic (e.g., one company controlling resources essential for value proposition of the whole ecosystem). Followingly, the ecosystems can then be centralized (i.e., many components dependent on one bottleneck component) or distributed (i.e., less bottlenecks and equal importance of all components). Position-wise, the complementarities of components within an ecosystem may be either hub and spoke (i.e., complementarities of components present between A and C, B and C, but not between A and B) or integrated (i.e., complementarities of components present

between D and E, E and F, F and D) (see Figure 1 for illustration). An example of a hub and spoke complementarities can be two apps compatible with Apple’s iOS but not compatible with each other, while an example of an integrated ecosystem can be two apps compatible with iOS as well as with each other (Shipilov and Gawer, 2020).

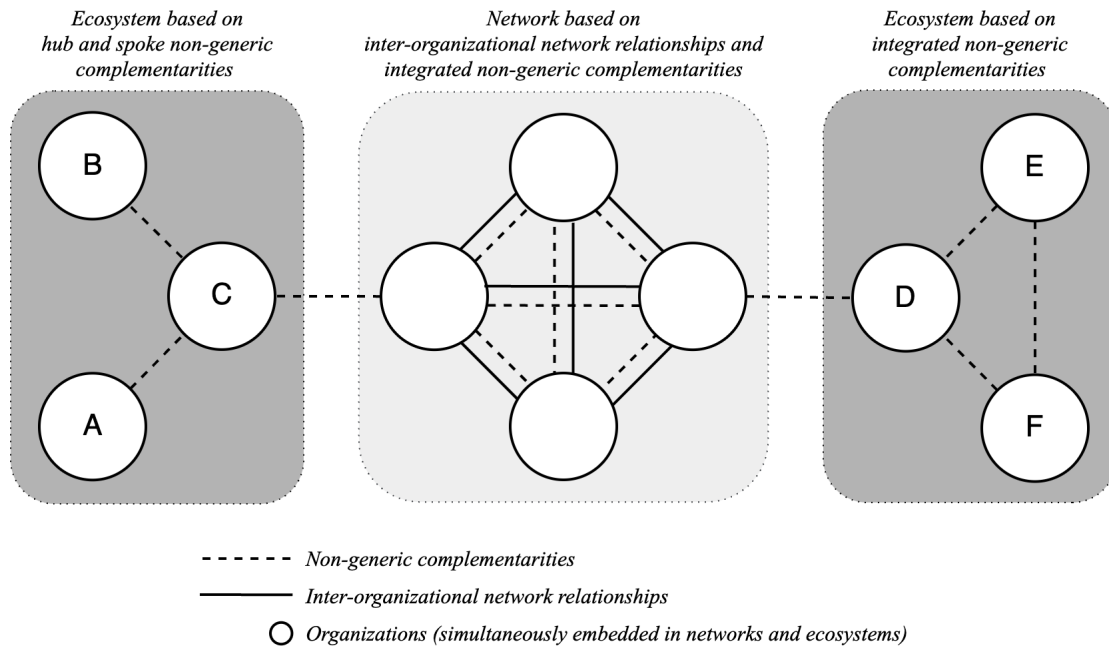


Figure 1. Simultaneous embeddedness of organizations in networks and ecosystems

As emphasized, the concept of an ecosystem is not a novelty. What is unprecedented, however, is the dramatic surge in its proliferation. As highlighted by Jacobides (2022) and Baldwin et al. (2024), due to a substantial shift in the innovative activity, the locus of managing interorganizational dependencies has shifted from isolated firms within traditional industries to groups of firms and individuals offering complementary goods and services, spanning multiple industries (Moore, 1996; Baldwin and Clark, 2000; Gawer and Cusumano, 2002; Adner, 2006; Kapoor, 2018). In other words, as pointed out by Furr, Ozcan, and Eisenhardt (2022), historically, organizations used to function as solitary units within fairly predictable,

straightforward value chains characterized by mostly direct relationships. The onset of digital transformation, however, marked a shift towards a more dynamic and fluid interaction between companies and their environment. This led to the emergence of modular value chains, reduced entry barriers, and enhanced product interconnectivity (Sturgeon, 2021; Yoo et al., 2010; Casadesus-Masanell and Yoffie, 2007; Ozcan and Yakis-Douglas, 2020). Consequently, beyond engaging in conventional networks, firms are increasingly navigating through digitized domains by establishing ecosystems. It is widely recognized that ecosystems are reshaping the landscape of competition and altering strategic paradigms (Jacobides, 2019; Birkinshaw, 2019). As firms venture into this novel realm, they encounter a myriad of unique conundrums across various business functions. This renders this topic not only a focal point of the continuously expanding academic inquiry (e.g., Agarwal and Kapoor, 2023; Ozcan and Hannah, 2020; Pidun et al., 2021; Ihrig and Macmillan, 2017; Fuller et al., 2019; Radziwon and Bogers, 2019) but also a central theme binding this dissertation. Like a red thread, the concept of ecosystems, therefore, weaves through the individual papers which cumulatively contribute to understanding “What challenges do organizations face in navigating ecosystems and how can they tackle them?”. Building on these foundations, the following parts of the theoretical outline use this conceptualization as a building block, explain the relationship of ecosystems and the focal research streams, and foreshadow the problems related to their emergence addressed in the respective articles.

2.2. Open innovation

Open innovation (OI) is the first concept this collection taps into. At the time of writing this dissertation, OI marks its twentieth anniversary (Chesbrough, 2003). And, as evidenced by the forthcoming Oxford Handbook of Open Innovation, the weekly UC Berkeley Open Innovation Seminars, and the annual World Open Innovation Conference, the field is evolving rapidly and

offers a plethora of exciting research opportunities to embark on (UC Berkeley, 2023). In its essence, OI sees innovation as an open system of activities (West et al., 2014). This means that sources of knowledge are widely distributed in the economy rather than vertically integrated within the boundaries of a single, isolated company (Chesbrough and Bogers, 2014). Revisiting the original concept, the definition of OI has gone through a process of finetuning and nuanced refinement (West et al., 2014). This development of the widely adopted definitions is illustrated in Table 2.

Article	Definition
Chesbrough, 2003, p. 43	<i>“Open Innovation means that valuable ideas can come from inside or outside the company and can go to market from inside or outside the company as well. This approach places external ideas and external paths to market on the same level of importance as that reserved for internal ideas and paths...”</i>
Laursen and Salter, 2006, p. 131	<i>“[O]pen innovation” [is a] model, using a wide range of external actors and sources to help them achieve and sustain innovation</i>
Chesbrough, 2006, p. 1	<i>“Open Innovation is the use of purposive inflows and outflows of knowledge to accelerate internal innovation, and expand the markets for external use of innovation, respectively.”</i>
Chesbrough and Bogers, 2014, p. 1	<i>“[We] define [open innovation] as a distributed innovation process based on purposively managed knowledge flows across organizational boundaries, using pecuniary and non-pecuniary mechanisms in line with the organization's business model.”</i>

Table 2. Development of the “open innovation” definition

OI challenges the fundamental assumptions, problems, solutions, and methods of the so called “closed innovation”. Generally, “closed innovation” is considered to rely on research and development activities that are internally siloed, i.e., the ideas are generated and developed in a linear fashion within the boundaries of an individual entity. Here, an organization uses its own resources and capitalizes on the innovation in a relative isolation. To summarize in line with Chesbrough (2003), an organization relying on this type of innovation universally embraces the tenet that the factors influencing its success are (and should be) endogenous. In

other words, it seeks to concentrate all the talent, come up with the best ideas, and get them to market first. It strives for control over the generated intellectual property and essentially secludes itself from the external influence to protect its competitive advantage. These principles of self-reliance peculiar to closed innovation can be demonstrated using a traditional innovation funnel, as illustrated in Figure 2.

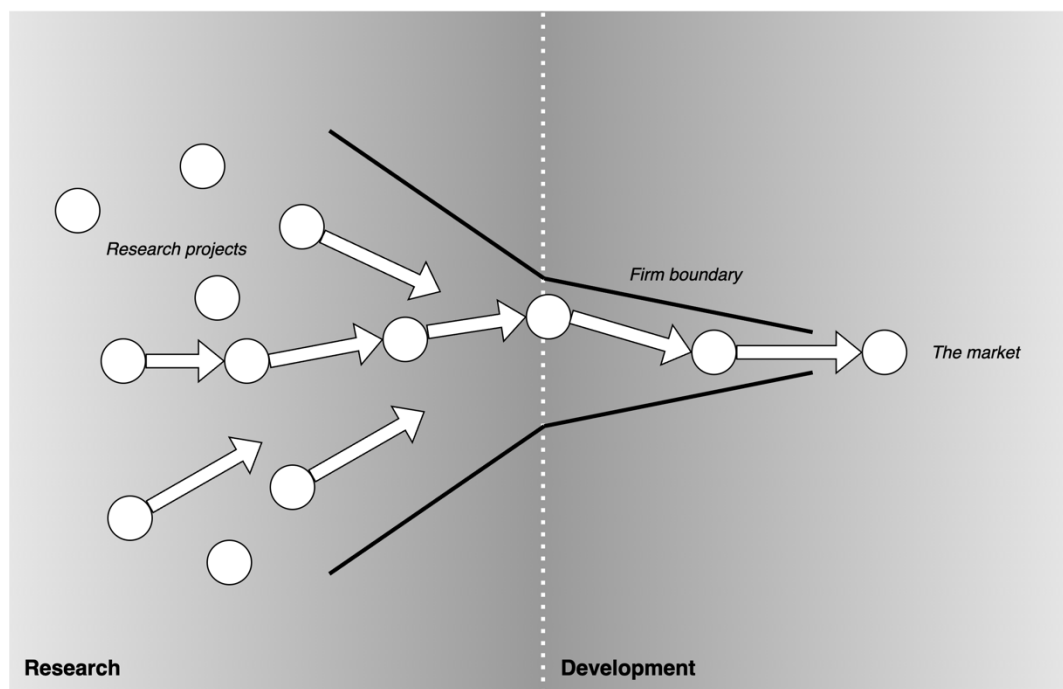


Figure 2. Closed innovation funnel

Contrastingly, OI dismantles the logic of closed innovation by recognizing the so called “erosion factors”. When supported by public policy, such factors change the circumstances under which the innovation takes place (Chesbrough and Vanhaverbeke, 2012; de Jong, et al., 2010) and challenge the core assumptions of the predominant innovation principles underpinned by the notion self-reliance. Constituting the reason for OI to be considered a paradigm shift (cf. Kuhn, 1962), these factors include, mobility of workers, more capable universities, declining hegemony of the United States, growing access of startups to venture

capital, and, importantly, the rise of digital technologies. Compared to the traditional “knowledge spillovers” which are understood as unmanageable externality (cf. Glaeser et al., 1992), the flows of knowledge in OI can be controlled in an intentional and deliberate way, by mechanisms specifically designed for such purpose (cf. Ogink et al., 2022). As demonstrated in Figure 3, the funnel in OI is, therefore, rather permeable, enabling organizations to transfer knowledge with their external environment.

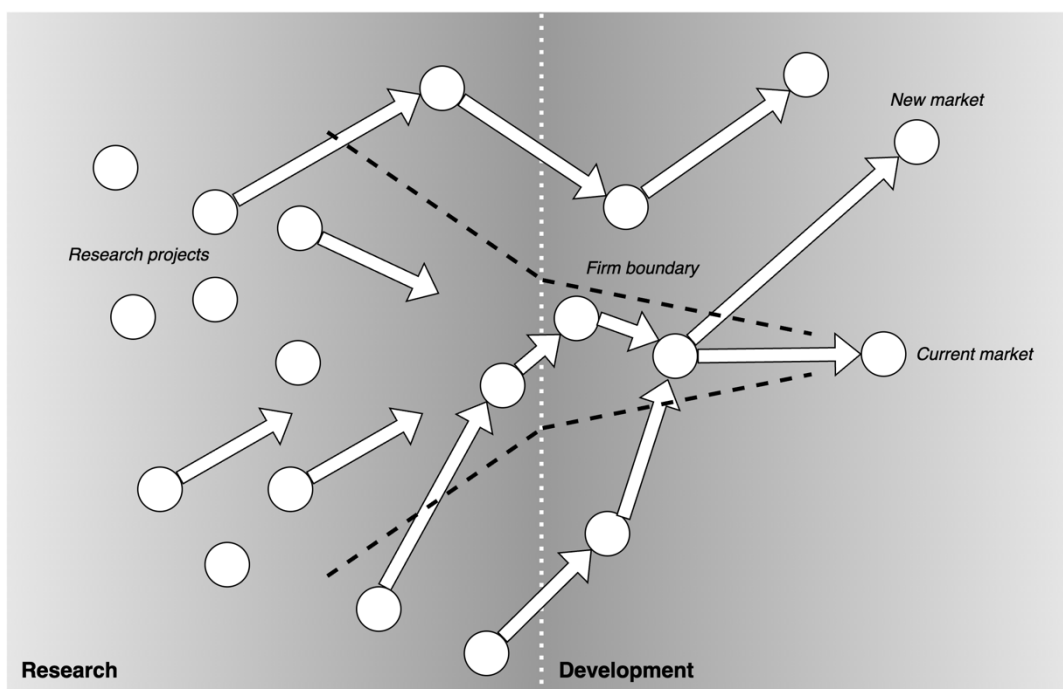


Figure 3. Open innovation funnel

As stated by Bogers, Chesbrough, and Moedas (2018), in today's digital landscape, there has been a fundamental change in the way innovation is approached. Rather than following a linear process, the organizations are now required to establish a modularity-enabled ecosystem that facilitates co-creation among individuals, organizations, and industries. This entails developing boundary-spanning business models that can adapt to changing circumstances and embrace the diversity of stakeholders involved (Holgerson, et al., 2022). Generally,

knowledge can cross the organizational boundaries in two directions – from outside the organization in (i.e., knowledge inflow) and from inside of the organization out (i.e., knowledge outflow). These flows can be than managed in three different ways. First, in addition to utilizing their own ideas, companies may obtain, integrate, and commercialize the external knowledge sources via their business model, i.e., outside-in (e.g., West and Bogers, 2014). To illustrate, specific examples of inbound innovation mechanisms can be, for instance, acquisitions of startups or crowdsourcing. Second, companies may generate value by allowing their redundant, underutilized, or unused knowledge to be leveraged by other firms’ business models, i.e., inside-out (e.g., Tranekjer and Knudsen, 2012). The outbound innovation takes place, for instance, by the means of, spinouts or out-licensing. Third, companies may also decide to simultaneously combine the inbound and outbound processes by engaging in strategic networks (Gassmann and Enkel, 2004). As discussed by Piller and West (2014), such coupled processes can be characterized by four dimensions – type of external actor (i.e., firms, other organizations, individuals), topology of coupling (i.e., dyadic, network, community), impetus for collaboration (i.e., top-down, bottom-up), and locus of innovation (i.e., bidirectional, interactive).

As elaborately presented in an “openly co-authored article” written by Bogers, et al. (2017), OI has been studied across different levels of analysis, ranging from intra-organizational (e.g., Antons and Piller, 2015) to industrial (e.g., Egger et al., 2016). Despite the high contextuality of the concept, the research on OI is rather scattered (Radziwon and Bogers, 2019). In particular, it has been highlighted that the existing studies have been primarily concerned with unravelling firm-level issues (Barbic et al., 2021). Highlighting the fact that core rationale of OI lies in firms commercializing internal innovations externally or sourcing external innovations to apply them internally (Randhawa et al., 2021), the lack of the interorganizational standpoint has been articulated by many. More specifically, as Bogers et

al., (2017) and Chesbrough, Lettl, and Ritter (2018) emphasise, such an uneven understanding of the theoretical domain points to a salient necessity to explore OI from a perspective centred around the processes and outcomes of joint invention, with a particular focus on activities related to value creation and value capture at the interorganizational level.

Studying OI on an interorganizational level leaves researchers facing an upheaval caused by the surge in the emergence of modularity-enabled ecosystems (Jacobides, et al., 2018; McGahan et al., 2020; Dahlander et al., 2021). In such a complex context inherently underpinned by the notion of coopetitiveness (Moore, 1993) (i.e., “simultaneous competition and cooperation among firms with value creation intent”, Gnyawali and Ryan Charleton, 2018, p. 2511), companies not only need to manage risks rooted in the differences in institutional culture, strategic focus, or structure (Temel and Vanhaverbeke, 2020) but also confront the obstacle of acquiring an attractive position in their ecosystem (Dahlander et al., 2021). Since the intensity of interorganizational interactions to improve innovation capabilities increases, the OI research has developed a branch specifically focused on business-to-business OI (B2B OI) (Bagherzadeh et al., 2021; Bogers et al., 2017; Chesbrough and Brunswicker, 2014; Gurca et al., 2021), defined as “a distributed, structured innovation process comprising manifold inbound and outbound knowledge flows derived from purposeful interactions with business partners” (Markovic et al., 2021, p. 159).

In line with the overall OI research trend, B2B OI has so far also been so far primarily concerned with the firm-level perspective (Bagherzadeh et al., 2021; Markovic and Bagherzadeh, 2018). Paradoxically, the tendency of the cumulative effort stands in contrast to the actuality that a large portion of firms mainly engage in B2B OI in order to serve the needs of a particular project (Bagherzadeh et al., 2021) and make decisions regarding different facets of openness in interorganizational relationships (IOR) based on the substance of such projects (e.g., Lee et al., 2019; Majchrzak et al., 2015). For that reason, it has been found pivotal to

explore B2B OI on the level of projects as well (Dahlander et al., 2021). Narrowing down the focus on this particular area of OI shows that governing OI projects entails a highly dynamic process combining structural (formal) and relational (informal) interactions (Faems et al., 2008; Henkel, 2016), which ultimately manifests in governance mechanisms based on contracts and relationships (e.g., Dyer and Nobeoka, 2000; Saebi and Foss, 2015; Zhu et al., 2019). The discourse on the duality of the two modes then develops primarily in the interorganizational literature, in the sub-stream regarded as organizational relationship (IOR) governance.

Generally, IOR governance is viewed as a key determinant influencing the economic success of a business. Depending on different factors, managing the interplay of contractual and relational IOR governance mechanisms may lead to variety of potential advantages (e.g., access to resources, access to knowledge) as well as disadvantages (e.g., conflicts, opportunistic behaviour, mistrust, lack of cooperation, unethical practices, or illegitimacy) (Cropper et al., 2008; Lumineau and Oliveira, 2018; Mesquita et al., 2017). While it has been discovered that the interplay changes in different phases of cooperation and varies in different types of environments (Olander et al., 2010), it remains uncomprehended how the phases of cooperation moderate the contracts-relational governance interplay, how different dimensions of contracts and relational governance co-evolve, and how and why contracts and relational governance interact differently in specific contexts (Cao and Lumineau, 2015). As the grasp of the substitutive and complementary interplay between the mechanisms is limited (Benítez-Ávila et al., 2018) and research exploring the interplay of different governance functions and dysfunctions is scarce (Howard et al., 2019), more insight is still needed in relation to how the governance mechanisms interact and evolve as co-operations develop. Except for a few contributions (e.g., Liu and Zhang, 2021; Radziwon and Bogers, 2019), the area of IOR governance in OI in general remains largely unexplored, and the research on interplay of IOR governance mechanisms in OI projects across ecosystems is essentially nonexistent. Reflecting

these research gaps, Article 1 of this collection thus aims to understand the interplay of IOR governance mechanisms in the context OI projects that are being carried out by multinational ecosystem orchestrators. By doing so, it answers the following research question: “How do orchestrators govern the interplay of IOR mechanisms in OI projects across ecosystems?”.

2.3. Business models

Business models, the second concept this collection taps into, is infamous for its multifacetedness, thus, similarly to ecosystems, its application without proper theoretical anchoring might cause substantial confusion. By tracing the references, it becomes evident that the first systematic antecedents of business models can be traced as far back as 1962 (Chesbrough and Rosenbloom, 2002); however, the term itself appeared in academic literature even earlier (Bellman et al., 1957). The field as a whole has begun gaining momentum simultaneously with the dot-com era in the second half of 1990s (e.g., Fielt, 2013; Zott, Amit, and Massa, 2010; Teece, 2010), and got to face some heavyweight criticism right from its inception. For instance, Porter (2001) labelled business models as part of the Internet’s destructive lexicon. Using the phrase “words for the unwise”, he presented an argument that the definition of a business model – a term employed by dot-coms and other internet actors in lieu of “strategy” and “competitive advantage” – is “murky at best”. He further posited that it predominantly refers to a vague conception of how a company generates revenue and generally does its business. Approaching management through the lens of a business model, he contended, thus fosters flawed thinking and disillusionment.

Resisting all the pushback, the debate on the topic of business models has persisted and steadily intensified. In spite of the argument that the concept has evolved into an “unclear idea with a cannibalizing tendency towards other management terms” (DaSilva and Trkman, 2014, p. 379), its importance for the fields of strategy, management, and innovation has been widely

established. A comprehensive account of the key motives for studying business models is offered, for instance, by Massa, Tucci and Afuah (2017). To illustrate, first, business models became instrumental for studying strategy and competitiveness (cf. Casadesus-Masanell and Ricart, 2010). Second, business models embody a new dimension of innovation, complementing its traditional foci (i.e., product, process, organization). Third, business models empower researchers to examine how organizations align their economic interests with the creation of environmental and social value. Fourth, as previously discussed, macro-level changes in the business landscape are blurring the boundaries between formerly distinct industries, compelling companies to reevaluate their approaches for achieving desired outcomes. The business model perspective not only streamlines this process, but also facilitates its understanding.

Although there seems to be a general consensus that the motivation of business models is to systematically and holistically explain how companies do business (Zott et al., 2011), how it is run and developed (Spieth et al., 2014), it is still apparent that the domain suffers from a significant ambiguity caused by a high number of different conceptualizations as well as taxonomies that systematically classify them. To cite Teece, “[t]here are almost as many definitions of a business model as there are business models” (2018, p. 41). For that reason, it is crucial to approach the understanding of business model concept systematically and in an organized way. According to Massa, Tucci, and Afuah (2017), from a very broad perspective, a business model is “a description of an organization and how that organization functions in achieving its goals (e.g., profitability, growth, social impact, etc.) (p. 73)”. However, the attempts to define the concept from a more operational perspective are massively diverging. As exemplified in Table 3, the literature focused on business models can be divided into three main groups of interpretations (Massa et al., 2017).

Interpretation	Article	Definition
Business models as attributes of real firms having a direct real impact on business operations	Amit and Zott (2001, p. 493)	<p><i>“A business model depicts the design of transaction content, structure, and governance so as to create value through the exploitation of business opportunities. We propose that a firm's business model is an important locus of innovation and a crucial source of value creation for the firm and its suppliers, partners and customers.”</i></p>
	Chesbrough and Rosenbloom (2002, pp. 533-534)	<p><i>“The functions of a business model are to: articulate the value proposition, i.e. the value created for users by the offering based on the technology; identify a market segment, i.e. the users to whom the technology is useful and for what purpose, and specify the revenue generation mechanism(s) for the firm; define the structure of the value chain within the firm required to create and distribute the offering, and determine the complementary assets needed to support the firm’s position in this chain; estimate the cost structure and profit potential of producing the offering, given the value proposition and value chain structure chosen; describe the position of the firm within the value network linking suppliers and customers, including identification of potential complementors and competitors; formulate the competitive strategy by which the innovating firm will gain and hold advantage over rivals.”</i></p>
	Bocken, Short, Rana, and Evans, (2014, p. 42)	<p><i>“Sustainable business models (SBM) incorporate a triple bottom line approach and consider a wide range of stakeholder interests, including environment and society. They are important in driving and implementing corporate innovation for sustainability, can help embed sustainability into business purpose and processes, and serve as a key driver of competitive advantage.”</i></p>
Business models as cognitive/linguistic schema	Magretta (2002, p. 4)	<p><i>“The word “model” conjures up images of white boards covered with arcane mathematical formulas. Business models, though, are anything but arcane. They are, at heart, stories – stories that explain how enterprises work. A good business model answers Peter Drucker’s age-old questions: Who is the customer? And what does the customer value? It also answers the fundamental questions every manager must ask: How do we make money in this business? What is the underlying economic logic that explains how we can deliver value to customers at an appropriate cost?”</i></p>
	Doganova and Eyquem-Renault (2009, p. 1559)	<p><i>“Rather than debating their accuracy and efficiency, we adopt a pragmatic approach to business models — we examine them as market devices, focusing on their materiality, use and dynamics. Taking into account the variety of its forms, which range from corporate presentations to business plans, we show that the business model is a narrative and calculative device that allows entrepreneurs to explore a market and plays a performative role by contributing to the construction of the techno-economic network of an innovation.”</i></p>

	Baden-Fuller and Morgan (2010, p. 19)	<i>“Our discussions suggest that business models have a multivalent character as models. They can be found as exemplar role models that might be copied, or presented as nutshell descriptions of a business organisation: simplified, short-hand descriptions equivalent to scale models.”</i>
Business models as formal conceptual representations/descriptions of how an organization functions	Osterwalder, Pigneur, Tucci (2005, p. 5)	<i>“A business model is a conceptual tool containing a set of objects, concepts and their relationships with the objective to express the business logic of a specific firm. Therefore we must consider which concepts and relationships allow a simplified description and representation of what value is provided to customers, how this is done and with which financial consequences.”</i>
	Boons and Lüdeke-Freund (2013, p. 10)	<i>“[We] distinguish the following elements of a generic business model concept:</i> <i>1. Value proposition: what value is embedded in the product/ service offered by the firm;</i> <i>2. Supply chain: how are upstream relationships with suppliers structured and managed;</i> <i>3. Customer interface: how are downstream relationships with customers structured and managed;</i> <i>4. Financial model: costs and benefits from 1), 2) and 3) and their distribution across business model stakeholders.”</i>
	Wells (2016, p. 37)	<i>“In broad terms, a business model can be defined as having three constituent elements: the value network and product/service offering that defines how the business is articulated with other businesses and internally (i.e., how value is created); the value proposition that defines how products and/or services are presented to consumers in exchange for money (i.e., how value is captured); and the context of regulations, incentives, prices, government policy and so on (i.e., how value is situated within the wider socioeconomic framework).”</i>

Table 3. Overview of perceptions of business models

In this dissertation the business models are being interpreted as formal conceptual representations/descriptions of how an organization functions. This interpretation depicts business model as a formal description of how a company does business by translating its strategic issues into a conceptual model that explicitly articulates some aspects of its activities (Massa et al., 2017; Osterwalder et al., 2005; Mylopoulos, 1992). These organizational “blueprints” then differ in three key aspects – levels of abstraction, content, and semantics. As

to the matter of abstraction, the focal point is “distance from reality”. For example, Massa and Tucci (2014) distinguish between business models as activity systems, meta-models, specified graphical frameworks, graphical frameworks (ontologies), archetypes and narratives. Content-wise, the formal conceptualizations of business models differ in what elements of “doing business” a particular researcher finds important. To illustrate, consider for instance the difference between Schaltegger, Hansen, and Lüdeke-Freund (2016) and Teece (2010). Although these articles articulate the concept on a relatively similar level of abstraction (i.e., the former essentially builds on the definition of the latter), Schaltegger and colleagues emphasise the dimension of sustainability, while Teece focuses rather on the aspect of economic viability. Lastly, contributions adopting this interpretation may also differ in semantics, i.e., “the signs, symbols, text, as well as other codes that are adopted and their meaning” (Massa et al., 2017, p. 76).

Narrowing down the theoretical focus, this collection views business models from the perspective of an ontology focused particularly on social sustainability. Specifically, the definition central to the article is the following : “[A] business model for sustainability helps describing, analysing, managing, and communicating (i) a company’s sustainable value proposition to its customers, and all other stakeholders, (ii) how it creates and delivers this value, (iii) and how it captures economic value while maintaining or regenerating natural, social, and economic capital beyond its organizational boundaries” (Schaltegger et al., 2016, p. 6). While the interest in business models for sustainability has been very much thriving (e.g., Upward and Jones, 2015; Schneider and Clauß, 2019; Lüdeke-Freund et al., 2020), as Lüdeke-Freund (2020) emphasises, the knowledge on what prevents sustainable value creation is extensive but not yet conclusive, hence requires further insight. In particular, a critical constrain is constituted by the insufficient focus on the social aspect of sustainability. For illustration, it has been argued that the social dimension of sustainability has not received the same amount

of attention as environmental or economic sustainability (Brem and Puente-Díaz, 2020) or that the body of literature concerned with sustainable business offers “huge scope and impetus for future scholarly works” but lacks conceptual and operational clarity Soni et al. (2021, p. 13).

While the literature on business models gives recognition to the social aspects of sustainability (and the need to explore it), it largely neglects some of the recent developments that directly affect the way of how business as well as society function. First, as previously outlined, in addition to rather straightforward networks (Gulati et al., 2000; Shipilov and Gawer, 2020), today's interconnected organizational landscape consists of complex ecosystems which fundamentally rely on the cross-border exchange of data and information (Snihur and Markman, 2023; Jiang et al., 2023; Nambisan et al., 2019). Despite a great amount of value created in such ecosystems, the society at large has been suffering from a critical externality threatening one of the fundamental human rights – the right to privacy (United Nations, 1945, 1948). Secondly, the act of protecting personal data from being shared can yield both beneficial and detrimental impacts on the well-being of both society and individuals (Acquisti et al., 2016) discuss. Contrary to the idea of merely restricting information flow or securing control rights, Nissenbaum's widely acclaimed and comprehensive theory of contextual integrity (Nissenbaum, 2010) suggests a different approach to privacy protection. More specifically, it asserts that "notice-and-consent, however sophisticated, will [not] achieve improved privacy online if it continues to be a procedural norm disconnected from the specifics of relevant online activities" (p. 35). This approach underscores the significance of managing the flow of personal information in a contextually appropriate manner. However, in the context of emerging digital ecosystems, this theory appears somewhat inadequate, particularly in addressing the appropriate, sustainable use of data.

Diving deep into the relevance of privacy protection in the context of sustainable business development, Article 2, therefore, aims to bridge the gap between business models for

sustainability and contextual integrity, proposing a novel angle on how these theories intersect and impact one another in the context of ecosystems. In particular, the synthesis paper makes a thorough effort to develop an argument that a business model which is based on transmission of data and information cannot be considered sustainable unless it operates in compliance with contextual integrity, while contextual integrity cannot be considered applicable in business environment unless the use of data is considered. This means that in order to protect privacy, the flow of data and information must be in line with the theory of contextual integrity (Nissenbaum, 2010), while the use of data and information must be in line with the theory of business models for sustainability (Schaltegger et al., 2016). Based on the conceptual gaps foreshadowed above, it hence strives a research question “How can companies propose, create, deliver, and capture value while protecting privacy in a sustainable way?”.

2.4. Disruptive innovation

Disruptive innovation has been first touched upon in 1995 in an article co-authored by Bower and Christensen called “Disruptive Technologies: Catching the Wave” (1995). In this pioneering piece of work, the authors proposed an explanation for surprising failures of leading companies to stay at the top of their industries. Based on Christensen’s experience from 1980s, when he co-founded a startup which successfully tackled Alcoa and DuPont, they identified a pattern suggesting that a company with fewer resources can beat the incumbents by offering simple, low-cost alternatives to the niche market omitted by the incumbents. While the established players remain focused on overserving their existing customer base and keep upgrading their offerings to attract more profitable customers, the entrants keep improving their product and start to take over the mainstream market before the incumbent notices. To prevent disruption, the authors then argued that incumbents themselves should identify the niche and launch their own disruptive innovation by means of a separate organizational unit. The idea of

disruptive innovation has reached the mass readership in 1997, when Christensen published his seminal book “The innovator's dilemma: when new technologies cause great firms to fail” (1997). Besides spurring lively interest of audience spanning scholars, practitioners, critics, and enthusiasts, the impact of the idea has been massive. This can be illustrated, for instance, by its recent inclusion in Harvard Business Review’s IdeaCast series “4 Business Ideas That Changed the World: Disruptive Innovation” (2022).

As discussed by Christensen, Raynor, and McDonald (2015), the use of the term “disruptive innovation” has been experiencing analogical inflation. While the number of people using the term rises (see Figure 4), it very often gets vaguely misapplied in instances of ordinary industrial development accompanied by a hiccup of a well-established business (e.g., case of UBER). Since the definitions are plentiful (e.g., Si and Chen, 2020), the concept itself has been considered quite elusive (e.g., Nagy et al., 2016). Originally, the theory of disruptive innovation has been very much focused on the technological aspect of the identified phenomenon, emphasizing how the disruptive components attract the niche market by possessing features omitted by the offerings sought-after by mainstream consumers. Over time, the disruptive technologies improve and overcome the dominant adopted by incumbents (Christensen, 1997). Nonetheless, as Christensen (2006) himself later admits, labelling the phenomenon “disruptive technology” been a mistake because it is the business model in which the technology is operationalized that disrupts the incumbent. Christensen, Raynor, and McDonald (2015, p. 4) define disruptive innovation as broadly as “a process whereby a smaller company with fewer resources is able to successfully challenge established incumbent businesses”. In the same breath, however, it is necessary to elaborate on the key assumptions that make the concept distinct from innovation of sustaining character. First, disruption is a process which takes time. Focusing on the design of their business model, the innovators advance from the “fringe” (i.e., low end, new market) to the mainstream. By improving the quality of their offering, they

gradually start to assume control over the incumbents' market share and proceed to curb their ability to generate profit. Second, the theory of disruptive innovation does not focus on the outcome of the process. Not all disruptions are necessarily successful and not all successes are disruptive. As entrants take very different paths to gain competitive advantage, outcome of the process simply lies outside of the boundaries of the theory. Therefore, rather than guiding companies in how to leverage a technology, it helps them to decide whether to pursue a direction of innovation that is sustaining or disruptive. And finally, the business models of the entrants are typically very different compared to the established players; however, this does not imply that the incumbents need to drastically revamp their whole organization in order to withstand the anticipated whirlwind. Instead, the incumbents should draw a line between their disruptive efforts by detaching them from their core operations, and simultaneously strengthen their core operations by investing into innovations that are sustaining (i.e., improving offerings for the existing customers).

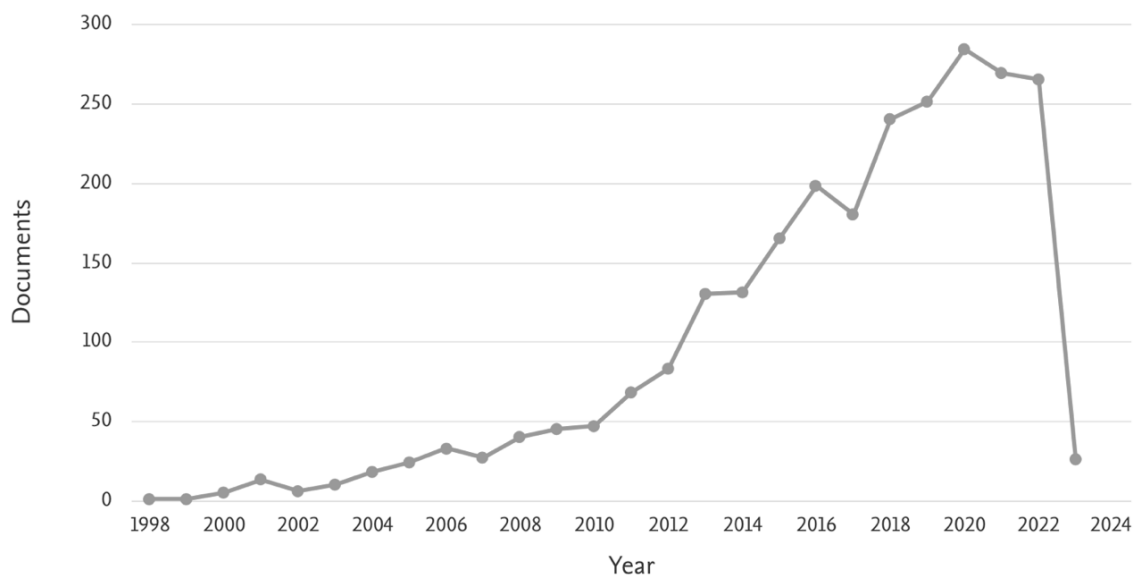


Figure 4. The use of term “disruptive innovation” in years 1995 – early 2023 (Scopus)

As discussed by Christensen, McDonald, Altman, and Palmer (2018), over the years, scholars have dedicated a great deal of attention to refining and expanding the theory in light of anomalies they observed across different contexts. To illustrate, it has been discovered that disruption is relative (i.e., an innovation which is sustaining for one organization is disruptive for another); therefore, it should be always evaluated mindful of the business model in question (Christensen and Raynor, 2003; Kapoor and Klueter, 2015). Researchers also discovered that the rigidity of incumbents to form a response by allocating free-flowing resources is dependent on whether the leadership framed the disruption as an opportunity or threat, or that incumbents can in fact successfully resist the disruption and maintain market leadership (Gilbert, 2005; Gilbert 2006). Ultimately, many of the then-surprising findings are understood as the essential features of the theory. For instance, the original theory has emphasized solely low-end market entries, i.e., disruptions that start at the bottom of an existing market before developing up the value network (Christensen and Raynor, 2003). Nonetheless, further research proved that disruption can also happen in completely new markets by turning non-consumers into customers (Charitou and Markides, 2003; Anthony et al., 2008). Such novel insights rendered disruptive innovation a fully-fledged theory; nonetheless, as described in the following paragraphs, it also sparked a wave of interest in exploring its nuances in light of contemporary developments.

Zooming in of the central theme of this dissertation, decades of research have unravelled a promising opportunity to understand disruption from an interorganizational perspective. In particular, as highlighted by Cozzolino and Geiger (2024), disruption has been traditionally conceptualized at the product level; nonetheless, in the last decade, scholars (e.g., Christensen et al. 2018; Kumaraswamy et al., 2018; Teece, 2018) have advocated for a broader, system-level perspective on the theory. This has led to an expanded focus of investigations focused on understanding disruption in the context of ecosystems (Adner and Kapoor, 2016; Adner and

Lieberman, 2022; Ansari et al., 2016; Gans and Stern, 2003; Ozalp et al. 2018; Snihur et al., 2018). To illustrate the development of this research stream, one of the first studies approaching disruption from a wider, interorganizational perspective is a contribution by Gans and Stern (2003). Although not directly mentioning ecosystem disruption, the article essentially explores the potential for new entrants to integrate into or replicate existing value chains, identifying four distinct commercialization environments for new market entrants. And, as illustrated on the following examples, further studies followed. Adner and Kapoor (2016), for instance, studied cases of technological disruption, suggesting that the adoption timing of new technologies is influenced by the resolution of emerging ecosystem challenges and the potential for extending existing technologies within established ecosystems. Cozzolino et al. (2018) differentiated between disruptive technologies and business models, studying their impacts on value creation and capture among ecosystem actors. Ozalp et al. (2018) investigated how incumbent firms introducing advanced platform technologies challenged their complementors and improved their learning curves. Conversely, Adner and Lieberman (2021) observed instances where complementors evolve into disruptors. Snihur et al. (2018) explored creation of Salesforce's new ecosystem, highlighting its framing strategies of differentiation and subsequent adaptation in response to other ecosystem participants including incumbents. Öberg (2023) focused on the interdependencies in ecosystems, particularly how incumbents depend on other ecosystem members, especially customers, to manage disruption.

Overall, interpreting Cozzolino and Geiger (2024), the literature on ecosystem disruption has been developing in line with Kumaraswamy et al. (2018) who see it as innovation which can “disrupt existing relationships among the members of entire industries and ecosystems instead of disrupting just specific incumbents” (p. 1027); therefore, extending the traditional product-centricity (Christensen, 1997) by including a wider range of disrupted actors, their relationships, sources of disruption, and strategies employed to disrupt ecosystems (Ozalp et

al., 2018; Öberg, 2023; Ansari et al., 2016; Kumaraswamy et al., 2018). Consequently, Cozzolino and Geiger (2024) suggested that ecosystem disruption can be defined as “an innovation challenging value-creation interdependencies in an ecosystem to the extent that the competitive advantage of one or more actors is threatened. The disruption can pertain to ecosystem actors' technologies, products, business models, assets, or relationships among actors and with customers. Disrupted actors are likely to include incumbents, but can also extend to suppliers, complementors, and competitors” (p. 2).

A research opportunity especially pertinent to the realm of literature on ecosystem disruption from entrants' perspective is rooted in the prime concern of entrants to assemble a governable ecosystem capable of bringing the innovation to life at the interorganizational level (Kumaraswamy et al., 2018). In particular, the entrants face a paradox coined as “disruptor's dilemma” (Ansari et al., 2016). “Disruptor's dilemma” lies in the fact that to successfully impact dynamics of an existing ecosystem, the entrants find themselves reliant on support of the very same incumbents embodying the status quo they ultimately seek to disrupt. In dealing with this paradox, the entrants are confronted with various forms of incumbent pushback, resulting in interorganizational relationships underpinned by a great deal of complexities.

Number of researchers explored how the tensions arising from the so-called “disruptor's dilemma” could be mitigated; nonetheless, the phenomenon still remains largely underexplored (e.g., Snihur et al., 2018; Autio and Thomas, 2018; Dattée et al., 2018; Gurses and Ozcan, 2015). In this context, an array of studies has continuously presented clear and convincing evidence that a factor which leads to a vast variety of positive interorganizational outcomes is trust (Villena et al., 2019). This resonates especially in ecosystems, interorganizational arrangements where hierarchical governance is absent (Jacobides et al., 2018). To illustrate, it has been argued that trust lies at the core of successful knowledge sharing in innovation ecosystems based on supermodular complementarities (i.e., more of A makes B more

valuable). Mostly related to the value-creation dynamics, trust is also considered to be a salient relational antecedent determining the general health of an ecosystem (Cobben et al., 2023), making it integral to the development and maintenance of strong, collaborative relationships among different ecosystem actors. Additionally, trust has been also determined to have a positive effect on cooperation (Gambetta, 1988; Stahl et al., 2011), reducing conflicts and costs of negotiation (Zaheer et al., 1998), lowering transaction costs and increasing competitive advantage (Dyer and Chu, 2003), willingness to take greater risks (Uzzi, 1997), flexibility and innovation (Lorenz, 1988), organizational adaptability and partnership performance (Gulati and Nickerson, 2008), satisfaction with interorganizational relationships (Gainey and Klaas, 2003), willingness to support partners during their growth stage (Wu et al., 2008), interfirm knowledge transfer (e.g., Faems et al. , 2007), or knowledge accessing (Lui, 2009); Li et al., 2010).

Despite the obvious potential of trust to act as a mediating factor in moderating interorganizational tensions, its role in “disruptor’s dilemma” – a paradox which revolves around a complex tangle of tensions between two contrasting types of organizations (i.e., entrants and an existing incumbent ecosystem) – remains unexplained. Relatedly, a substantial effort has been dedicated to unveiling how can incumbents strategize to resist the entrants. For illustration, is known that the incumbents’ resistance can be direct or indirect and takes different shapes and forms (Aldrich and Baker, 2001). Furthermore, their approach can be either more focused (i.e., single reaction) or more combinative (i.e., multiple reactions at the same time) (Aghaie et al., 2022). Typically, incumbents also tend to create a structurally autonomous business unit to take advantage of the innovation in a disruptive manner (e.g., Gilbert, 2006), or even attempt to acquire the entrants (Ferrary, 2011; Kapoor and Klueter, 2015). Ultimately, facing the abundant narratives on the topic of incumbent response strategies, the literature discussing disruption of ecosystems is teeming with unaddressed calls for

contributions adopting the perspective of entrants (Ansari et al., 2016; Snihur et al., 2018; Kumaraswamy et al., 2018). To address the foreshadowed research gaps and contribute to the outlined theory, Article 3 thus sets out to answer the research question “How do entrants use trust to mitigate tensions with incumbents in ecosystem-level disruption?”

2.5. Summary of research questions

To summarize the research questions exposed by the means of the previous sub-sections, this collection consists of three standalone articles respectively answering three domain-specific sub-questions related by a common, overarching theme. The overview of the research questions is presented in Table 4 below.

	<i>Research question</i>
<i>Theme of the collection</i>	<i>What challenges do organizations face in navigating ecosystems and how can they tackle them?</i>
<i>Article 1</i>	<i>How do orchestrators govern the interplay of interorganizational relationship mechanisms in open innovation projects across ecosystems?</i>
<i>Article 2</i>	<i>How can companies propose, create, deliver, and capture value while protecting privacy in a sustainable way?</i>
<i>Article 3</i>	<i>How do entrants use trust to mitigate tensions with incumbents in ecosystem-level disruption?</i>

Table 4. Overview of research questions

3. Reflections on research process and philosophy

To fully grasp the collection that constitutes this dissertation, it is considered crucial to view it against the backdrop of the overall research process and through the optics adjusted in accordance with the underpinning philosophical paradigm. The following paragraphs thus shed light on these aspects and explain the evolution of the work from a rather empirical standpoint.

3.1. Reflections on the research process

From a meta-perspective, the dissertation has been purposely positioned as “a collection of articles”. In line with the “Rules and guidelines for the PhD degree programme” (Aarhus BSS Graduate School, 2023, p. 24), such a collection must include about 3-6 articles (approx. 150-300 pages), which have been published in or are potentially publishable through recognised publishing channels. These articles ought to be accompanied by a summary which needs to account, possibly briefly, for the relation between the publications and outline how they contribute to the overall PhD project. It is hence substantial to clarify that the intention of this collection is neither to simulate a monograph nor address a singular research problem by dividing it into three separate pieces. Rather than that, it longs to offer a rich but specific insight into how the emergence of ecosystems as a new form of managing organizational interdependencies interact with the focal research streams, address the respective research gaps, and discuss the implications of such developments in the context of managerial practice. After a consultation with the Head of PhD Program as well as the Principal Supervisor, the summary (substantiated by the “Introduction” and “Conclusion” sections) has been intentionally kept rather concise, drawing the focus of a reader to the papers themselves.

To meet the requirements of the respective target journals (and to accommodate the preferences of the individual reviewers), the format and tone of each article slightly vary. For context, Article 1 was published in the *Industrial Marketing Management* (Aagaard and Rezac, 2022). Various iterations of this article have also greatly benefited from different sessions at the World Open Innovation Conference in 2020 (Meet the Editor Shark Tank at the University of California, Berkeley) and in 2021 (Doctoral Consortium at Eindhoven University of Technology). Despite being listed as the second author of this publication, my contribution has been considered major (see Appendix 1 for “Declaration of Co-authorship”).

Article 2 was published in the Journal of Business Models (Rezac, 2022). Predominantly written in 2020, this contribution is solely authored, with its multiple versions shaped by feedback received from the International Conference on New Business Models 2022 (LUMSA University, Rome), an internal conference at the Department of Business Development and Technology at Aarhus University, and discussions with students enrolled in a 10 ECTS MSc course on Digital Business Development (the article was presented in various instances in the form of a lecture).

Finally, Article 3 emerged during the time I spent as Recognised DPhil Student at Saïd Business School, University of Oxford. During this period, I had the privilege of receiving invaluable guidance from Prof. Ozcan along with her team. This sole-authored article has been developed at the Journal of Product Innovation Management Paper Development Workshop 2023 (Responsible Innovation and Entrepreneurship Conference at San Francisco State University) and its early draft was subsequently presented at the European Academy of Management Conference (EURAM) 2023 (Trinity College, Dublin). It was also accepted for presentation at DRUID 2023 (Nova School of Business and Economics, Lisbon) and Innovation and Product Development Management Conference (IPDMC) 2023 (Politecnico di Milano, Lecco); nonetheless, it had to be withdrawn due to the lack of funding. This article has been undergoing a major revision and remains a continuous work in progress.

3.2. Philosophical considerations

Given the nature of this document (i.e., a collection of articles), it is needless to say that the methodology of each individual article differs. At the same time, however, it is important to recognize that the dissertation as a whole is built upon a common philosophical tradition. Since the format of a journal article does not allow for such a discussion, the key reflections are presented by means of the following paragraphs.

As articulated by Burrell and Morgan (2019), “all social scientists approach their subject via explicit or implicit assumptions about the nature of the social world and the way in which it may be investigated” (p. 1). As summarized in Saunders, Lewis, and Thornhill (2019), these assumptions commonly differ in ontology (i.e., researcher’s perspective on the nature on reality), epistemology (i.e., researcher’s perspective on how reality can be understood and communicated as acceptable knowledge), and axiology (i.e., the role of values and ethics in researcher’s work). Distinguishable by their inclination towards subjectivist (i.e., social world is hard, real, and external to individuals) or objectivist (i.e., social world is soft, personal, and created by individuals) approach towards social science, they directly shape the methodology applied in pursuing an answer to a particular research question (Guba and Lincoln, 1994; Burrell and Morgan, 2019). The importance of articulating such standpoints explicitly should be rendered substantial in building internally consistent foundations for any research project that is deemed to be of scientific nature. The particular set of views ultimately forms a paradigm, i.e., “[a] universally recognized scientific achievement that for a time provides model problems and solutions to a community of practitioners” (Kuhn, 1962, p. viii). In case of this dissertation, the metaphysical optics is adjusted as follows.

Overall, it can be argued that this dissertation is underpinned by a research philosophy widely recognized as an interpretivist. Emerging in the early- and mid-twentieth-century Europe as a subjectivist response to inadequacy of positivism to achieve in-depth and rich understanding of complex social phenomena, interpretivism seeks to explore how the subjects of research interpret their reality (Collis and Hussey, 2009). As further explained in Saunders, Lewis, and Thornhill (2019), the mainstay of this paradigm is that social phenomena are different from physical, because different human beings create different meanings of their own reality. Generally, interpretivists believe that reducing these meanings into broadly applicable generalizations leads to shallow understanding absent of important contextual nuances that

build up the otherwise unveiled richness. To elaborate, at face value, phenomena may seem to have a universal meaning; nonetheless, the interpretations of social actors may diametrically differ (e.g., disruptive innovation has a completely different meaning for entrants as opposed to incumbents, customers, or other actors). This belief system has crystalized into a several schools of thought focusing on particular units of analysis. For illustration, briefly drifting into the sociological territory, the most notable branches of interpretivism include phenomenology (i.e., focus on studying structures of consciousness based on lived experience), hermeneutics (i.e., focus on studying cultural artefacts), and symbolic interactionism (i.e., focus on studying how social actors interact).

Finally, based on Blaikie and Priest (2017), it can be concluded that interpretivism, as a research paradigm, shares certain traits with critical realism and pragmatism – for instance, all value human experience and context in knowledge creation, all recognize complexity of reality and non-empirical aspects, all emphasize reflexivity in research, all adapt methods to research specifics, and all contribute to nuanced understanding of social phenomena. Interpretivism, however, stands out due to its unique focus on the subjective interpretation of social phenomena. Unlike critical realism, which emphasizes an objective reality shaped by underlying structures and mechanisms, interpretivism posits that reality is constructed through individual perceptions and experiences. While critical realism seeks to uncover these hidden structures, interpretivism is more concerned with understanding how individuals interpret and give meaning to their experiences. In comparison with pragmatism, which values the practical implications of knowledge and its usefulness in real-world situations, interpretivism recognizes the importance of context in shaping understanding and diverges by prioritizing the depth of understanding over practical utility. It emphasizes the role of subjective experience and interpretation, valuing the richness and complexity of human perspectives over objective truths or practical outcomes. For a more granular comparison of these paradigms, see Table 5.

Aspect	Critical Realism	Pragmatism	Interpretivism
Philosophical Underpinnings	Emerged from the critique of positivism, with influences from Marxism, hermeneutics, and critical theory.	Rooted in the American philosophical tradition, drawing from Charles Sanders Peirce, William James, etc.	Derives from phenomenology and hermeneutics, influenced by thinkers like Heidegger and Husserl.
Ontological Stance	Posits an objective reality that is understood through mediated knowledge.	Views reality as a construct continually reshaped by human actions and experiences.	Emphasizes a subjective reality, constructed through social interactions and individual perceptions.
Epistemological Orientation	Advocates for socially-produced, yet objective knowledge; emphasizes causal mechanisms.	Sees knowledge as a pragmatic tool for addressing problems; it is evolutionary and context-dependent.	Regards knowledge as inherently subjective and context-specific; focuses on individual meanings.
Focus of Inquiry	Aims to understand the underlying structures and causal mechanisms affecting phenomena.	Concentrates on solving real-world problems through flexible and iterative methods.	Seeks to understand human experiences and the social construction of reality.
Methodological Preferences	Utilizes both quantitative and qualitative methods, emphasizing contextual relevance.	Employs a flexible approach to methods, guided by the research question's practicality.	Predominantly employs qualitative methods, focusing on interpretive techniques like interviews.
Researcher's Role	Strives for objectivity while acknowledging personal influence on the research.	Engages actively with the subject; emphasizes reflexivity and adaptability.	Plays a central role in the research process; interpretations significantly shape the findings.
Approach to Data	Balances empirical observation with theoretical reflection; often employs triangulation.	Adopts an iterative approach to data collection and analysis, adaptable to evolving contexts.	Prioritizes in-depth data collection, commonly using thematic and narrative analysis.
Research Outcomes	Seeks to reveal truths about societal structures and their impact on behaviour.	Produces practical, actionable knowledge for decision-making and action.	Provides deep insights into human experiences and social constructs.
Considerations of Validity	Balances empirical validation with theoretical substantiation.	Prioritizes practical utility and workability over traditional notions of validity.	Emphasizes the credibility and authenticity of findings, moving beyond conventional validity measures.
Ethical Considerations	Recognizes power dynamics in research; advocates for responsible, ethical practices.	Emphasizes the impact and consequences of research on practical applications.	Prioritizes ethical responsibility to participants, valuing their perspectives and experiences.

Application Examples	Common in social sciences for exploring societal structures and their effects.	Applied in action research, education, and practical problem-solving fields.	Utilized in cultural studies, anthropology, and sociology to focus on behaviour and culture.
Distinctive Features	Combines empirical research with theoretical understanding to reveal underlying structures.	Focuses on practical application and adaptability in research methodology.	Emphasizes the subjective interpretation of social reality, prioritizing individual context.
Drawbacks	Can be complex and abstract, making it challenging to operationalize in research. The emphasis on underlying structures and causal mechanisms may overlook the dynamic and evolving nature of social phenomena.	May be criticized for lacking a firm theoretical foundation and for being too focused on practical outcomes, potentially oversimplifying complex issues. Its iterative nature can lead to ambiguity in results.	Highly subjective and context-specific, which can limit the generalizability of findings. Heavy reliance on qualitative methods might be seen as less rigorous or objective compared to quantitative approaches.

Table 5. Comparisons of critical realism, pragmatism, and interpretivism

Generally, the choice of interpretivism is thus grounded in its emphasis on the subjective nature of knowledge and reality. It is particularly suited for studies where understanding the nuanced, context-dependent experiences is crucial. This paradigm offers a comprehensive approach to exploring the complexities of human thought, behaviour, and social interactions, making it a valuable framework for research in the social sciences and humanities. In practice, the interpretivist paradigm has manifested itself throughout the dissertation in the following ways. In terms of ontology, the articles see the social world as a complex and dynamic system that is characterized by multiple subjective meanings and interpretations; therefore, they recognize the importance of understanding how individuals and groups experience and interpret their social reality (Daymon and Holloway, 2011). Epistemologically, the dissertation complies with the belief that knowledge is socially constructed and that it is impossible to study social phenomena in an entirely objective way. Finally, in terms of axiology, an implicit emphasis has been put on acknowledging the potential of own values affecting the findings,

while striving to be transparent about the employed research practices and respecting the significance of contexts.

While interpretivism provides a more nuanced understanding of social phenomena, it is also important to consider its potential drawbacks. First, it may be challenging to generalize the findings beyond the specific context in which the research was conducted. This is because interpretivist research tends to work with relatively contextual factors, rather than broader societal or structural issues. As a result, the applicability of the empirical findings to other populations or contexts might be limited, which often calls for further research. Second, interpretivist research is generally prone to bias – it relies heavily on the researcher's interpretation of the data, which can be influenced by their personal experiences or beliefs. Consequently, it can be challenging to maintain a desirable level of objectivity. Finally, the methodology rooted in interpretivism tends to be time-consuming and resource intensive. This is because interpretivist research often involves in-depth data collection methods such as interviews, focus groups, and observations. All of these limitations were carefully considered in the process of developing and implementing all the respective research designs outlined in the following section and described detailedly in the respective articles.

4. Summary of the articles

As elaborately unfolded in the previous sections, this collection of articles is fundamentally grounded in the perspective that to be successful in their endeavours, companies need to effectively manage their dependencies with other organizations. Reflecting the widespread adoption of new business models enabled by information and communications technologies, companies started to organize themselves in ecosystems. Characterized by varying degrees of multi-lateral, non-generic complementarities that are not fully hierarchically controlled, the widespread emergence of ecosystems as a new form of managing interorganizational

dependencies has shaken the business landscape, leaving the actors vis-à-vis a variety of unprecedented challenges affecting different aspects of their operations. In light of this actuality, this dissertation seeks to understand what some of these challenges are and how companies can tackle them. Set out to answer the research question “What challenges do organizations face in navigating ecosystems and how can they tackle them?”, this dissertation presents three published/publishable peer-reviewed articles, which delve into the realms of open innovation, business models, and disruptive innovation, respectively. By doing so, it contributes by developing new knowledge as summarized below.

4.1. Article 1

To summarize, Article 1 was published in the *Industrial Marketing Management* journal under the title “Governing the Interplay of Inter-Organizational Relationship Mechanisms in Open Innovation Projects Across Ecosystems” (Aagaard and Rezac, 2022). The key focus of this article is to answer the research question “How do orchestrators govern the interplay of interorganizational relationship mechanisms in open innovation projects across ecosystems?”.

The research question is answered by the means of the exploratory multiple-case study approach. The cases have been selected theoretically from the population of large multinational technology-intensive companies that fit the criteria of playing the role of an orchestrator (i.e., a focal firm aligning partners in an ecosystem toward a joint value proposition that a single firm could not create in isolation, Lingens et al., 2021). The informants were selected based on their seniority/ level of experience, strategic involvement in ecosystem orchestration, and availability for interviews in the given period. The primary data were collected via interview sessions were guided by a theoretically derived semi-structured guide and supported by a thorough document analysis. The data were collected in 2019 – 2020 through semi-structured interviews, either in-person or online via Zoom. The final dataset comprises 30 interviews,

each approximately 1–1.5 h long, with 30 senior-level managers (e.g., CEOs, senior vice presidents, directors) of ten case companies (i.e., Microsoft, Company X, IBM, Ericsson, SAP, Siemens, Bosch, Grundfos, FLSmidth, Lundbeck). The decision to limit the sample to ten case companies was based on the principle of achieving theoretical saturation (Glaser and Strauss, 1967). As far as the data analysis is concerned, the article employs the method of flexible pattern matching developed by Sinkovics (2018). Therefore, in line with Bouncken et al. (2021), it consisted of simultaneous, iterative comparison of the theoretical patterns derived from the semi-systematic literature review with empirical patterns derived from hierarchical coding in compliance with the rules of template analysis (Crabtree and Miller, 1999; King, 2004; King, Horrocks, and Brooks, 2019

In terms of findings, Article 1 proposes a sequential, closed-loop model consisting of three sequential phases of interorganizational relationship (IOR) governance in business-to-business (B2B) open innovation (OI) projects across ecosystems – ex-ante, co-development, and ex-post (Gurca et al., 2021; Majchrzak et al., 2015; Olander et al., 2010). Each of the phases can be respectively explained by different aggregated dimensions (i.e., evaluating prerequisites, establishing foundations, shifting mindset, jointly creating and capturing value, and launching interorganizational spinoffs). The nature of these dimensions is determined by complexity and uncertainty; oscillations between complementarity and substitution of IOR governance mechanisms; and a variety of factors determining the governance success of orchestrators. In summary, Article 1 unfolds how IOR governance interplay changes across different OI B2B project phases in ecosystems (Cao and Lumineau, 2015; Olander et al., 2010). Furthermore, it emphasizes the need for firms to manage the functionalities and dysfunctions of contractual and relational mechanisms for successful value creation and value capture (Howard et al., 2019; Huber et al., 2013; Carson et al., 2006; Klein-Woolthuis et al., 2005).

Overall, Article 1 makes a variety of contributions and provides several managerial implications as well as avenues for future research. These are summarized by the means of in the conclusion of this collection and discussed detailedly in Article 1 itself.

4.2. Article 2

Article 2 was published in *Journal of Business Models* as “The Role of Privacy Protection in Business Models for Sustainability: A Conceptual Integration from an Ecosystem Perspective” (Rezac, 2022). The purpose of this article is to answer the research question “How can companies propose, create, deliver, and capture value while protecting privacy in a sustainable way?”.

The research question is answered by the means of a conceptual contribution which can be classified as a synthesis paper, i.e., an article with the ambition to achieve an outcome that enhances knowledge on a concept or a phenomenon by conceptual integration across different, previously unconnected literature streams or theories (Jaakkola, 2020). The method of reviewing literature has been focused mainly on two particular research streams, i.e., business models for sustainability and privacy. Both of the streams have been traced to the point of their origin and, adopting an ecosystem perspective, a theoretical narrative highlighting their complementarity has been constructed. Key concepts (i.e., business models for sustainability, contextual integrity) were chosen based on their relevance to the focal issue and, due to their complementarity, an interdisciplinary synthesis has been found exceptionally promising to address their respective blind spots (Schaltegger et al., 2016; Freudenreich et al., 2020; Nissenbaum, 2010; Jacobides et al., 2018).

In terms of findings, Article 2 identifies and bridges the gap between business models for sustainability and contextual integrity, proposing a novel angle on how these theories intersect and impact one another in the context of ecosystems emergence. In addition to highlighting

and emphasizing the significance of integrating privacy protection within the realm of sustainable business practices, this article introduces two key propositions. Firstly, it suggests that there is a need for revising the theory of contextual integrity to better align with current challenges and perspectives. Second, it argues that the research stream on sustainable research modelling needs to pay more attention to the externalities caused by the increasing dependency of businesses on sharing and processing resources such as data and information. By synthesizing two rigorously developed research streams, the article proposes a heuristic framework designed to guide business managers in evaluating and strategizing their operations with considerations for both privacy and sustainability. This proposed framework is structured around a core dimension that facilitates the identification of privacy indicators and an assessment dimension focused on evaluation principles, providing a comprehensive toolset for operational assessment and planning in the context of sustainable and privacy-conscious business practices. In summary, Article 2 bridges the gap between the theory of contextual integrity and business models for sustainability. It offers a nuanced heuristic framework for evaluating the sustainability of privacy protection in business models. This framework strives to offer a comprehensive approach which considers both macro and micro-level factors and emphasizes proactive, ethical, and sustainable data and information handling in business practices.

Overall, Article 2 makes a wide range of theoretical contributions as well as suggestions for further research. Additionally, it also offers a number of implications for the consideration of practitioners. These are discussed in detail in Article 2 and summarized by the means of in conclusion of this dissertation.

4.3. Article 3

Developed at the Journal of Product Innovation Management Paper Development Workshop 2023 (Responsible Innovation and Entrepreneurship Conference at San Francisco State University), Article 3 was published in proceedings of the European Academy of Management Conference (EURAM) 2023 (Trinity College, Dublin) as “The Role of Trust in Ecosystem-Level Disruption” (Rezac, 2023). Currently close to journal submission, it answers the research question “How do entrants use trust to mitigate tensions with incumbents in ecosystem-level disruption?”.

In terms of methodology, the research follows an abductive research approach (cf. Tavory and Timmermans, 2014) in line with Dubois and Gadde (2002) and unfolds in two subsequent phases – an exploratory pilot (i.e., Phase 1) and an instrumental in-depth single-case study with multiple embedded subunits of analysis (i.e., Phase 2) (Stake, 2000; Yin, 2018).

The purpose of the rather inductive Phase 1 has been to observe and confirm an anomaly – “a novel or unexpected phenomenon that cannot be explained or is poorly understood using existing knowledge” (Sætre and Van de Ven, 2021, p. 684) – and to determine a specific research context suitable for its in-depth analysis (i.e., Phase 2). To bound the phenomenon, Phase 1 has mainly relied on semi-structured interviews with a fairly context-agnostic sample of 14 executives leading 13 entrant ventures involved in an initiative called Next Generation Internet (European Commission, 2018; NGI, 2022) and operating across different industries (e.g., healthcare, energy, fintech). Followingly, to determine the most suitable context, in Phase 1, 7 facilitators of ecosystem-level disruption (i.e., coordinators specifically tasked to select, fund, mentor and coordinate the entrants backed by the Next Generation Internet initiative) and 7 independent senior-level industry experts operating the area of innovation (e.g., Deloitte, Grundfos, Wolt) were interviewed. Ultimately, the phenomenon has been bounded as “entrants using trust to mitigate tensions with incumbents in ecosystem-level disruption” and the context

suitable for its studying has been determined to be the UK insurtech ecosystem (cf. Palmié et al., 2020). These findings were triangulated using publicly available archival data and documents.

Phase 2, it relies on an instrumental single-case study research design (i.e., the case being a bounded phenomenon² of entrants using trust to mitigate tensions with incumbents in ecosystem-level disruption) with multiple embedded subunits of analysis (i.e., the subunits being the individual entrants representing particular roles within the UK insurtech ecosystem) (Stake, 2000; Yin, 2018). In order to achieve a comprehensive understanding of the case, the interviewed entrants have spanned the full spectrum of entrant roles within the studied ecosystem. In phase 2, C-suite informants from 18 insurtech companies were interviewed in 2021 – 2022, yielding approximately 30 hours of data. Followingly, the resulting dataset was triangulated using publicly available interviews and documents either provided by informants or accessed online. Ultimately, the data has been coded and structured in line with Gioia, Corley, and Hamilton (2012).

As to the findings, the study argues that that entrants indeed use trust to mitigate tensions with incumbents in order to achieve ecosystem-level disruption. Furthermore, it suggests that to gain the trust of said incumbents, the entrants need to nurture it on two levels – with the established ecosystem and with customers. On both of the levels, the antecedents comprise of cognitive and affective components. On the incumbent side, the entrants engage in signalling homogeneity and reframing innovation. On the customer side, the entrants take part in signalling legitimacy and reframing of the ecosystem's value proposition. The customer and incumbent trust simultaneously reinforce one another; therefore, the trust of customers plays a

² In this context, it is crucial to highlight that the case study research method involves in-depth examination and analysis of a particular bounded system (e.g., phenomenon, individual, group, organization, or event) based on extensive data collection (Creswell, 2007; Miles and Huberman, 1994). In Phase 2, the examined case is not an individual company but a bounded phenomenon. For details, please see subsection 3.2.1. of Article 3.

crucial role in gaining trust of incumbents and vice versa. The dynamics has been encapsulated within in a detailed framework portraying the role of trust in ecosystem-level disruption. In addition to providing a granular insight into the role of trust in disruption of established ecosystems, Article 3 presents a contemporary view of disruption, contrasting with the traditional firm-centric notion (Christensen, 1997), which adds to the topical debate on ecosystem disruption (cf. Cozzolino and Geiger, 2023). It suggests that in disrupting an established ecosystem, entrants might not need to completely displace incumbents. Instead, utilizing the resources controlled by incumbents could be strategically beneficial for entrants (Ansari, Garud, and Kumaraswamy, 2016). This perspective aligns with the developing idea of “Mark III” (Jacobides et al., 2023), which moves from a dichotomic understanding of disruption (i.e., entrants against incumbent) towards a relationship characterized by a much tighter connection between incumbents and new entrants, framing disruption as an opportunity for incumbents to reposition themselves, assume new roles, and remain relevant as complementors in the ecosystem.

In conclusion, acknowledging the inherently limited generalizability, Article 3 puts forward a number of paths for future research, makes several theoretical contributions and highlights a number of managerial implications. These are summarized by the means of in the conclusion of this collection and discussed in detail in Article 3 itself.

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Article 1

Governing the Interplay of Interorganizational Relationship Mechanisms in Open Innovation Projects Across Ecosystems

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1. Introduction

In the profoundly saturated business environment, where companies pursue competitive edge by widening the space to co-create value through sharing knowledge across their boundaries, the concept of open innovation (OI) has been receiving a great deal of scholarly attention (Markovic and Bagherzadeh, 2018). Defined as “a distributed innovation process based on purposively managed knowledge flows across organizational boundaries” (Chesbrough and Bogers, 2014, p. 17), OI has been studied on a number of different levels, ranging from individual and intra-organizational arenas to the focus on national institutions and innovation systems (Chesbrough and Bogers, 2014). Despite its high dependence on context, studies on OI remain distributed rather unevenly (Radziwon and Bogers, 2019). In particular, the extant contributions have predominantly adopted the firm-centric perspective (Barbic et al., 2021). This poses a paramount need to advance the understanding beyond the processes and outcomes of joint invention, while evoking calls for studying activities related to value creation and value capture at the interorganizational level (Bogers et al., 2017; Chesbrough et al., 2018). Researchers have recognized that OI is being extensively used as a vehicle to extend innovation practices beyond the boundaries of isolated firms, specifically by using the stakeholders either to commercialize internal innovations externally or to source external innovations to apply them internally (Randhawa et al., 2021). While existing OI research primarily focuses on the use of OI from the individual company's perspective, the competitive dimensions of OI and the interests of multiple players must be considered simultaneously (Dahlander et al., 2021). Such settings are highly conducive for the emergence of modularity-enabled interdependencies, resulting in the formation of ecosystems (Jacobides et al., 2018; McGahan et al., 2020).

The momentousness of ecosystem arrangements has shifted the focus of researchers as well as companies from the traditional inter-firm competition to the phenomenon of coopetition, i.e., “simultaneous competition and cooperation among firms with value creation

intent” (Gnyawali et al., 2018, p. 2511). However, opening up to competitors entails inherent risks stemming from the differences in institutional culture, strategic focus, or structure (Temel and Vanhaverbeke, 2020). The reality that companies need to attain an attractive position within ecosystems interwoven by cooperation pushes scholars to rethink the governance and organizing principles of OI (Dahlander et al., 2021; Jacobides, 2019). Given that companies have been abundantly engaging in interactions with heterogeneous partners to boost their innovation capabilities, a stream of OI research and practice focused on business-to-business (B2B) has gained on topicality (Bagherzadeh et al., 2021; Bogers et al., 2017; Chesbrough and Brunswicker, 2014; Gurca et al., 2021). Markovic et al. (2021, p. 159) defined B2B OI as “a distributed, structured innovation process comprising manifold inbound and outbound knowledge flows derived from purposeful interactions with business partners.” While previous research has primarily studied B2B OI from the firm-level perspective (Bagherzadeh et al., 2021; Markovic and Bagherzadeh, 2018), some have proposed that firms mainly take part in B2B OI for the purpose of serving the needs of a particular project (e.g., Bagherzadeh et al., 2021). As companies make decisions regarding different aspects of openness in interorganizational relationships based on the nature of such projects (e.g., Lee et al., 2019; Majchrzak et al., 2015), it is crucial to explore B2B OI on a less aggregated project level as well (Dahlander et al., 2021).

When creating value through OI B2B projects in environments as complex as ecosystems, the actors are taking part in extensive knowledge sharing, while protecting their intellectual property to preserve competitiveness. In managing the resulting tensions, it is essential to find the right governance modes and organizational designs (Rouyre and Fernandez, 2019). Consequently, governing OI projects entails a dynamic process combining structural (formal) and relational (informal) interactions (Faems et al., 2008; Henkel, 2016). Transferring knowledge across the actors' boundaries thus requires strategies involving not only contracting, but also governance mechanisms based on relationships (e.g., Dyer and

Nobeoka, 2000; Saebi and Foss, 2015; Zhu et al., 2019). The debate of the interplay of contracts and relationships unfolds mainly in the inter-firm literature under the notion of interorganizational relationship (IOR) governance. IOR governance is considered to be a central determinant of businesses' economic prosperity, and apart from a number of potential benefits (e.g., tapping into resources and learning), it also entails a variety of negative aspects that can manifest themselves in conflicts, opportunism, mistrust, non-cooperation, unethical practices or illegitimacy (Cropper et al., 2008; Lumineau and Oliveira, 2018; Mesquita et al., 2017).

The interplay of contractual and relational IOR governance mechanisms may change in different phases of cooperation as well as in different types of environments (Olander et al., 2010). For that reason, it is necessary to explore how the phases of cooperation moderate the contracts-relational governance interplay, how different dimensions of contracts and relational governance co-evolve, and how and why contracts and relational governance interact differently in specific contexts (Cao and Lumineau, 2015). As the knowledge on the substitutive and complementary inter-play between the mechanisms is inconclusive (Benítez-Ávila et al., 2018), and research exploring the interplay of different governance functions and dysfunctions is scarce (Howard et al., 2019), more knowledge is still needed in relation to how the governance mechanisms behave and evolve as co-operations develop. Except for a few contributions (e.g., Liu and Zhang, 2021; Radziwon and Bogers, 2019), the area of IOR governance in OI in general remains largely unexplored, and the research on interplay of IOR governance mechanisms in OI projects across ecosystems is essentially nonexistent.

In light of these research gaps, our work seeks to understand the interplay of IOR governance mechanisms in the context OI projects that are being carried out by multinational ecosystem orchestrators; therefore, it responds to the following research question: “How do orchestrators govern the interplay of IOR mechanisms in OI projects across ecosystems?”. This research question is answered through a multiple-case study of ten multinational firms of

appropriate characteristics engaged in B2B OI projects, while employing the novel approach of flexible pattern matching developed by Sinkovics (2018). Besides elaborating on the indicated literature, we present our findings and propose a five-dimension IOR governance model for OI B2B projects in ecosystems. Finally, we discuss our contributions in the context of relevant literature, reflect on the managerial implications, and present our suggestions for future research directions.

2. Theoretical background

2.1. B2B OI at the project level

Nowadays, projects are considered to be the main instrument for managing organizational innovation (Hobday, 2000), and their openness determines the openness of the companies as such (Kim, Kim, and Lee, 2015). Nonetheless, it is apparent that B2B OI projects differ in a number of aspects. For instance, Cassiman, Di Guardo, and Valentini (2010) revealed through their study of 52 projects that basic projects of less strategic importance are usually developed through formal cooperative agreements, whereas projects of higher importance that involve development of new knowledge tend to lean on formal contracting. This assumption essentially implies that the more complex a project is, the more contractual elements it involves. Kim, Kim, and Lee (2015) found that project-level openness can be affected by team and task characteristics, such as team size, distance of learning, strategic importance, relevance to the main business, technology, and market uncertainty. Lee et al. (2019) investigated the impact of project expertise and complexity on the adoption of open or closed innovation and identified four OI models: crowdsourcing, coopetition, science-based, and network. Their findings suggest that the relationship between varying conditions of project expertise and the choice of a particular OI model is moderated by complexity. Moreover, together with uncertainty,

complexity is considered to be a key attribute of project-level B2B OI. In elaboration hereof, Bagherzadeh et al. (2021) collected data from 201 innovation projects and revealed that *complexity* (quantity of tasks, elements, and knowledge needed for project completion, including the degree of interdependency between them) and *uncertainty* (changes in beliefs about market and underlying technological know-how and know-why embodied in the focal value proposition) are related to five factors that determine successful OI management (Akgün et al., 2006; Fernandes and Simon, 1999) and critical to consider throughout the whole duration of a project. According to Majchrzak et al. (2015), it can be argued that interorganizational collaborations comprise two main phases. These phases are formation (pre-OI formulation of the problem to be solved) and execution (putting OI into effect). It is argued that three factors need to be considered in the formation phase, i.e., the level of openness (or “firms’ use of external knowledge in their pursuit of innovation” (Bogers et al., 2018, p. 218), the choice of external partners (different types of organizations to collaborate with (de Oliveira et al., 2019; Laursen and Salter, 2006), and the choice of OI mechanism (substance of the particular collaboration (Veugelers and Cassiman, 1999). In the execution phase, the literature argues that collaboration process formalization (“duality, involving trade-offs between its functions and dysfunctions, and eventuating in dialectic tensions” (Vlaar et al., 2007, p. 437), and internal practices of firms (incentives for sharing and acquiring knowledge, and internal communication within the project boundaries; cf. Foss et al., 2011) are of managerial and academic interest.

Considering the inherent variability of the abovementioned success factors, companies face a number of challenges related to the governance of interorganizational OI projects. For instance, in exploration of R&D collaborations, Du (2021) argues that firms can tackle the paradox of sharing versus protecting knowledge by leveraging three modes of knowledge governance mechanisms. These are selective openness (i.e., selective collaboration to maximize the value of collaboration while minimizing the leakage of knowledge), contingent

openness (i.e., collaboration contingent on the type of partner), and orchestrated openness (i.e., making use of an internal network of interconnected projects that belong to the same knowledge portfolio to channel knowledge flows). These modes are to be selected depending on the particular technological field. Technological fields are distinguished based on two criteria – patent share and revealed technology advantage – and can be divided into three groups: core, related non-core, and distant non-core technologies. As the article concludes, the selective openness works best in non-core fields, while orchestrated openness achieves the best performance in core and non-core fields. These findings unveil an opportunity for firms to strategically distribute the risks across multiple projects and to subsequently optimize the desired knowledge access. Adopting a micro-foundational perspective, Gurca et al. (2021) address the project-level B2B OI challenges by unpacking the black box of organizational capabilities underpinned by actions and practices. The authors develop a sequential, multi-stage process model for managing openness in complex projects comprising three sequential stages. The first phase is ex-ante integration, in which firms rely on hierarchical product architecture to enable modularity of product design. The second phase is co-development, where focal firms and their business partners engage in bidirectional knowledge flows; that is, focal firms share knowledge about architecture while outsourcing knowledge about components. This allows for knowledge overlap through co-development (e.g., co-experimentation, avoiding overprotecting IP, or internal knowledge sharing). The final phase is called ex-post integration and involves design alignment of the interdependent subsystems through the mutual adaptation of the components as well as the overall product. This phase can be facilitated by an integration tool (e.g., software).

Another challenge related to the OI processes is their impact on project performance. For instance, Cheah and Ho (2021) show that high innovation potential (i.e., “commercial potential of a technology for product and process innovation” p. 231) likely leads to high commercialization performance – especially in projects with high resource allocation quality

and high network-driven opportunity discovery. In another study, Tang, Fisher, and Qualls (2021) explore the influence of team role diversity on project performance and show that coupled OI in combination with low team diversity has a positive effect on internal performance, whereas inbound OI positively influences external performance, especially when team role diversity is high. Finally, acknowledging that the success of projects is also highly dependent on the partner selection, Steils et al., (2021) suggest that the selection of partners is determined by project attributes and the stages of the project, e.g., the higher the complexity, the more secondary stakeholders are involved.

In parallel with the IOR governance, discussed in the next section, the topic has also been approached from the perspective of transaction cost theory (Williamson, 1985). In their article, Barbic et al. (2021) explore the opening and closing of OI B2B projects by applying the concepts of unanticipated disturbances, tolerance zone, and contract interpretations. First, they argue that unanticipated disturbances during the execution stage can be considered threats to value creation and value capture and lead to adaptations in knowledge sharing. Second, they suggest that such disturbances may be absorbed in a tolerance zone (i.e., “the area in which adaptations of interpersonal relations takes place,” p. 177). And finally, they propose that these project-level threats and changes in knowledge sharing result in impacting the interpretation of firm-level OI contract, which is then viewed either as a semi-legal regime or as a framework. Summarizing the findings, the authors present evidence that in cases where value creation is threatened, OI tends to continue, while in cases where value capture is threatened, OI tends to close.

Despite being studied more intensively in the recent years, the understanding of project-level B2B OI is still far from complete. Based on the extant literature, many of the research gaps overlap with the inquiry into the topic of IOR governance interplay, especially in the context of ecosystems. To quote Bogers et al. (2017, p. 16), “new ‘dynamic’ theories are needed to explain how open governance can affect the way how multiple actors evolve throughout the

innovation process in a self-organizing way where mechanisms of hierarchical control are absent.” To elaborate, as more and more firms engage in interorganizational projects that require employing different kinds of governance, taking a dynamic view could be helpful for understanding how its management evolves across the different project stages, which require collaboration with various types of external partners and differ in goals, needs, and activities (Bagherzadeh et al., 2021; Markovic et al., 2021; Steils et al., 2021). Along these lines, researchers also call for exploring how organizations can manage tensions emerging from the simultaneous adoption of formality and informality (Bagherzadeh and Brunswicker, 2016; Majchrzak et al., 2015). Gurca et al. (2021) argue that further research is needed on coordination mechanisms within and across organizational boundaries and on managing OI in B2B relationships in particular, as both formal (e.g., rules) and informal (e.g., norms) coordination mechanisms may affect the sequences of interdependent actions (e.g., their order).

2.2. Interplay of IOR governance mechanisms

From a more general perspective, to cite Rossignoli and Ricciardi (2015 p. 33), “human nature is based on opportunism and relations must be strongly coordinated and controlled to prevent opportunism from harming us.” And focusing on OI, it is also apparent that the governance of dynamic relationships is a determinant for its success in the context of ecosystems (Autio and Thomas, 2018; Shipilov and Gawer, 2020; Tiwana et al., 2010). Nurturing and managing IORs by deploying governance mechanisms is of importance not only for the performance of the focal firms, but also for their networks (Carson et al., 2006; Klein-Woolthuis et al., 2005; Roehrich et al., 2020; Vandaele et al., 2007). To illustrate, Gesing, Antons, Piening, Rese, and Salge (2015) propose that tailoring governance mechanisms to the innovation partner type and specific innovation objectives can increase the innovation payoff, while the appropriateness of governance has also a reducing effect on proneness to vulnerabilities.

The foundations of IORs governance research field itself are essentially positioned at the intersection of transaction cost theory, relational exchange theory, and social exchange theory. In essence, transaction cost theory supports the effectiveness of contracts, relational exchange theory explains relational norms, and social exchange theory focuses on trust (Cao and Lumineau, 2015). The literature identifies two main types of governance mechanisms, i.e., contractual and relational. Contractual governance is implemented as a protection against possible opportunism, as a way to control exchange hazards, and as a design plan detailing coordination and adaptation of a particular IOR (Holgersson et al., 2018; Jia et al., 2020; Malhotra and Lumineau, 2011; Poppo and Zenger, 2002; Schepker et al., 2013; Weber and Mayer, 2011; Williamson, 1985; Zobel and Hagedoorn, 2020). This dual mode of governance is operationalized by means of written contracts that formally specify the duties and responsibilities of the involved parties (Abdi and Aulakh, 2012; Ryall and Sampson, 2009). Contracts are agreed upon, are legally enforceable, and stipulate penalties for the breach of terms (Huo et al., 2016; Jia et al., 2020; Liu and Çetinkaya, 2009; Luo, 2002; Wang et al., 2015; Williamson, 2000). Relational governance refers to an inter-firm exchange that includes relationship-specific assets embedded in the structure as well as in the process of IORs (Roath et al., 2002; Zaheer and Venkatraman, 1995). This mode of governance is based on informal self-enforcement of those involved and deployed via shared norms and social relations (Dyer and Singh, 1998; Malhotra and Murnighan, 2002; Poppo et al., 2008; Zhou and Xu, 2012). It is important to mention that both contractual and relational governance mechanisms suffer from a number of limitations. On the one hand, besides the already indicated implications of bounded rationality (e.g., Hart, 1988), contractual governance entails issues related to misalignment of interpretations (e.g., Faems et al., 2008) and seeming manifestation of distrust toward the other involved parties in the particular IOR (e.g., Poppo and Zenger, 2002). On the other hand, relational governance is rather fragile (e.g., Shen et al., 2020), prone to ambiguities

(e.g., Cannon et al., 2000), and can be easily exploited through opportunism (e.g., Liu et al., 2021).

As highlighted by Liu, Sinkovics, and Sinkovics (2020), the literature on inter-firm relationships develops in three main directions. First is the structural perspective, which argues for complex, well-developed contracts as a way of simplifying decision-making and avoiding conflicts (Pisano, 1990; Reuer and Ariño, 2007). Second is the relational perspective, which consists of literature in favour of relational governance, where the safeguards and coordination rely on mutual trust (i.e., confidence in credibility, integrity, and benevolence) and relational norms (i.e., shared behavioural expectations) (Cannon et al., 2000; Das and Teng, 1998; Thorgren et al., 2011; Zaheer et al., 1998). Contributions belonging to the third perspective assert that instead of being mutually exclusive, contractual and relational governance modes can either complement (e.g., Das and Teng, 2001; Luo, 2002; Poppo and Zenger, 2002; Klein-Woolthuis et al., 2005; Zheng et al., 2008; Burki and Buvik, 2010; Schilke and Cook, 2015) or substitute for each other (e.g., Cavusgil et al., 2004; de Reuver and Bouwman, 2012; Gulati, 1995; Sitkin and Roth, 1993; Yang et al., 2011). This dynamics is dependent upon contingencies of environmental and behavioural uncertainties (Abdi and Aulakh, 2014). Environmental uncertainty manifests itself in instable and unpredictable environments. It acts as a catalyst for complications in adaptation, which leads to increased dependency on either of the mechanisms, hindering the viability of the other. As a result, the mechanisms tend to substitute for each other.

In comparison, behavioural uncertainty stems from the lack of shared frameworks and common understanding among the involved partners. It impedes the creation of rapport between the parties, which results in mechanisms to facilitate the effective operation of each other. As a consequence, the mechanisms exist in a complementary relationship. Furthermore, as highlighted in Roehrich et al. (2020), researchers have also started to draw a distinction between the coordination and control functions of contracts, and proposed that there is a

difference in how they interplay with the relational mechanism. While control (i.e., safe-guarding against opportunism) indicates lack of trust and negatively influences the benevolence and integrity of the partnering organizations, coordination creates a common knowledge structure and evokes confidence in the ability of the counterparties to perform as expected (Malhotra and Lumineau, 2011; Weber and Mayer, 2011).

Overall, the debate on interplay (i.e., the substitution and complementarity) yields inconclusive scientific outcomes (e.g., Benítez-Ávila et al., 2018). For instance, according to Huber, Fischer, Dibbern, and Hirschheim (2013), the relationship between contractual and relational governance is dynamic and oscillates between complementarity and substitution. Complementarity manifests itself either through enabling (one creates conditions that facilitate the other) or compensating (one compensates for the weaknesses of the other). Substitution, on the other hand, manifests through replacement (mechanisms are functional equivalents) or dampening (more of one leads to less of the other). These oscillations are caused by three main types of contextual events: goal fuzziness (uncertainty regarding the output of a project or the process through which the output is meant to be achieved), goal conflict, and goal misalignment. In their longitudinal study, Howard et al. (2019) move beyond the notions of complementarity and substitution and zoom in on where the IOR governance converges or diverges. They acknowledge that both formal (i.e., contractual) and informal (i.e., relational) governance mechanisms can have positive “functionalities” (safe-guarding interests, clarifying roles and responsibilities, clarifying multi-party coordination, adaptation, learning, etc.) as well as negative “dysfunctionalities” (exploitation, coordination failure, conflicts, over-regulation, cognitive lock-in, relational inertia, poor objectivity, etc.). The authors suggest that IORs can exhibit functionalities and dysfunctionalities at the same time, meaning that mismatches in governance approach are not only negative, but can also result in positive outcomes.

2.3. Context of OI ecosystems

Generally, the roots of the ecosystem research date back to Moore (1993), who first pointed out the analogy between biological and business communities and suggested that a company should not be perceived as a member of a single industry, but rather as an entity that is part of a business ecosystem that crosses a number of varied industries. In these interdependent networks of self-interested actors that jointly create value (Bogers et al., 2019; Rezac, 2020), companies have to find a way to balance the distribution of value capture that both satisfies the actors' individual motivations and keeps ecosystem actors interested in participation (Bogers et al., 2017; Bogers et al., 2019; Vanhaverbeke and Cloudt, 2006; West, 2014). In doing so, there is a need for the actors to align toward a focal value proposition. This is achieved by means of a central player, also known as the orchestrator, who is key in enabling value creation superior to the value that firms would be able to create in isolation (Adner, 2017; Lingens et al., 2021).

As argued in Gomes, Facin, Salerno, and Ikenami (2018), since the mentioned contribution by Moore (1993), the discourse on ecosystems in relation to innovation has gone through a number of turning points, including the works of Gawer and Cusumano (2002) and Iansiti and Levien (2004). Nonetheless, the use of innovation ecosystem as a concept started to gain traction after the publication of a seminal Harvard Business Review article by Adner (2006), who defined it as “the collaborative arrangements through which firms combine their individual offerings into a coherent, customer-facing solution” (p. 2). Focusing on OI ecosystems specifically, it is evident that firms in such settings also “expand organizational resources and allow for collaborations across organizations, which can promote the flow, aggregation, and integration of resources” (Xie and Wang, 2020, p. 29). According to Bogers et al. (2017), for OI to be effective, interorganizational knowledge flows at early stages are essential; however, playing a role in innovation ecosystems that integrate different actors throughout the innovation process is equally important. Such actors interact even before a

value-creating ecosystem architecture is established and collectively solve various innovation problems. Furthermore, the need for establishing innovation ecosystems is dependent on the complexity of technology as well as business models (Baldwin and Woodard, 2008; Chesbrough and Bogers, 2014).

OI enquiry is not only well positioned to explore how to orchestrate an ecosystem in a way that would ensure pursuing collective as well as individual goals and interests, but it is also a promising angle to determine how to manage the complementarity of IP protection and openness (Lopez-Berzosa and Gawer, 2014). Several articles relevant for our research discuss various issues in this context. For instance, Alam, Rooney, and Taylor (2022a) study the interorganizational openness in OI ecosystems and present an Inter-Firm Openness Scale comprising five critical dimensions: trust, collaboration, sharing, transparency, and risk-taking. Following this, Alam, Rooney, and Taylor (2022b) also argue that inter-firm openness occurs in four interlocking transitory phases (realization, socialization, strategic alignment, and two-way openness). According to the authors, the transitions between the phases start spontaneously but become increasingly complex as the firms open and an ecosystem is formed. In the process of creating OI ecosystems, a significant role is played by interdependence, social exchange, and trust. Creation of OI ecosystem is also discussed by Rohrbeck, Hölzle, and Gemünden (2009), who focus on the large multinational company Deutsche Telecom. In this case, the authors identify eleven OI instruments (foresight workshops, executive forums, customer integration, endowed chairs, consortia projects, corporate venture capitalist, Internet platforms, joined development, strategic alliances, spinouts, and test markets).

Researchers have approached OI ecosystems from various angles. Studying quadruple helix actors (i.e., science, policy, industry, and society), Miller, McAdam, Moffett, Alexander, and Puthusserry (2016) identify five factors that mediate the ability of stakeholders to engage in knowledge transfer, as well as the effectiveness of knowledge acquisition, assimilation, transformation, and exploitation (i.e., human-centric factors, organizational factors, knowledge

characteristics, power relationships, and network characteristics). Similarly, Bacon, Williams, and Davies (2019) suggest that successful transfer of knowledge between partners in OI ecosystem is determined by different combinations of knowledge, relationship, and organizational characteristics. Randhawa et al. (2021), on the other hand, study how can firms use cognitive artifacts – tangible, visual representations that synthesize how to create and capture value – to overcome cognitive constraints in evolving value chain to an open innovation ecosystem. They present evidence that such artifacts are central in driving organizational and strategy flexibility in creating open business models. Furthermore, they argue that the order of their deployment in shaping managerial cognition and stakeholder is crucial for achieving the desired transformation. Putting OI ecosystems into a topical perspective of the COVID-19 pandemic, Boeing and Wang (2021) explore how key stakeholders in an OI ecosystem (i.e., enterprises, government, citizens, and communities) interact within the digital technologies to overcome challenges emerging in the areas of public health and socio-economic welfare. They conclude that the effectiveness of contract tracing depends on wide bottom-up engagement and timely top-down intervention, with communities serving as pivotal moderator.

Overall, the myriad contributions related to the context of OI ecosystems spans a wide spectrum of varied research interests and domain contexts. For instance, studies have focused on the heterogeneity of actors (e.g., Usman and Vanhaverbeke, 2017), product innovation (e.g., Zhao and Yi, 2022), or innovation capabilities (e.g., Xie and Wang, 2021). At the same time, however, the studies focusing on IOR in the context of OI ecosystems are scarce, and, as illustrated in Table 1, no contributions explicitly studying exploring the interplay of the IOR governance mechanisms in OI projects across ecosystems have been published to date.

Article	Interplay of IOR governance mechanisms	B2B OI on project level	Ecosystem context
Praest Knudsen and Bøtker Mortensen (2011)	-	X	-
Radziwon and Bogers (2019)	-	X	-
Tranekjer and Knudsen (2012)	-	X	-
Feller, Hayes, O'Reilly and Finnegan (2009)	X	-	-
Luoma, Paasi, Valkokari (2010)	-	-	-
Delgado-Verde, Martín-de-Castro, Navas-López and Cruz-González (2011)	-	-	-
Westergren (2011)	-	X	-
Colombo, Dell'Era and Frattini (2011)	-	X	-
Scarborough and Amaeshi (2009)	X	-	-
Olsson and Bosch (2015)	-	-	X
Bertello, Ferraris, De Bernardi and Bertoldi (2021)	-	X	-
Haim Faridian and Neubaum (2021)	-	-	X
Monteiro, Mol and Birkinshaw (2011)	-	-	-
Westergren (2010)	-	X	-
Liu and Zhang (2021)	X	-	-
Wang and Yang (2016)	-	-	-
Agostini and Nosella (2019)	-	-	-
Cantù, Schepis, Minunno and Morrison (2021)	-	X	X
Loderer and Kock (2021)	-	X	-
Audretsch and Belitski (2021)	-	X	-

Table 1. Overview of literature focused on IOR governance and OI

3. Methodology

Our article follows the exploratory multiple-case study approach, which allows for investigation and understanding of a real-life phenomenon, consequently capturing its complexity and details. Case study methodology is suitable for acquiring rich, detailed data (Eisenhardt and Graebner, 2007) and for identifying emerging themes and patterns (Eisenhardt, 1989). It is appropriate for creating new knowledge about how and why events occur in situations with little theoretical background (McCutcheon and Meredith, 1993). Moreover, it often leads to emerging theory that is typically more generalizable and better grounded than theory from single-case studies, thus adding to the validity of the findings (Eisenhardt, 1989). Furthermore, we chose to employ the increasingly popular method of flexible pattern matching developed by Sinkovics (2018). This pattern matching logic spans the space between partial (e.g., Gioia, 2004) and full pattern matching (Yin, 2009), while allowing the interaction of deductive and inductive components, ensuring rigor with a high level of flexibility (Bouncken et al., 2021). It is especially suitable for exploratory research designs, as it emphasizes exploration and theory building based on patterns that emerge from the data collected. In order to ensure that the flexible pattern matching is applied correctly, we made sure to review similar publications that utilize this logic (e.g., Bouncken and Barwinski, 2021; Sinkovics et al., 2019). In practice, we commenced our research by exploring extant literature on OI and IOR, gradually narrowing our focus down to formulating a research question. (i.e., specification of theoretical framework, see Figure 1).

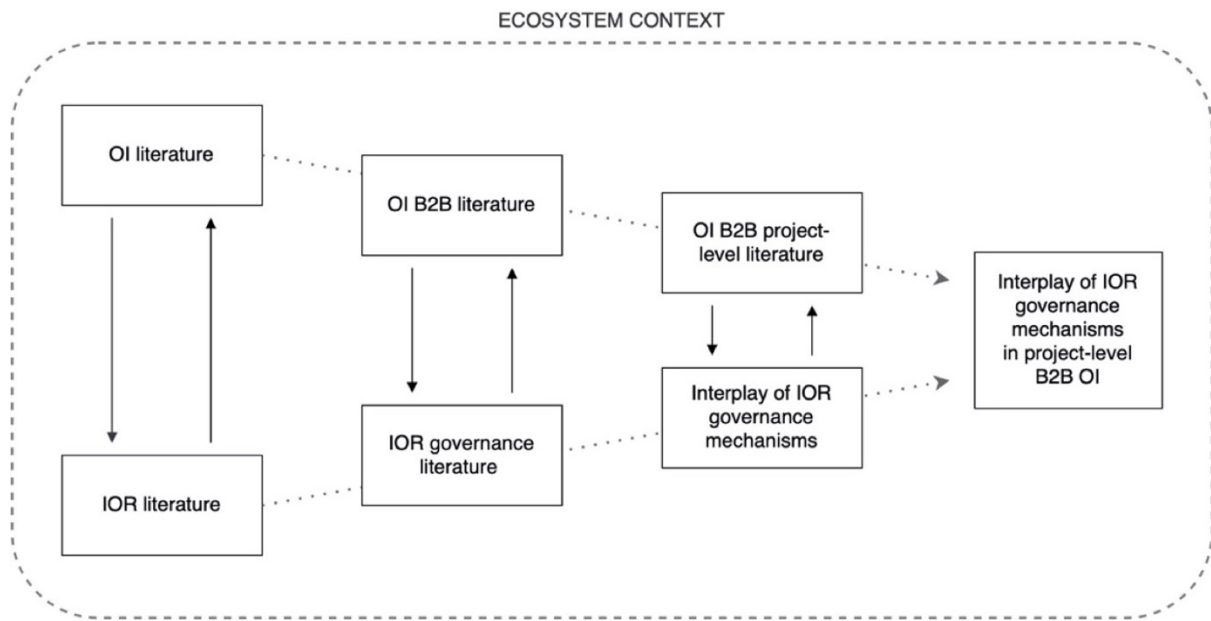


Figure 1. Applied theoretical framework

Similarly to Sinkovics, Sinkovics, and Archie-Acheampong (2021), we developed an initial flexible pattern-matching template to guide the data analysis by identifying relevant themes in literature and grouping them into constructs by their common characteristics (see Table 2). Paying special attention to avoiding subliminal confirmation bias, we concluded that this step was essential for guiding our focus and avoiding getting overwhelmed by irrelevant data.

Expected theoretical pattern	Reference	Implication for data analysis
Specificity of the context (i.e., ecosystem) will likely affect the findings*	(cf. Rezac, 2020; Bogers et al, 2019; Cao and Lumineau, 2015; Olander et al., 2010)	Expect previously unidentified observations specific to the context of ecosystemic arrangements.
IOR governance interplay in project-level B2B OI unfolds in sequential phases: <ul style="list-style-type: none"> • Ex-ante • Co-development • Ex-post 	(cf. Gurca et al., 2020; Cao and Lumineau, 2015; Majchrzak et al. 2014; Olander et al., 2010)	Explore patterns across project phases.

<p>Key attributes moderating governance success factors:</p> <ul style="list-style-type: none"> • Uncertainty • Complexity 	<p>(cf. Bagherzadeh et al., 2021; Markovic et al., 2021; Steils et al., 2021; Tang et al., 2021; Cheah and Ho, 2021; Barbic et al., 2021; Lee et al., 2019; Howard et al., 2017;</p>	<p>Match to observed patterns in the data.</p>
<p>Interplay manifests through oscillations specific to a particular phase:</p> <ul style="list-style-type: none"> • Complementarity <ul style="list-style-type: none"> - enabling - compensating • Substitution <ul style="list-style-type: none"> - replacement - dampening 	<p>(cf. Abdi and Aulakh, 2017; Schilke and Cook, 2014; Huber et al., 2013; Burki and Buvik, 2010; Zheng et al., 2008; Klein-Woolthuis et al., 2005; Luo 2002; Poppo and Zenger, 2002; Das and Teng, 2001)</p>	<p>Match to observed patterns in the data.</p>
<p>Key success-factors:</p> <ul style="list-style-type: none"> • Team and task characteristics • Level of openness • Knowledge protection • Choice of external partners • Choice of OI mechanism • Formalization of collaboration • Risk distribution • Internal firm practices and capabilities • Degree of innovation potential • Managing threats to value creation and value capture 	<p>(cf. Bagherzadeh et al., 2021; Du, 2021; Gurca et al., 2021; Cheah and Ho, 2021; Steils et al., 2021; Tang et al., 2021; Barbic et al., 2021; Oliveira et al., 2019; Kim, Kim, and Lee, 2015; Bogers et al., 2018; Majchrzak et al., 2014; Bogers et al., 2014; Foss et al., 2011; Vlaar et al., 2007; Laursen and Salter, 2005; Veugelers and Cassiman et al., 1999)</p>	<p>Match to observed patterns in the data.</p>

** As interplay of IOR governance mechanisms in project-level B2B OI across ecosystems has not been explored yet (see Table 1), unprecedented observations are likely.*

Table 2. Initial flexible pattern-matching template to guide the data analysis

3.1. Sampling strategy

The cases have been selected theoretically from the population of large multinational technology-intensive companies that fit the criteria of playing the role of an orchestrator, i.e., a focal firm aligning partners in an ecosystem toward a joint value proposition that a single firm could not create in isolation (Lingens et al., 2021). To increase the generalizability of our findings, we invited ecosystem orchestrators regardless of their industry. The firms were selected through the following sampling strategy. First, based on the revenue and the number of employees, we searched for large companies of multinational presence. Next, we determined

the dependence of their value proposition on digital technologies using the secondary data. Finally, we conducted a set of pilot interviews to determine whether the respective companies participated in project-level B2B OI. This resulted in removing two companies, both of industrial and manufacturing character. In case of one of the informants, we also had to conduct a complete de-identification. Therefore, instead of the actual name of the company, we are using a pseudonym "Company X". Company X is a multinational technology company that focuses on organizing information and specializes in providing Internet services.

The particular informants were selected based on their seniority/ level of experience, strategic involvement in ecosystem orchestration, and availability for interviews in the given period. We targeted at least three informants from each company to acquire the necessary successful basis for data triangulation (Lincoln and Guba, 1985; Yin, 2018); however, the scarce availability of the corresponding managers hindered the process of inquiry in three cases (Microsoft, Company X, and SAP), where we managed to reach only two informants. We compensated for this minor setback by accessing all the required data from industry publications and other reliable sources of publicly available information, including panel discussions and webinars.

The interview sessions were guided by a theoretically derived semi-structured guide, which was forwarded to interviewees prior to the interview sessions. In order to reach saturation, the primary data collection process was supported by employing document analysis. Considering the size and reputation of the abovementioned companies, the necessary supporting secondary data was quite elaborate but easily collected. Importantly, we appointed multiple investigators on one case, similarly to Eisenhardt and Bourgeois (1988). In practice, this means that the majority of interviews were conducted in tandem, with one interviewer leading the discussion and a second interviewer taking field notes, as well as making sure that the dialogue covered all points intended. Each of those sessions was followed by a meeting to reflect on the particular interview, synthesize facts, and share impressions and ideas of how to

sharpen and refine the guide for the subsequent sessions. The final, transcribed interviews were sent out to the individual informants for approval and validation of the interview data.

Overall, the data were collected from September 2019 to December 2020 through semi-structured interviews, either face-to-face or online via Zoom. The interviews were all conducted in English and recorded. Each lasted 1–1.5 h on average. The finalized interview transcripts yielded close to 600 pages of data. Furthermore, we collected secondary data exceeding 2700 pages of archival material, comprising annual reports, website information and online materials, newsletters, magazine articles, and company presentations. Our final dataset comprises 30 interviews, each approximately 1–1.5 h long, with senior-level managers (e.g., CEOs, senior vice presidents, directors) of ten case companies (see Table 3).

Company	Size	Informants
Microsoft	Revenue: €113.59 billion Employees: 144,000	1 Vice President 1 Senior Manager
Company X	Revenue: €145.5 billion Employees: 114,096	1 Senior Director 1 Senior Manager
IBM	Revenue: €71.8 billion Employees: 352,600	1 Senior Director 2 Senior Managers
Ericsson	Revenue: €20 billion Employees: 99,095	1 Senior Director 2 Senior Managers
SAP	Revenue: €27.55 billion Employees: 101,150	1 Senior Director 1 Senior Manager
Siemens	Revenue: €86.85 billion Employees: 385,000	1 Senior Director 3 Senior Managers
Bosch	Revenue: €78.5 billion Employees: 400,100	1 Director 2 Senior Directors
Grundfos	Revenue: €3.6 billion Employees: 19,280	1 Senior Vice President 3 Senior Managers
FLSmidth	Revenue: €2.41 billion Employees: 11,765	2 Vice Presidents 2 Heads of Department
Lundbeck	Revenue: €2.31 billion Employees: 5,800	1 Senior Vice President 2 Vice Presidents

Table 3. Overview of case companies

The decision to limit the sample to ten case companies was based on achieving theoretical saturation (Glaser and Strauss, 1967). The concept of theoretical saturation, serving as a “criterion for judging when to stop sampling” (p. 61), suggests that after revising the constructs number of times, the researcher is able to easily recognize whether further application of new incidents points to a new aspect that could result in progress. If negative, the incident is not taken into account, as it “only adds bulk to the coded data and nothing to the theory” (p. 111). In our case, theoretical saturation was determined by achieving the point of observing already seen phenomena, resulting in yielding negligible further learnings that did not improve the quality of our findings or widen our perspective on the topic of interest.

3.2. Data analysis

Based on Bouncken et al. (2021), our analysis process consisted of simultaneous comparison of the theoretical patterns with patterns emerging from data. This process allowed us to leverage flexibility in data collection and refine our theoretical foundations, hence data collection instruments, as the study developed. Furthermore, we have coded our data hierarchically in compliance with the rules of template analysis (Crabtree and Miller, 1999; King, 2004; King et al., 2019). The patterns derived from the semi-systematic literature review presented in Table 2 have been iteratively revised by matching them with patterns that emerged empirically. The assessment of the key innovation project attributes has been determined qualitatively using five managerial factors for successful project-level OI management proposed by Bagherzadeh et al. (2021) as presented in Section 2.1. Consequently, we have developed a final flexible pattern-matching template presented as Table 4. This table demonstrates how the theoretical and observed patterns manifest as the project-level discussed OI develops. Our findings are further elaborated in the following section.

4. Findings

In the process of matching the theoretical and observational patterns, we have identified three sequential phases of IOR governance in B2B OI projects across ecosystems – ex-ante, co-development, and ex-post (Gurca et al., 2021; Majchrzak et al., 2015; Olander et al., 2010). Based on the similarities in the nature and distribution of the mentioned patterns, we have discovered that each of the phases can be respectively explained by different aggregated dimensions (i.e., evaluating prerequisites, establishing foundations, shifting mindset, jointly creating and capturing value, launching interorganizational spinoffs). As illustrated in Table 4, the character of these dimensions can be defined by complexity and uncertainty; oscillations between complementarity and substitution of IOR governance mechanisms; and a variety of factors determining the success of orchestrators in the studied governance. Our findings can be illustrated via a sequential, closed-loop model, as represented in Figure. 2.

Phases of project-level B2B OI:	I. EX-ANTE (T)		II. CO-DEVELOPMENT (T)		III. EX-POST (T)
Interplay dimensions:	Evaluating prerequisites (O)	Establishing foundations (O)	Shifting mindset (O)	Jointly creating and capturing value (O)	Launching interorganizational spin offs (O)
Key attributes moderating governance success factors:	Medium complexity (T & O) High uncertainty (T & O)		High complexity (T & O) Medium uncertainty (T & O)		Low complexity (T & O) Low uncertainty (T & O)
Interplay manifests through oscillations specific to a particular phase:	Dominance of relational mechanism Contractual mechanism enables openness (T)	Mechanisms are equally dominant Mechanisms should be able to substitute each other through replacement (T) Complete absence of	Dominance of relational mechanism Contractual mechanism compensates for the disability of relational to evidence leadership commitment (T)	Dominance of relational in value creation Dominance of contractual in value capture Mechanisms compensate for each other (T)	Depending on form of contingent collaboration: 1) Relational mechanisms lead to contractual formalization of relationship 2) Interplay continues in the form of project-level proof of concept scaled-up to the ecosystem-level

		contractual mechanism is a no go (O)			3) Project does not meet expectations (either of actors or the ecosystem as a whole) and no further collaboration is triggered
Key success-factors:	Choice of external partners (T) Determining roles of actors (O) Choice of OI mechanism (T) Degree of innovation potential (T) Assessing business model complementarity (O) Setting expectations (O) Disclosing vulnerabilities and intentions (O)	Resource commitment (O) Delineating value capture (O) Formalization of collaboration (T) Reciprocity of contracts and trust (O) Rethink legacy governance structures (O) Interoperability of infrastructures (O)	Balancing degree of openness and IP protection (T) Team and task characteristics (T) Internal firm practices and capabilities (T) Digital transformation of complementors (O) Leadership commitment (O)	Managing threats to value creation and value capture (T) Balancing self-interest and prosperity of ecosystem (T) Maintaining relevance for complementors (O) Enabling trial and error approach (O) Risk distribution(T)	Assessing and scaling proof of concept (O) Determining form of spin-off collaboration (O) Bundling value proposition (O) Assessing potential joint business model development (O) Continue as in I. EX ANTE phase (O)

Source of the pattern: (T)...theoretical pattern; (O)...observed pattern

Table 4. Matching theoretical and observational patterns: interplay of IOR governance mechanisms in project-level B2B OI

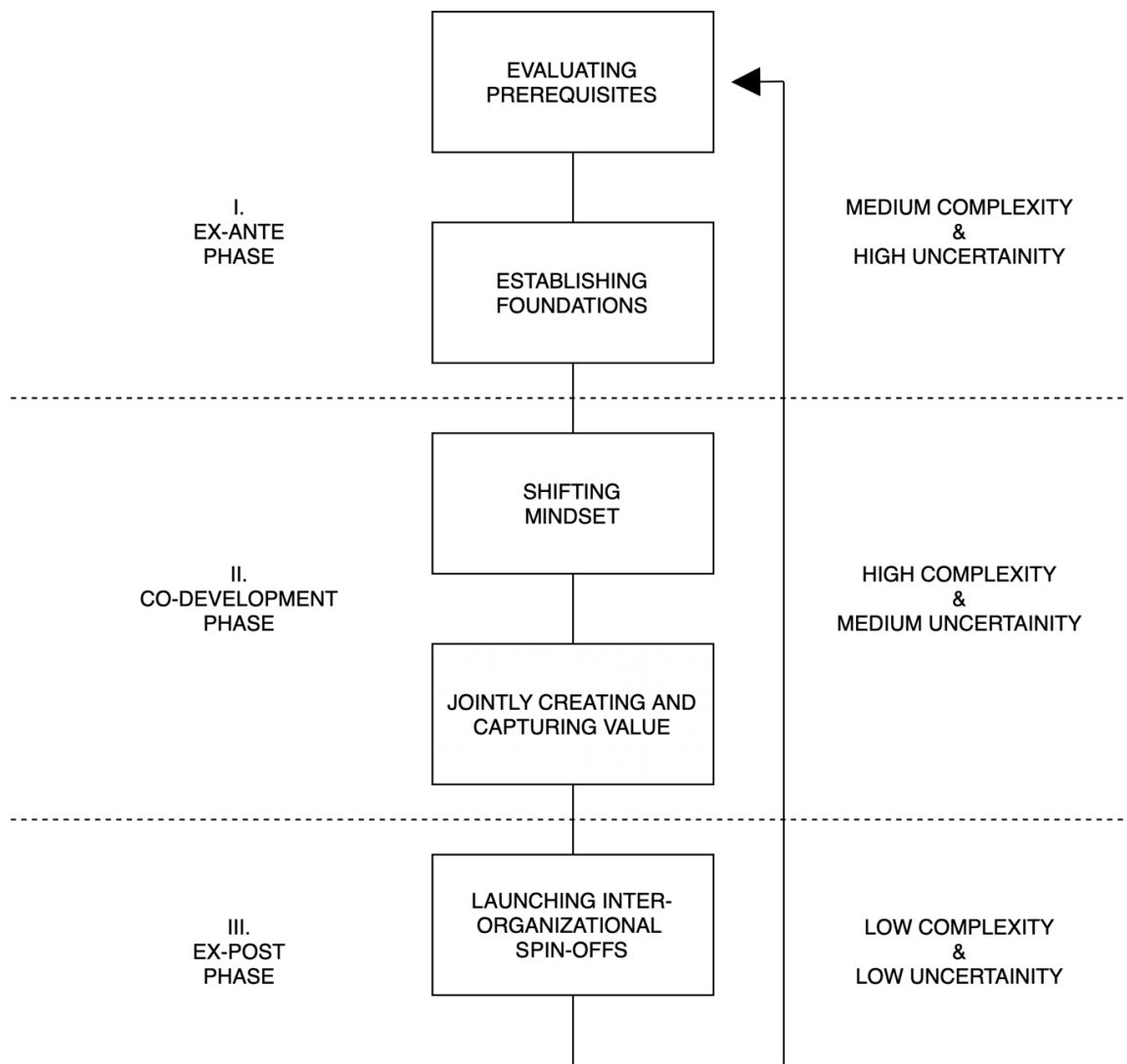


Figure 2. Governing the interplay of interorganizational relationship mechanisms in open innovation projects across ecosystems: five dimensions

4.1. Evaluating prerequisites

In the context of ecosystems, the need to engage in a B2B project typically starts from an innovation opportunity that emerged from a different project in which one of the organizations was involved. In line with the extant literature, the motivation to engage in B2B OI collaboration is motivated by the goal to jointly solve a particular project (Bagherzadeh et al., 2021; Bagherzadeh et al., 2019). Different from traditional partnerships, OI collaborations in ecosystems may also start by means of a network effect. This shifts the strategic decision making from the board members to the user base. For instance, companies collaborating with

Microsoft start to work with the company because their developers begin to use the platform organically without the awareness of the management. In line with the literature, our findings suggest that large multinational companies typically engage in OI projects across ecosystems to address complex needs that none of the actors would be able to address alone (Felin and Zenger, 2014; Lee et al., 2019). The first active step is generally evaluating the innovation potential of the project through an open discussion. The governance is at this stage underpinned by no or very little contractual governance as it limits the innovation capabilities of those involved. This process typically involves mapping out the key actors and determining their roles within the ecosystem of the particular project. Concurring with Steils et al. (2021), we find that the higher the complexity of a particular project, the more actors tend to be involved. This can be demonstrated by the Food Trust project by IBM. It started as an early adoption of blockchain tracking in collaboration with Walmart and slowly developed into a major project that contributes to the transformation of the food industry by offering the platform as a service. For the purposes of ecosystem mapping, IBM uses an in-house developed framework similar to “business model canvas” but for ecosystems. Although the highest value-capture opportunity may seem to rest on the shoulders of the ecosystem orchestrators, in some cases, it makes more sense for the companies to play a smaller role in an ecosystem orchestrated by someone else. This observation is especially valid in case of projects where a key player owning a powerful algorithm can leverage superior machine learning capabilities. Concurring with the findings of Markovic et al. (2021), companies also pay increased attention to understanding the business models of the other actors and assess whether they are complementary to those the company in question has in its portfolio. As the CEO of Siemens noted, “complementary” in this case matters not only in terms of coexistence, but also in terms of “different strengths” that enable each other's prosperity. This has to be reflected also internally, making sure that the emerging project does not cannibalize other parts of the company. Company X, for instance, operates with two completely different business logics (advertising and cloud) and mixing them up, as

the firm's head of division framed it, “would be disastrous”—both from the regulation side and from a customer perspective. Importantly, companies explicitly agree on paying close attention to setting expectations early, disclosing vulnerabilities, and being transparent about the intentions behind the decision to engage in such a particular project. While the informants agreed that interests of multiple players must be considered simultaneously (Dahlander et al., 2021), they also agreed that successful projects are driven by prioritizing the value they can add to the customer. As a chief designer and futurist summarizes, “If you have great relationships, and you have good business models that sustain and support these relationships, you will have profit. Money will fly in your face. So, move from profit to purpose.”

In this dimension, the relational aspects of governance are clearly dominant. Nonetheless, the companies often use contracts for ensuring confidentiality of their discussions. Typically, the tasks are of rather administrative character, not requiring additional resources or knowledge. The complexity has been considered medium, mainly stemming mainly from heterogeneity of the involved organizations and the necessity to visualize the potential of the company outside the regime of its standard operations. However, due to the volatility of the related early-stage considerations, the uncertainty in this dimension is high. The same is observed also in the second dimension of the ex-ante phase, establishing foundations.

4.2. Establishing foundations

When the organizations decide to proceed in developing their relationship, the rather relational set of activities is followed by a phase dominated by contractual governance, which enables the relational aspects of OI to unfold further. In this phase, the organizations start to proactively commit resources. In line with Felin and Zenger (2014) and Markovic et al. (2021), organizations start to cooperatively delineate the value capture and property rights (e.g., algorithm ownership) through the mechanisms of contractual governance, ensuring formal recognition of the trust-based incentives upon which the relationships rests. Although there is

a wide consensus that interorganizational projects in ecosystems are based on trust, the legal enforceability of the mutual agreement remains essential. An important finding is that the deployment of legal frameworks as a safeguard against opportunism has to reflect the relational aspects of the collaboration. In other words, at this stage, the key determinant of functionality is the reciprocity of trust and contracts. While one enables the existence of the other, in theory, in a well-functioning B2B OI relationship, they should be replaceable. In the words of Siemens' global account manager, "It is a partnership of trust. And that is with a THICK underline. That is a basis for a digital partnership in an ecosystem. We cannot escape having contracts and legal agreements, but the basis is trust and an ability to work together as partners."

The key dysfunctionality in establishing foundations of such projects' foundations lies in the potential clash of governance approaches. While OI projects in the context of ecosystems require an agile managerial mindset conducive for leveraging dynamic innovation capabilities, some actors might cling to the traditional ways of partnership engagement. Such approaches are rooted in prevailing legacies and limit the joint value-creation by prompting the actors to unnecessarily fence their organizational boundaries. In many projects where the goal of the orchestrator is to increase the user base to leverage the network effect, it is not possible to make a priori statements regarding contract size. In the words of Microsoft's vice president, in the "in the open platform mindset, there is more "expand the pie" rather than "divide the pie" thinking". Furthermore, a critical issue arises in cases where platform infrastructures of companies in an ecosystem are not compatible. Organizations, often those in more traditional industries, tend to develop their in-house platforms on a handful of use cases and end up with what a vice president of FLSmidth calls "bespoke Frankenstein platforms." Although these platforms can communicate through application programming interfaces (APIs), the built-in complexity does not allow for a full value creation. For that reason, in some cases, companies must make long-term investments in standardization of technological infrastructure, both within industries and across ecosystems. These investments are often overshadowed by tasks having higher priority

in relation to the bottom line. In the words of an executive vice president, chief technology officer and chief digital officer of Bosch, “That's why scale economies do not happen. Here, a precompetitive collaborative approach is required. Distributed Ledger Technologies can be – but not have to be – a solution for a neutral decentralized platform model.” As our informants agreed, in B2B OI projects, technology is no longer a differentiator; it is a necessity for retaining relevance as a potential collaborator. As a vice president of Microsoft mentioned, “you need to be top of the art ... but having said that, it takes [on average] 30 days for Google, Amazon, Microsoft and Alibaba to copy each other...” Another important aspect that underpins the participation in OI B2B projects in ecosystems is the willingness to collaborate with competitors. As a vice president of Microsoft said, “Everybody is collaborating...even the three ‘mother’ platforms [Microsoft, Google and Amazon] are also part of an open ecosystem. Nothing is built in isolation anymore”. Additional issues may arise from the misalignment of governance mechanisms across different organizational forms, levels of maturity, and domains. As argued by Roehrich et al. (2020), different organizations have different assumptions about the governance mechanisms. And while more mature companies may be used to employ contractual safeguarding as a prerequisite for OI B2B project collaborations, other – typically smaller and more agile – actors may not have capabilities in place to process them. This is the case of Lundbeck, a pharmaceutical company that orchestrates a wide spectrum of startups that complement their domain knowledge by their digital capabilities. Although the modularity of their knowledge allows the organizations to jointly create value, the startups often lack resources to carry out tasks along the lines of legal matters or quality control.

Overall, there is a wide consensus among the informants that the relational and contractual mechanisms should essentially be able to substitute each other. In other words, for an OI project in ecosystem to succeed, a handshake and a contract should be equally binding. Nonetheless, despite the fact that contracts can cover only a fraction of the mutual agreements, their function as a safeguard against opportunism is irreplaceable – especially when the focal

actors committing their resources and carrying out change-management interventions are large multinational companies with a wide spectrum of stakeholders.

4.3. Shifting mindset

Similar to other contexts, companies involved in OI projects in ecosystems face a number of tensions stemming from creating value through knowledge sharing, while simultaneously protecting the intellectual property to ensure competitive advantage (Rouyre and Fernandez, 2019). More specifically, when orchestrating ecosystems, companies must employ mechanisms of relational governance to mitigate the limited openness of other actors. On the one hand, as a vice president of Microsoft points out, “[our] platform has no value when no one uses it” just as “there is no value in railways” unless “there is a train on it”. For that reason, the company measures the value by monitoring the number of Azure-certified developers on LinkedIn – because “the more the merrier” as “more is adding in on the platform.” On the other hand, however, a high number of companies on the platform may cause reluctance to open up (due to, e.g., privacy and security concerns), which then limits the value-creation potential of the whole ecosystem. According to the literature, to leverage the benefits of OI, companies need to develop a set of capabilities that allow them to cope with issues related to differences in institutional culture, strategic focus, structure, and risks that are unique (Bocquet and Mothe, 2015; Cohen and Levinthal, 1989; Gurca et al., 2021; Temel and Vanhaverbeke, 2020; Yap and Rasiah, 2017). Specifically, in the context of ecosystems, we have identified one capability of relational nature that surprisingly intensively resonated among all of our informants without a single exception – mindset shift related to digital transformation. Building on and expanding findings of Markovic et al. (2021) and Ovuakporie, Pillai, Wang, and Wei (2021), this paradigm change is considered a critical stop-go mechanism in achieving desired project performance. Companies find it important to anchor the change initiative in the top management layer (i.e., CEO); otherwise, as a worldwide industry sales leader of IBM points

out, the project cannot “scale or accelerate” and is “bound to fail.” Transformation towards building capabilities allows for seizing the opportunities that openness offers, which requires embracing disruptions in organizational structure, daily processes, internal culture, resource prioritization, measurements of success, underpinning vision, and values. According to our findings, coordination of such organization-wide changes requires absolute commitment of the leadership. This can be demonstrated through the case of Grundfos, originally the largest pump manufacturer in the world. The organization went through a complete upgrade of the entire organization by identifying which capabilities were needed and where. Instead of just “shipping the box,” as a group vice president mentioned, the organization started to leverage servitization through building digital layers around the physical product. “We very much use the illustration of an onion, where the pump is in the centre,” he continued. This way, the company was able to position itself as a complementor in major ecosystems, such as smart cities or regions. Their value proposition shifted from selling water pumps to ensuring water access for more people around the world, safeguarding water resources and making a positive and lasting impact on the global climate challenges. “We needed to do something quite bold,” the group vice president stated, “and it's super important to have the top management helping you to spread the message ... and [our CEO] has done a great job to push this”. This finding proved itself valid across all the industries we examined. To summarize, in the words of a senior vice president of Lundbeck, “everybody's so busy doing their regular job rather than spending the time on innovation; [therefore] you have to have people that drive that process forward.” She continued, “Spending time and energy on assessing something that may create value – it's a luxury that very few people have and take, and if you want to drive yourself into that ecosystem, you need to have a digital strategy and take a very active approach as a company”. Finally, advancing the contributions of Kim, Kim, and Lee (2015) and Tang et al. (2021), the factor of mindset change as a principal moderator of OI projects in ecosystems has manifested itself also on the level of teams and individuals. Companies often have to cope with the internal resistance

to change. For instance, we have observed that in many cases, the role of Sales has transformed into a more consultative role of trusted advisors that understand the value of the service offered beyond the boundaries of a single industry. Therefore, in order to change the status quo also among the employees, it is crucial for the companies to establish a dynamic learning culture throughout the whole firm. As a Vice President of FLSmidth summarized, “It's people. That is the biggest challenge. Their mindset. In the purest form. ... And it goes from the top all the way down to the shop floor.”

In the whole phase of co-development, the companies are working in the unknown and complexity is high. Nonetheless, as they take concrete steps to align their processes, the actors are simultaneously gaining confidence in the ecosystems as well as the project. Thus, it is apparent that the level of uncertainty gradually decreases. In the dimension of mindset shift in particular, the organizations heavily rely on the relational governance mechanisms and use the formal devices to demonstrate the gravity of their commitment.

4.4. Jointly creating and capturing value

In the context of ecosystems, the value is created and captured jointly through a network of interdependent actors. Therefore, in order to keep a balance between self-interest and the prosperity of others (Bogers et al., 2017; Bogers et al., 2019; Vanhaverbeke and Cloudt, 2006; West, 2014), the companies ensure that relational and contractual governance mechanism exist in a harmony, where each compensates for the weaknesses of the other. As threats to the value creation can be mitigated by contracts only to a limited degree (Barbic et al., 2021), it is necessary for the companies to compensate for drawbacks that stem from the non-hierarchical nature of ecosystems through activities of relational substance. As the chief technology officer of Ericsson stressed, “The [key learnings from the process of co-creating and co-capturing value across ecosystems] are that the next ten years is going to be three dimensional – multiple technologies, multiple actors and multiple business/go-to-market models. ... From day one,

before even starting, you need to think about who are the actors that can complement and how”. However, at the same time, the organizations find it equally important to actively maintain relevance for others. The “old-industry mentality that the winner takes it all,” as the CEO of Siemens put it, inhibits both value co-creation and co-capture. In order to remain valuable for the other actors, for instance, companies construct hypothetical scenarios and, by the means of retrospective analysis, reverse-engineer the storylines leading to them. In the words of the chief designer and futurist of SAP, “If you cannot put down on paper [why you will be relevant for the ecosystem in 10 years], you will not be relevant. This is how it starts. Build narratives about common futures, common relevance, relationships, and success”. Furthermore, our findings concur with the contribution of Cheah and Ho (2021), who argue that high innovation potential leads to high commercialization potential. Nonetheless, interorganizational OI projects in ecosystems entail what a director from Microsoft calls “working in the unknown” or “trial and error.” OI projects in ecosystems often cannot have a predetermined business plan or return-on-investment margins. As the companies work beyond what can be specified, it is also uncertain what value will such collaborative arrangement yield, when, and for whom. Innovation itself becomes the end goal, and the projects often become a matter of trust. In the words of the executive innovation architect, “Often, we work in an environment where we cannot really fix any thinkable situation in a contract. We cannot put it into a clause in a contract. We work in an open contract that is based on trust.” The joint value-creation potential is often proved viable through projects of smaller size that involve fewer actors and lower risk. Such business cases are then evaluated and, in case of success, scaled into ventures of bundled value propositions addressing needs of a wider user base, which can then be easier formalized in terms of contractual safeguards. As the head of ventures at Grundfos argued, “That's where our partnerships either make it or break it, you know. The trust and the team spirit that we are working together and making one plus one equalling three. That's the reason we partner up.” Such projects are typically provided in terms of service and often through subscription. In the

same breath, it is important to highlight that the value capture aspect of OI projects remain an issue for many. Since the results of B2B OI projects are often something as intangible as knowledge, major organizations with a more traditional set-up find it challenging to a priori assess the outcome in terms of short-term impact on the bottom line.

In summary, the interplay in this phase manifests through compensation. While the relational mechanisms are dominant in creating value, contractual mechanisms are essential to ensure the ultimate distribution of value the ecosystem captures as a whole. The same, however, goes for the distribution of the emerging risks; the chance of scaling the project further decreases simultaneously with centralizing the responsibility for consequent failures.

4.5. Launching interorganizational spinoffs

As the projects prove themselves in terms of superior customer experience, operational excellence, or new revenue stream, it becomes viable for the key orchestrators to leverage the proof of concept on projects of a larger scale. Involving a much wider spectrum of stakeholders, such spinoffs may take the form of a legitimate enterprise, or a non-hierarchical arrangement governed by complementary interplay of contractual and relational mechanisms. An apposite example of the former is the company called TradeLens³, an open and neutral supply chain platform underpinned by blockchain technology, which enables collaboration and information sharing, thus reducing friction, fostering industry innovation, and promoting global trade

³ On 29 November, 2022, TradeLens was discontinued. To cite Head of Business Platforms at A.P. Moller – Mærsk, “TradeLens was founded on the bold vision to make a leap in global supply chain digitization as an open and neutral industry platform. Unfortunately, while we successfully developed a viable platform, the need for full global industry collaboration has not been achieved. As a result, TradeLens has not reached the level of commercial viability necessary to continue work and meet the financial expectations as an independent business (Mærsk, 2022).” Supporting the findings of this study, this statement was released after the publication of this article.

(TradeLens, 2021). Aiming for industry-wide adoption, its ecosystem now comprises nearly 200 members, including shipping terminals, ocean carriers, and governmental authorities. TradeLens started as a project orchestrated by IBM and Mærsk. As the IBM's worldwide industry sales leader illustrated, "Shipment of containers has been based on paperwork [and] processes defined in the 1950s. And that's actually where the largest cost is. Just the paperwork behind it. Just shipping flowers from Kenya to Rotterdam includes more than 200 separate pieces of paperwork and more than 30 organizations." TradeLens has spun off into a joint venture owned 50% by IBM and 50% by Mærsk. Moreover, actors in its ecosystem also include some of Mærsk's key competitors. As elaborated by IBM's Executive Innovation Architect, "They asked us if we could help them in actually creating kind of an open-source platform for some of it. And eventually, this has actually become one of the world's largest blockchain solutions today." In this case, the project spun off into a separate business with a detached identity, which now builds its own ecosystem where other B2B OI projects take place. A fitting example of the latter is a strategic partnership of Siemens and Grundfos. As the CEO of Siemens recounted, "We were sitting together with [Grundfos] some time ago and we said we have this IoT platform, MindSphere. Shouldn't we try to go out together and test it? We agreed, let's find a customer." Siemens and Grundfos approached Danish Crown, a global leader in meat production, who used the companies' pumps and industrial equipment, and found a mutual interest in collecting machine data. Siemens realized that to derive value from the data, it was necessary to develop algorithms; therefore, the company acquired Mendix, an organization specializing in developing low-code applications. Siemens' MindSphere combined with Grundfos' IoT solutions were able to optimize pump and motor schedules in order to maximize uptime and minimize energy consumption, while acquiring data and knowledge. The companies ended up signing a long-term co-development digital partnership focused on water and wastewater applications, industrial automation and building technology. The project was successful and spun off into an ecosystem tackling global sustainability challenges. On the one

hand, MindSphere has developed into an agnostic platform that provides the same application programming interface on any of the infrastructures, making it usable across otherwise competing geopolitical areas. On the other hand, the project allowed the companies to open up and co-create value as a part of ecosystems of a larger significance, involving a high number of different actors. For instance, in the words of Siemens' Global Account Manager of Siemens “[We and Grundfos] are actually using, and planning to use, artificial intelligence in smart city approaches, which is something that is being highly focused on in Asia at the moment. For example, Singapore, Shanghai, and, as I mentioned also earlier, New York. We're looking at making it a smart city. Alibaba is working heavily on that in China as well. The smart city approach, it's driven by digitalization and the capabilities of digitalization, but also driven heavily by the SDGs and scarcity of electricity, water and other resources.” Such major projects are governed contractually only to a certain extent. Although the legal framework protects actors' intellectual property, the collaboration is based mainly on mutual trust and relationship. Companies still need to open up their algorithms in order to be able to complement each other and create superior value. Despite no formal hierarchical structure, they work as one. In line with Gesing et al. (2015), Cheah and Ho (2021), and Du (2021), once an OI project in an ecosystem reaches the phase of spinoff, the IOR governance goes back to the phase of evaluating prerequisites for seizing the innovation opportunity emerging from the existing collaboration.

Relational mechanisms lead to contractual as companies decide whether to make the relationship formal or not. Having had a chance to go through the process of trial and error, organizations can make a well-informed assessment of the potential of the project to be scaled further. In cases where the continuation of such endeavor is deemed unviable, companies may decide to reflect on their learnings and systematically accumulate the generated knowledge for application in their future OI engagements. Throughout the project, the organizations have

developed the capacity to make well-informed decisions, therefore, both uncertainty and complexity are considered to be low.

5. Discussion

Based on our findings, we developed a five-dimensional governance model explaining how multinational companies govern IOR across different phases of OI projects in ecosystems. Each of the dimensions (evaluating prerequisites, establishing foundations, shifting mindset, jointly creating and capturing value, launching interorganizational spinoffs) builds on extant OI and IOR literature and depicts our empirical findings on the interplay of contractual and relational governance mechanisms applied throughout OI projects in ecosystems.

Overall, we have detected that IOR governance interplay changes in different phases of OI B2B project collaborations and different types of environments (Cao and Lumineau, 2015; Olander et al., 2010). As the appropriateness of governance proved itself important for both the focal firm and the other ecosystem actors (Carson et al., 2006; Klein-Woolthuis et al., 2005), contractual and relational mechanisms manifest several functionalities and dysfunctionalities that need to be managed in order to ensure successful joint value creation and value capture (Howard et al., 2019; Huber et al., 2013).

Essentially, while confirming that the theories presented in the theoretical background are valid in the context of ecosystems, we also reveal a number of findings that go beyond “connecting the dots” and unfold the previously unknown. Specifically, in the first dimension where companies start to get to know each other, we can see that although the relational governance is dominant, the contractual governance compensates for its inability to ensure that the knowledge flowing across their organizational boundaries will not be misused. Therefore, while the collaboration is based on a mutual relationship, without a contractual safeguard, companies are not willing to open up, which limits the evaluation of the innovation potential and hampers value capture performance (Cheah and Ho, 2021). While companies team up to

work on a particular project and create superior value through identified complementarities (Bagherzadeh et al., 2019; Bagherzadeh et al., 2021), our findings also suggest that in ecosystems, collaborations may begin also as a result of a network effect. Companies map their ecosystems and tailor the blend of mechanisms depending on the actors involved (Gesing et al., 2015; Roehrich et al., 2020; Steils et al., 2021), so the interests of all actors are balanced with the goal of the joint project (Bogers et al., 2017; Bogers et al., 2019; Vanhaverbeke and Cloudt, 2006; West, 2014). The key dysfunctionalities emerge from the limits of relational governance, as the companies might find it threatening to be transparent about vulnerabilities and their true intentions.

In the second dimension, the interplay is dominated by contractual governance, which cements interests of actors by concrete actions (Cassiman et al., 2010). These formal commitments constitute the basis for relational governance to develop further. Importantly, based on our findings, while contracts serve as a safeguard implied by the fact that firms are legal entities that need to carry out a number of internal changes, the innovation is driven by mutual relationships. For that reason, the key dysfunctionalities lie in differences in assumptions towards governance approaches and organizational forms (Temel and Vanhaverbeke, 2020).

Building on Markovic et al. (2021), we have discovered that the third dimension is dominated by the relational governance and entails managing knowledge-sharing tensions through development of capabilities related to shifting the mindset of actors from traditional value chain toward complementary co-creation enabled by modularity and shared vision (Bocquet and Mothe, 2015; Cohen and Levinthal, 1989; Dattée et al., 2018; Gurca et al., 2021; Rouyre and Fernandez, 2019; Temel and Vanhaverbeke, 2020; Yap and Rasiah, 2017). The decisions regarding openness are based on characteristics of particular projects (e.g., Lee et al., 2019; Majchrzak et al., 2015) and the main dysfunctionalities in this stage may emerge either from insufficient anchoring of the vision in the top management layer or poor

operationalization of novel paradigms on the team level (Kim, Kim, and Lee, 2015; Tang et al., 2021).

The fourth dimension demonstrates a compensational interplay between contractual and relational mechanisms. While some aspects of value creation and value capture can be bounded through legal instruments, companies need to ensure that they stay relevant for their ecosystem complementors by remaining in the position of an actor that plays a role that is essential for achieving the project goal. Since OI projects in ecosystems often do not have any other goal than innovation itself, the actors need to base their value creation on trust and an approach that acknowledges the interests of others (Dahlander et al., 2021). It is especially interesting to view these findings in light of the OI paradox (e.g., Du, 2021). In the ecosystem context, we can see that trust serves as a component underpinning the ability of actors to create and capture value without any formal bonds. In other words, at a certain point in, the whole fate of the OI project surprisingly comes down to trust; if it is not established sufficiently, the project is bound to perish by tension (cf. Bogers, 2011). The main dysfunctionality is hence rooted in the intangibility of outcome; informality of incentives (Felin and Zenger, 2014); fragility of the relational mechanism, especially in its fragility (e. g., Shen et al., 2020); the informality of self-enforcement (Dyer and Singh, 1998; Malhotra and Murnighan, 2002; Poppo et al., 2008; Zhou and Xu, 2012); and emerging ambiguities (e.g., Cannon et al., 2000).

In the fifth and final dimension, the actors essentially decide whether to leverage the developed relationship on a larger scale. This may occur in two ways. First, the actors may establish a separate legal entity underpinned by contractual arrangements that then continue to engage in B2B OI projects with other actors. Second, the actors may decide to keep the non-hierarchical structure and continue on the basis of dominating relational governance with contractual mechanisms compensating for its inability to protect the intellectual property (Shah, 2006; West, 2003; West and O'Mahony, 2008). Importantly, as can be seen in the case of Grundfos, the companies can leverage their network of inter-connected products when

collaborating with external parties (Du, 2021). When the appropriate governance mode is selected, the value-creation potential of such ventures is less vulnerable (Gesing et al., 2015). Both forms then move into the dimension of evaluating pre-requisites in a scaled-up form.

6. Theoretical contributions

Our study makes four theoretical contributions. First, we explore OI as an interactive, collaborative process of joint value creation (Piller and West, 2014) and study it on the project level. As stressed in our review, previous research has primarily studied B2B OI from the firm-level perspective (Bagherzadeh et al., 2021; Markovic and Bagherzadeh, 2018). However, companies make decisions regarding different aspects of openness in these interorganizational relationships on the nature of particular heterogeneous projects (e.g., Lee et al., 2019; Majchrzak et al., 2015). Hence, our article explores the different development stages on a less aggregated project level, as requested by Dahlander et al. (2021), providing new insights into how OI project governance is impacted by the interplay of substitution and complementarity among the OI partners. We also build on Chesbrough and Bogers (2014) and attempt to provide new knowledge of the interactive and reciprocal nature of OI projects, which in essence underpin the existence of OI in ecosystems. Positioning our study in the context of ecosystems, where actors find themselves involved in cooptation, our study also contributes to West and Bogers (2014), who identified the need to further develop the concept of “coupled OI.”

Second, taking a dynamic view and studying B2B OI at the project level contributes to our understanding of how B2B OI management evolves across the different project stages, as requested by Markovic et al. (2021). In particular, we contribute to the literature discussing tension management (e.g., Bagherzadeh and Brunswicker, 2016; Bogers, 2011; Rouyre and Fernandez, 2019), answering the call for research exploring how organizations can manage tensions emerging from the simultaneous adoption of formality and informality (Bagherzadeh and Brunswicker, 2016; Majchrzak et al., 2015). This develops the discussion established by

Gurca et al. (2021), who argue that both formal (e.g., rules) and informal (e.g., norms) coordination mechanisms may affect the sequences of interdependent actions (e.g., their order). Specifically, we provide new knowledge on the stages of IOR governance applied in co-creating and co-capturing value through OI projects across ecosystems. With our specific focus on IOR in OI across ecosystems, we also answer the research calls by West (2014) and Teece (1986, 2006), who argue for further exploration of OI practices on an interorganizational level. Finally, our study concurs with the existing research stating that companies apply selective openness strategies to control the IP rights, the creation process, and the community governance in ways to maximize the alignment of the companies' goals while at the same time attracting outside participants (Shah, 2006; West, 2003; West and O'Mahony, 2008). We further add to this literature stream in showing how the combination of specific relational and contractual governance mechanisms are applied when companies contribute to joint creative and knowledge-sharing processes while simultaneously protecting their IP rights and competitive knowledge from being exploited.

Third, with inconclusive knowledge of the substitutive and complementary interplay between contractual and relational governance in interorganizational relationships (e.g., Benítez-Ávila et al., 2018), we provide new insights into the nexus between interplay of IOR governance mechanisms and the project-level B2B OI. This is done by revealing how the interplay of contractual and relational governance changes across five different dimensions of OI across different types of environments (i.e., industries), as called for by Olander et al. (2010) and Cao and Lumineau (2015). Furthermore, we concur with Roehrich et al. (2020) that partnering organizations with different types of organizational structures and objectives have different assumptions regarding governance mechanisms. Finally, with the scarcity of research exploring the interplay of different governance functions and dysfunctions (e.g., Howard et al., 2019), our study also provides new answers as to how the phases of OI projects moderate the contract-relational governance interplay.

Fourth, by exploring the phenomenon in the context of ecosystems, our paper contributes to the growing interest in understanding how companies successfully govern dynamic relationships across OI ecosystems (Autio and Thomas, 2018; Shipilov and Gawer, 2020; Tiwana et al., 2010). In combining OI and ecosystems in our study, we build further on West (2014) and Adner (2006), who stress the research and practice opportunities of linking OI and ecosystems. In particular, our model shows how the actors govern the IOR interplay in OI projects across ecosystems in a self-organizing way, in an environment where mechanisms of hierarchical control are absent (e.g., Bogers et al., 2017; Brunswicker and Almirall, 2015; West, 2003). In doing so, we partially respond to Bogers et al. (2017), who request new and dynamic theories explaining how open governance can affect the way actors evolve throughout the innovation process.

7. Managerial implications

Apart from its theoretical contributions, our study highlights key managerial considerations regarding IOR governance in OI projects leading to successful value co-creation and value co-capture in ecosystems. From our findings, we derived a five-dimensional model that explains how large multinational, technology-intensive companies govern the interplay of IOR mechanisms in OI projects across ecosystems. The findings can assist orchestrators in proactively managing and setting up the right governance structures, collaborative processes, and project infrastructures in their organizations, while aligning the heterogeneous complementors toward a focal value proposition. Further, management can apply the model to evaluate the progression and identify the IOR governance stage of their existing OI projects in their ecosystems, hence reflecting on next steps toward successful value co-creation and co-capture. Finally, management can also apply the model as a “stop-go model,” ensuring that the necessary prerequisites are established before “rushing” off to the next stage without the proper foundation for co-creating or co-capturing value.

8. Limitations and further research

Naturally, our study also entails several limitations. To elaborate, we have only involved senior-level interviewees heavily involved in the strategic decision-making. Changing the level of informants may very well impact the IOR governance observations. For that reason, a comparison across different organizational levels engaged in OI projects could provide interesting insights. This approach could be especially fruitful in single-case studies conducted across different industries and company sizes, allowing for comparisons across the different contexts. Although document studies were applied to validate and triangulate the data derived from the senior-management informants, the individual interviewees may suffer from self-selection and recall bias. For that reason, it is necessary to challenge our findings by conducting similar studies, but with different set of ecosystem orchestrators. Finally, this study has not been carried out using a longitudinal approach, which would provide an interesting venue for validating our model by real-time observations.

Besides the opportunities emanating from the presented drawbacks, we recommend using our contribution as a steppingstone to address the general deficiency of knowledge on governing the interplay of IOR mechanisms in OI projects across ecosystems. Based on our discovery that IOR governance in B2B OI projects across ecosystems takes place in three sequential phases which can be explained by respective aggregated dimensions, we call for studies to build on our findings and explore the components of IOR governance in B2B OI projects across ecosystems in a more nuanced way. Applying theories that would allow for studying the identified dynamics from a different perspective (e.g., managerial sensemaking) would allow for a more holistic understanding of the occurring phenomena. Further, it would be helpful to see the measures of complexity and uncertainty to be determined qualitatively. An interesting avenue of future research would be to study IOR governance in B2B OI projects

across ecosystems through other types of qualitative research methods (e.g., ethnography, action research).

We see a significant potential in studying trust as a unit of analysis in relation to OI paradox in the context of ecosystems. Ecosystems are based informal hierarchies, making trust an essential condition for creating and capturing superior value. Our findings can be also used for further development of the model by adopting a stakeholder theory perspective, which considers business “a set of relationships among groups which have a stake in the activities that make [it] up” (Freeman, 2010, p. 7). This angle would not only allow relating the model to the remaining ecosystem complementors, but also to the environment and society per se. An inspiration could be, for instance, work of Freudenreich, Lüdeke-Freund, and Schaltegger (2020), who have applied a similar approach but in a different research stream. Furthermore, we can see an upheaval of digital transformation in previously unaffected domains (e.g., insurance). For that reason, it would be interesting to see how our findings would unfold in the ecosystems heavily impacted by digitalization, highly regulated ecosystems, or in ecosystems that could be classified as “walled gardens” (cf. Jacobides, 2020). Finally, it could be beneficial to explore the governance of the IOR mechanisms in OI projects across ecosystems orchestrated by organizations of different size (e.g., SMEs), maturity (e.g., startups), type (e.g., quadruple/quintuple helix actors), and structure (e.g., flat hierarchies).

References – Article 1

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Article 2

The Role of Privacy Protection in Business Models for Sustainability: A Conceptual Integration from an Ecosystem Perspective

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1. Introduction

It is obvious that data-driven technologies have significantly impacted the way how business is conducted (e.g., Johnson et al., 2008; Amit and Zott, 2012; Iansiti and Lakhani, 2014; Porter and Heppelmann, 2015). Literally every aspect of the business landscape has been radically shifting (Westerman and Bonnet, 2015) and with the Fourth Industrial Revolution underway, the biological, physical, and digital worlds have been gradually fusing. People have never been so close to technology before (Schwab, 2016; Rigby, 2014) and, in fact, each of us can now be considered a “walking data generator” (McAfee and Brynjolfsson, 2012, p. 63). Just to illustrate, it is estimated that in 2023, there will be 29.3 billion networked devices, which is approximately 10 billion more than 5 years earlier (Cisco, 2020). With the contribution of the COVID-19 pandemic causing a sudden increase in online presence, more than 59 zettabytes of data were predicted to be created, captured, copied, and consumed solely in 2020 (IDC, 2020). This amount of data is expected to grow with a five-year compound annual growth rate of 26 percent through 2024, and despite the ratio of unique data to replicated data being approximately 1:9, the data created by 2023 will amount for creation of more data than in the past 30 years (IDC, 2020). In the same breath, however, it is necessary to add that as technology per se has no single objective value (Chesbrough, 2010), the same applies to all the data it generates. These barely imaginable volumes mean nothing unless they are processed and used for various purposes – including those of commercial character.

Generally, business environments consist of interdependent bundles of resources, markets and technologies controlled by many (Astley and Fombrun, 1983). Therefore, when proposing, creating, delivering, and capturing value, we can see companies navigating these nowadays highly digitalized spaces jointly, by managing such dependencies with focus on establishing complementarity. On the one hand, they do so by actively engaging in different networks where the interorganizational relationships are governed by an interplay of

contractual and relational mechanisms (Aagaard and Rezac, 2022). On the other, we can also see them becoming embedded in ecosystems – sets of actors with varying degrees of multilateral, non-generic complementarities that are not fully hierarchically controlled and cannot be decomposed into an aggregation of bilateral interactions (Jacobides et al., 2018; Shipilov and Gawer, 2020; Adner, 2017). Underpinned by modularity, the actors ultimately cover customer needs in a way that an individual, isolated firm would never be able to. Thus, facing the reality that offering alternative value proposition has only a little or no effect on building up a competitive advantage, the innately self-interested companies cope with the major paradigm shift by co-specializing and opening up for collaboration even with their competitors (Jacobides, 2019; Gnyawali and Charleton, 2018, Jacobides, 2019).

Zooming in on the dynamics of ecosystems in particular, we can see companies co-creating products and services that span the traditionally clearly demarcated organizational as well as industrial boundaries – typically by using digital platforms, Application Programming Interfaces, Internet of Things, and other tools for gathering, sharing and analysing data (Desai et al., 2022; Fuller et al., 2018, Porter and Heppelmann, 2014). And while there is no doubt that such a substantial data-driven progress has all the required potential to serve as a major catalyst for socially sustainable development, it simultaneously encompasses a number of critical concerns, with privacy protection being one of the most imperative (e.g., Acquisti, Taylor and Wagman, 2016; World Economic Forum, 2021; Gstrein and Beaulieu, 2022). The endless array of notorious scandals of big-tech behemoths has drawn attention to the colossal imbalance of the value created for companies compared to value created for society. It has become widely recognised that organizations capitalize on customers’ personal data and often use it on a massive scale without their permission or awareness (cf. Cochrane, 2018; Burt, 2019). Despite the fierce deployment of various regulatory mechanisms, the mitigation by external interventions seems to be ineffective or, in fact, even counterproductive for innovation as such (cf. Bansal et al., 2015; Burt, 2018; Martin et al., 2019). While the infamous trade-off

between customers' convenience versus their privacy gradually escalates into a crisis of society-wide proportions (e.g., Meyer and Kirby, 2010; Li and Unger, 2012; Wang, 2013; Cloarec, 2020), the business models of many paradigm-setting companies still rely on exploitation of data and information, essentially ignoring their cumulative impact on the social bottom line. Since their products and services embody the very cornerstone of some of the most fundamental daily-life operations, giving up privacy has become seen simply as an inevitable collateral damage of living in this day and age – an ordinary price expected to be paid to be able to fulfil one's basic needs.

The practice of leveraging data for the commercial purpose has become so far-reaching that some researchers even resorted to using terms such as “data capitalism” (West, 2017, p. 20). And although the rise of distributed-ledger created a number of opportunities for levelling out the playing field and establishing digital sovereignty (Montes and Goertzel, 2019), reclaiming the ideals that revolve around the notion of human-centricity requires to stop applying intrusive techniques and find a safer, more inclusive way to develop business (Esteve, 2017; Caputo et al., 2021). The current status quo residing in pseudo-competition dominated by gatekeeping platforms gradually closing their ecosystems and perpetually reinforcing their walled gardens calls for revisiting privacy protection from a perspective that reflects the current situation underpinned by redefined interorganizational dependencies. On the one hand, it is desirable for customers to share data and information – it makes their life swiftly convenient. On the other, however, one must simultaneously consider the picture in full; when used for generating profit across ecosystems, the data and information must be combined and used only in ways that are sustainable not only for an individual but also for the society at large.

This article attempts to tackle the abovementioned issue by answering the research question “How can companies propose, create, deliver, and capture value while protecting privacy in a sustainable way?” and unfolds followingly. First, due to the generally ambiguous understanding of conceptual articles, the adopted process is delineated by means of a research

design section. Second, the key concepts belonging to the relevant debates on the topic of concern are introduced, and, adopting a perspective that reflects the emergence of ecosystems, their main limitations are identified. Third, the emergent gap is addressed, concepts are integrated, and a heuristic framework for sustainable privacy protection through business models is presented. Finally, the article reflects on the theory synthesis in terms of its contribution, future research, and managerial implications.

2. Research design

In general, as argued by Cornelissen (2017) referencing Ragins (2012), “the craft in writing theory lies partly in the fact that there are no straightforward formulas or templates for theory papers” (p. 1). Obviously, as stated by Gilson and Goldberg (2015), “conceptual papers do not have data, because their focus is on integration and proposing new relationships among constructs” (p. 127). Nonetheless, while the distinction between empirical and conceptual articles is commonly drawn through the assumption that the empirical have data while the conceptual do not (Elder and Paul, 2009; MacInnis, 2004), it is apparent that not all papers without data should be considered conceptual (cf. Cropanzano, 2009). According to Salomone (1993), “a sound conceptual article can be a quantum leap, in terms of value and usefulness, beyond a typical literature review” (p. 73). And since it goes beyond the mere association of similar ideas and logical extensions of prior thinking, the advancement of a concept requires to be underpinned by a well conducted creative process. As pointed out by Gilson and Goldberg (2015), the difference between a review and a conceptual paper is the question “what’s new.” Hence, a conceptual article should definitely include a brief but comprehensive overview of the domain (i.e., “what do we know, where have we come from, and what are the areas yet to be examined,” p. 128), but this section should be written in a concise fashion, allowing the author to focus on a specific area that requires attention as well as to propose and integrate novel relationships between constructs.

The understanding of conceptual papers applied throughout this article can be considered in line with a recently published contribution by Jaakkola (2020). This article concurs with her proposition that “a well-designed conceptual paper must explicitly justify and explicate decisions about key elements of the study” (p. 19) and shares her view on the research design elements a conceptual paper should comprise. Firstly, the argumentation in conceptual literature is based “less on data in the traditional sense, but [involves] the assimilation and combination of evidence that may come from a variety of sources” (Hirschheim, 2008, p. 434). Therefore, it is necessary to be explicit about the choice of theories and concepts used to generate novel insights. Furthermore, the authors should clarify their choice of theories and concepts that are being analysed and draw distinction between domain theory (i.e., “particular set of knowledge on a substantive topic area situated in a field or domain”) and method theory (i.e., “meta-level conceptual system for studying the substantive issue(s) of the domain theory at hand”) (Lukka and Vinnari, 2014, p. 1309). Other elements necessary to consider are the level of perspective, level of analysis, level of aggregation, key concepts used for analysis and explanation, key concepts to be analysed and explained, translating the focal phenomenon in a conceptual language, method of integrating the well-defined concepts, and quality of argumentation (Jaakkola, 2020, p. 20).

The approach towards reviewing literature in writing this article has been focused predominantly on two pertinent research streams, i.e., business models for sustainability and privacy. In both cases, the respective streams have been traced to their inception and, searching for potential parallels, a theoretical narrative highlighting their complementarity has been developed. Resultingly, adopting an ecosystem angle, this effort allowed for discovering significance in relating privacy protection to business modelling focused on sustainable development. Key concepts (i.e., business models for sustainability, contextual integrity) were chosen based on the fit with the phenomenon, and, due to their complementarity, an interdisciplinary synthesis has been found exceptionally promising to address their respective

blind spots. The selection of papers used for building the argument has, therefore, been based on their relevance to the focal issue and the conducted synthesis. The overview of choices related to this paper are illustrated in Table 1.

Empirical research	Conceptual paper equivalent	Research design elements of this article
Theoretical framing	Choice of theories and concepts used to generate novel insights	Privacy protection in sustainable business models from an ecosystem perspective
Data (source, sample, method of collection)	Choice of theories and concepts analysed	Business models for sustainability, contextual integrity
Unit of analysis	Perspective; level(s) of analysis/aggregation	Meta-perspective
Variables studied (independent/dependent)	Key concepts to be analysed/explained or used to analyse/explain	Sustainable privacy protection in business models
Operationalization, scales, measures	Translation of target phenomenon in conceptual language; definitions of key concepts	Based on a thorough review of relevant literature
Approach to data analysis	Approach to integrating concepts; quality of argumentation	Figure 1.

Table 1. Decisions about the key elements of this study in accordance with Jaakkola (2020)

Ultimately, this article can be classified as a synthesis paper, i.e., an article with the ambition to achieve an outcome that enhances knowledge on a concept or a phenomenon by conceptual integration across different, previously unconnected literature streams or theories (Jaakkola, 2020). To elaborate, adopting the typology of conceptual contributions developed by MacInnis (2011), the general conceptual goal of this article is to relate the concepts of business models for sustainability and contextual integrity by integrating them. The role of an author is to act as a metaphorical “architect” who projects an original building from a set of

materials through portraying the construction as a whole, while pointing out how the individual elements fit together (potentially in an unprecedented way).

3. Understanding business models for sustainability

During the last decades, several global economic and financial crises have highlighted the impact of companies on society, leading to calls for revisiting the relationship between business and sustainable development as defined more than thirty years ago, i.e., “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (World Commission on Environmental Development, 1987, p. 41). Although the general importance of sustainability and green growth policy agenda has been evident (Aagaard, 2019; Beltramello et al., 2013), researchers also realized that all of our sustainability issues cannot be resolved by technology and innovation alone (e.g., Wells, 2013). Hence, building on Teece’s (2010) seminal definition and a literature review by Boons and Lüdeke-Freund (2013), Schaltegger, Hansen and Lüdeke-Freund (2016) came up with a concept of business model for sustainability and defined it thusly: “[a] business model for sustainability helps describing, analysing, managing, and communicating (i) a company’s sustainable value proposition to its customers, and all other stakeholders, (ii) how it creates and delivers this value, (iii) and how it captures economic value while maintaining or regenerating natural, social, and economic capital beyond its organizational boundaries (p. 6).”

Focusing specifically on value creation as a component central to business modelling, conventionally, it has been considered predominantly in terms of a product or service bundle offered to customers in order satisfy their needs, or in relation to economic value created for the business in question. In the vein of the frequently referenced triple bottom line by Elkington (2004), business models for sustainability offer a broader view emphasizing the social and ecological aspects of value creation in relation to stakeholders that lie outside the scope of parties directly involved in the key business processes and activities. Building on these

foundations, Freudenreich, Lüdeke-Freund and Schaltegger (2020) further pointed out the lack of research in the area of stakeholder relationships and expanded the conventional one-directional understanding of value creation by exploring it from the stakeholder theory perspective. Stakeholder theory as such considers business as “a set of relationships among groups which have a stake in the activities that make [it] up” (Freeman, 2010, p. 7). The stakeholder focused approach is especially resonant in the context of sustainability management for several reasons (Hörisch et al., 2014). In particular, both of these perspectives explore business practice beyond the limited ego-centric focus on creating value only for customers and companies. Acknowledging broader societal and natural embeddedness of businesses, they both reject separating business and ethics, hence condemning various forms of philanthropy. Finally, they both also resolutely oppose the thesis that profit is immoral and extend the short-term business outlook by seeking to create value over the long term, particularly in terms of financial, societal, and environmental aspects. Asserting relationships and joint purpose as the key elements of business models, Freudenreich, Lüdeke-Freund, and Schaltegger (2020) developed a stakeholder value creation framework that diverges from the classical customer value proposition view by considering not only what is the value and how is it created, but also with and for whom. This framework distinguishes between five interdependent stakeholder groups (i.e., customers, business partners, employees, societal stakeholders, and financial stakeholders) and explicitly considers the value flows that take place in their relationships. Given the presumption that value creation occurs between multiple different actors, the authors posit that the outcome of the process needs to be viewed as a portfolio.

Naturally, the development of the stakeholder value creation framework has had implications on the original concept of business models for sustainability, resulting in the following refinements. First, the activity of identification and solving sustainability issues as a part of value creation processes needs to involve all relevant stakeholders (Stubbs and Cocklin,

2008; Aagaard and Ritzén, 2020). Second, how the particular stakeholders contribute to achieving the business model's joint purpose, which is oriented toward sustainable development, needs to be clearly formulated (Bocken et al., 2014; Lüdeke-Freund and Dembek 2017; Schaltegger et al., 2017; Upward and Jones, 2015). Third, the interests of the stakeholders need to be aligned and the social, ecological, and economic value they receive needs to be integrated (Freeman, 2010; Hörisch et al., 2014). And finally, the value creation with and for stakeholders needs to understand business and ethics as inseparable (Freudenreich et al., 2020). Ultimately, these propositions allow for evaluation of business models in terms of their capacity to perform in line with the business models for sustainability.

Notably, the commercialization of technological innovations while aspiring to create sustainable value with and for stakeholders also entails a number of barriers. For instance, besides issues with appropriability regimes, complementary of assets, discursive ambiguities, directional risks, methodological constraints, or the challenge of double externality, the list also includes the struggle with unsustainable dominant designs, and difficulties of interventions of system-level scale (Teece, 1986; Boons et al., 2013; Lüdeke-Freund, 2020).

While further contemplations on the topic can be also found in several other contributions (e.g., Upward and Jones, 2015; Schneider and Clauß, 2019; Lüdeke-Freund et al., 2020), as Lüdeke-Freund (2020) argues, the knowledge on what prevents sustainable value creation is “extensive but not yet conclusive” and requires further insight. One specific gap lies in the lack of focus on the social aspect of sustainability. For instance, Brem and Puente-Díaz (2020) highlight that “[the] social dimension of sustainability has not received the same amount of attention as environmental or economic sustainability. Hence, the construct of social sustainability lacks conceptual and operational clarity (p. 4).” While the field is still in its nascent stage, the body of literature on socially sustainable business is growing and offers a “huge scope and impetus for future scholarly works” (Soni et al., 2021, p. 13). Although business model literature marginally acknowledges the importance of the social side of

sustainability, it basically overlooks that in the interconnected world which essentially relies on flows of data and information, one simply cannot discuss sustainability without involving privacy as well as its protection. The following sections hence introduce privacy as a major social issue within the stream of sustainability focused business model research and suggest how to tackle it.

4. The role of privacy in business development

Considering the impact of digital transformation, privacy in business has been constituting a massive issue occupying scholars running the academic gamut from engineering to philosophy. Perhaps not-surprisingly, it has also been *raison d'être* for some of the key public, private, and non-profit institutions. To explain the reasons behind such an upset, in the words of Montes and Gortzel, the space of artificial intelligence (AI) is essentially “dominated by an oligopoly of centralized mega-corporations (2019, p. 354)” that expand into an increasing number of verticals. Such actors seemingly enhance privacy at the cost of creating bottlenecks, raise barriers to entry, and strengthen their position as ecosystem orchestrators controlling majority of the core society-wide operations. Looking under the metaphorical hood of such hyperscalers, it can be seen that compared to the traditional operating models that rely predominantly on the processing power of employees, the value creation capacity of enterprises centring their business models around AI becomes far superior. In this environment, differentiation takes place through finding a right position within particular ecosystems and integrating algorithms into the very core of value creation processes. As Iansiti and Lakhani (2020a) point out, due to the push for constant innovation and improvement, we witness that companies which holistically embrace the potential of algorithms can seize unprecedented learning opportunities and scale at a much faster pace. Although having more data and information does not necessarily equal higher competitive advantage, through a thorough consideration and careful

cultural alignment, companies can create network effects that enable almost exponential and long-lasting value creation without diminishing returns (Hagiu and Wright, 2020).

These disruptive changes are naturally followed by consequences of the same magnitude. Besides other factors, the performance of AI depends extensively on the nature, type and volume of data and associated information – including the circumstances and conditions under which they were collected. As widely assumed, the consent-based rules of privacy protection are notoriously ill-suited to tackle the social challenges, as they only nurture trading data and information in the fashion of the so called “privacy paradox”, i.e., a phenomenon where people say they highly value privacy, and subsequently decide not to protect it, or even voluntarily exchange it for goods and services of inadequate value (Solove, 2020; Berinato, 2018). The concern of people over exploitation of their personal data generally differs (e.g., Cecere, Le Guel and Soulié, 2015) and, to cite Acquisti, Taylor and Wagman, “consumers’ ability to make informed decisions about their privacy is severely hindered because consumers are often in a position of imperfect or asymmetric information regarding when their data is collected, for what purposes, and with what consequences” (2016, p. 442). Thus, in digital economies where data and information are aggregated, combined, and distributed across ecosystems, informing individuals and empowering them with higher control while calling for firms to be transparent about their practices not only does not result in privacy being protected – in a number of cases, it can also backfire (Acquisti et al., 2015).

As can be summarized by using citation from a recent World Health Organization report reflecting on the sustainability of AI in healthcare “[the] pursuit of data, whether by government or companies, could undermine privacy and autonomy at the service of government or private surveillance or commercial profit. (2021, p. 2)”. While the regulators have been indefatigably attempting to curb the power of the key industry-shaping players, their efforts have not been particularly effective (e.g., Jacobides et al., 2020). To illustrate, according to the OECD Digital Economy Outlook 2020 report (2020), the absolute majority of OECD

member countries consider the main challenge to their privacy and data protection regulatory frameworks to be catching up with the technological developments and business models of online platforms. More than 80 percent of the countries also consider AI and big data – central elements of contemporary business practice – to pose the main challenge for privacy and personal data protection. These findings are also very much in line with further global projections, which consider protection of privacy to be one of the great challenges of the coming years (Reinsel et al., 2020). In light of the ineffective regulatory instruments, to prevent an unnecessary damage to their value creation processes, the digital platforms have been even encouraged to self-regulate (Cusumano et al., 2021).

To cite Véliz, “digital technologies can only constitute progress if they serve the well-being of citizens and the flourishing of democracy” (2021, p. 11). Many have discussed that a threat to privacy means a direct threat to democratic principles (e.g., Gavison, 1980; Simitis, 1987; Regan, 1995; Reiman, 1995; Roessler, 2005; Lever, 2006; Goold, 2009; Hughes, 2015; Richards, 2015); however, nowadays, individuals as well as organizations have basically two options – get locked-in into the prevalent business models or reconcile with their demise as a functioning part of the society. Based on the ongoing developments, it is reasonable to assume that until creating superior value requires exploitation of personal information, doing so will remain to be a justifiable *modus operandi*. At the same time, as long as protecting privacy remains understood as contradicting the idea of creating value through leveraging network effects, modularity, and complementarity, it will remain a niche endeavour of seemingly utopistic enthusiasts struggling to scale their ventures to the level of economically self-sufficient business cases.

5. Understanding privacy as a social value

In 1945, after the end of World War II, the United Nations was founded. Three years later, its General Assembly set forth the Universal Declaration of Human Rights as a “common standard

of achievements for all peoples and all nations.” In Article 12, the Declaration recognized that “no one shall be subjected to arbitrary interference with [her] privacy, family, home or correspondence, nor to attacks upon [her] honour and reputation” and that “everyone has the right to the protection of the law against such interference or attacks.” Privacy thus became one of the fundamental human rights (United Nations, 1945, 1948).

Although the core focus of this paper does not allow for discussing the full background of the originally predominant liberal perception of privacy rooted in Warren and Brandeis (1890), shaped by Prosser (1960), Westin (1967), or Roessler (2005), it is critical to mention that the perception on privacy has always reflected the major societal changes (Keulen and Kroeze, 2018). Notably, to illustrate, the diminution of printing regulations in 18th-century England resulted in the upheaval of newspapers and the rise of the first indications of celebrity culture. Trading private life as a public commodity has led to further efforts to separate private and public personae, establishing the archetypal link between privacy and technology (Fawcett, 2016).

According to Margulis (2003), the understanding of privacy has been significantly influenced by the work of Altman. Defining privacy as “the selective control of access to the self” (1975, p. 24), Altman proposes that privacy has five properties. First, privacy is a temporal dynamic process of controlling the interpersonal boundaries, regulating interaction with others through determining how open or closed a person is in response to changes in their internal states and external conditions. Second, there is a difference between the desired and actual levels of privacy. Third, privacy is non-monotonic, meaning that the optimal level of privacy is achieved when the actual level of privacy corresponds to the desired, creating the possibility of too much privacy in cases when the actual level of privacy is higher than desired (e.g., social isolation) and the possibility of too little privacy in cases when the actual level of privacy is lower than desired (e.g., crowds). Fourth, the nature of privacy is bi-directional and entail inputs

from others (e.g., noise) and outputs to others (e.g., oral communication). Finally, there are two levels of analysis at which privacy applies, i.e., individual level as well as group level.

Altman's contribution rooted in projecting privacy as an inherently social process has challenged the liberal view on privacy revolving around autonomy as social detachment. As argued by Mokrosinska (2018), "saying that privacy protects autonomy is to say that privacy also protects the practices in which the agent exercises [their] autonomy" (p. 123); therefore, one cannot discuss the privacy of an individual, without the privacy of their social relations. In addition, building on the relational perspective maintained by Fried (1968) and Rachels (1975), Roessler and Mokrosinska (2013) further argue that privacy not only regulates and facilitates the "social conditions of the meaningful exercise of autonomy" (p. 779) but that it also constitutes the social relations as a condition of autonomy. This, in essence, means that a threat to privacy is a threat to society as such.

The focus on autonomy, control, and right of an individual has notably shifted toward a broader social value, not coincidentally in parallel with the development pivotal technologies, including the invention and commercial application of microprocessors in 1971 (Intel, 2020), transition of the ARPANET host protocol from NCP to TCP/IP (i.e., birth of Internet) in 1983 (Leiner et al., 1997), and the launch of the World Wide Web in 1993 (CERN, 2020). Scholars, including Friedrich (1971), Simmel (1971), Thomson (1975), Scanlon (1975) and Rachels (1975), started to recognize the social value of privacy and, to cite Simitis (1987), who reviewed the concept of privacy in in the context of information society, it was necessary to move away from discussing privacy as a "tolerated contradiction" of the right to be let alone and the need to be informed, towards understanding it as a "constitutive element of a democratic society" (p. 732).

Along these lines, arguing that privacy is not only of value to individuals but also to society in general, Regan (1995) proposed three bases for the social importance of privacy. First, on the basis of Mill (1863), Gavison (1980), and data-evidenced public opinion, Regan

(1995) suggested that privacy is a common value as it is valued by all individuals and all individuals share some perceptions about it. Second, reflecting on the importance of privacy to the democratic political process (e.g., targeting political messages through the exploitation of personal information), Regan defines privacy as a public value. And third, considering that market forces and technology make it hard for an individual to have privacy without all individuals having similar minimum level of privacy, she regards privacy as a collective value. Drawing on Coase's paper "The Lighthouse in Economics" (1974), Regan then proposes three reasons why privacy can virtually be considered a "collective or public good" (Regan, 2018, p. 59). Firstly, due to the non-voluntary nature of record-keeping in various relationships, one cannot simply acquire or establish privacy to the level that is desired. The cost of unwillingness to take part in essential relationships (e.g., healthcare, education, or banking) for the sake of protecting privacy would lead to serious issues on the individual as well as societal level. Secondly, market is an inefficient mechanism for supplying an optimal supply of privacy. In this vein, Regan states that privacy choices are often hidden transaction costs and considers privacy invasions to be the result of market failures. Furthermore, she argues that in this matter, privacy is in fact similar to clean air or national defence. Thirdly, the interrelatedness and complexity of the communication infrastructures increases the difficulty of dividing privacy. In other words, the design of the technology that enables the communication to take place determines the level of privacy possible to be achieved. As Regan concludes, "if we did recognize the collective or public-good value of privacy, as well as the common and public value of privacy, those advocating privacy protections would have a stronger basis upon which to argue for its protection" (Regan, 1995, p. 231).

A related issue of fundamental importance is discussed by Solove, who denies the possibility of articulating the meaning privacy at all, calling it a "concept of disarray" that among other things encompasses "freedom of thought, control over one's body, solitude in one's home, control over personal information, freedom from surveillance, protection of one's

reputation, and protection from searches and interrogations” (Solove, 2008, p. 1). Asserting that privacy “consists of many different yet related things” (Solove, 2008, p. 9), he suggests that the traditional way of conceptualizing privacy should be abandoned for an approach based on Wittgenstein’s philosophical idea of family resemblance, i.e., concepts drawing from a common pool of similar elements rather than having a single common characteristic. Solove argues that the nature of privacy and its social value is pluralistic and highly dependent on its context (2015) and further points out a key discourse concerning the trade-off between privacy and security where “privacy often loses to security where it shouldn’t” (2011, p. 2). He proposes that people are encouraged to accept that in order to be more secure, they need to sacrifice their privacy. This presumption is also widely present in management literature. For instance, Casadesus-Masanell and Hervas-Drane emphasize that trading off privacy for use of various “information-sensitive” services are “defining business models and the role of privacy in online marketplaces” (2015, p. 229). Building on this article, the authors recently developed a framework that helps firms that accumulate and exploit personal information to manage privacy, i.e., delivering the benefits while mitigating the threats (Casadesus-Masanell and Hervas-Drane, 2020). This firm-centric roadmap divides privacy landscape into four domains and corresponding external players: government (political environment); hackers (security environment); third parties (market environment); and peers (social environment). They argue that on the one hand, disclosure allows companies to tap into new revenue streams and can be profitable and desirable when generating positive impact to consumers. On the other, it can be also harmful as it “generates distraction, distress, or detrimental consequences (such as higher prices)” (p. 8). The authors suggest that this “conflict of interest” can be resolved by compensating consumers for disclosure, limiting disclosure and sacrifice revenues, or in the worst case ceasing the disclosure altogether (p. 8).

In this article, however, such a logic is challenged. Approaches built on refining the mechanisms of control and access only feed into the faulty perception that giving up privacy is

necessary (and sometimes even reasonable) if the consumers “name the price” for such a practice. Not only that individuals assign markedly different values to the privacy of their data, but their assumptions are also based on different factors, and the market to trade data in a fair way does not exist (Acquisti, John and Loewenstein, 2013). The rationale upon which such imbalanced deliberations stand is per se based on misleading views about the understanding of privacy protection, its costs, and benefits, which resultingly leads to unfair, inadequate, and unnecessarily skewed compromises at the expense social well-being (Solove, 2011; Acquisti et al., 2016). Building our digital future on a principle that wrongdoing can be justified by a certain amount of money sets a dangerous precedent that one can buy a privilege to exploit others, hence undermines the very core idea of egalitarianism. People cannot avoid sharing data and information, the question is how to do that in a way that is sustainable for everyone – individual, society, as well as companies.

6. Privacy and contextual integrity

Protecting personal data against sharing can have both positive and negative effects on societal and individual welfare (Acquisti et al., 2016). And according to the highly influential and thoroughly developed theory of contextual integrity by Nissenbaum (2010), protecting privacy is not about restricting the flow of information or ensuring the right to control it. Opposing the ineffective procedural approaches (e.g., informed consent practice) rooted in the five fair information practice principles coined by US Secretary's Advisory Committee on Automated Personal Data Systems (U.S. Department of Health, 1973), Nissenbaum (2011) argues that “notice-and-consent, however refined, will [not] result in better privacy online as long as it remains a procedural mechanism divorced from the particularities of relevant online activity” (p. 35). She suggests that the pivotal rationale lies in making the flow of the personal information appropriate. The appropriate flow of information is, in essence, defined by its conformity with entrenched social norms that meet the context-relative expectations.

Therefore, when the flow of information conforms with the norms, it can be considered appropriate, hence privacy can be deemed preserved. In short, the information norms are constructed by three independent parameters whose value must be specified in order to allow for determining whether an information flow is appropriate, i.e., conforming the context-specific social domain. These parameters are actors (i.e., subject, sender, recipient), attributes (i.e., information types), and transmission principles. When identifying actors, it is necessary to identify their contextual roles “to the extent possible,” i.e., “capacities in which each are acting” (Nissenbaum, 2010, p. 141). Followingly, attributes describe the nature of information in question, i.e., “kind and degree of knowledge” (Rachels, 1975, p. 71). Finally, the parameter of transmission principle is embodied in particular terms and conditions under which the transfer of information should or should not happen (e.g., confidentiality). In order to operationalize the descriptive framework, Nissenbaum further also offers a nine-step augmented contextual integrity decision heuristic adapted for situations where nonconforming practices outperform the entrenched norms (Nissenbaum, 2010, pp. 181–182):

- 1) *Describe the new practice in terms of information flows.*
- 2) *Identify the prevailing context. Establish context at a familiar level of generality (e.g., “healthcare”) and identify potential impacts from contexts nested within it, such as “teaching hospital.”*
- 3) *Identify information subjects, senders, and recipients.*
- 4) *Identify transmission principles.*
- 5) *Locate applicable entrenched informational norms and identify significant points of departure.*
- 6) *Prima facie assessment*
- 7) *Evaluation I ...*
- 8) *Evaluation II ...*
- 9) *On the basis of these findings, contextual integrity recommends in favor of or against systems or practices under study.*

The suitedness of this theory for the digital economy as well as its potential to guide further regulatory steps is often emphasized. This can be for instance evidenced by its influence on the Privacy Bill of Rights presented by the Obama administration (The White House, 2012), which recognized “Respect for Context,” as consumers’ “right to expect that companies will collect, use, and disclose personal data in ways that are consistent with the context in which consumers provide the data.” Such a contested definition, however, opened door for various biased interpretations that could be misused for the benefit of the affected incumbents. In her response, Nissenbaum (2015) argued that one of the key issues emerged from the related discourse is understanding context as business model. Asserting that it “offers no prospect of advancement beyond the present state-of-affairs” as “its proponents seem to expect individuals and regulators to sign a blank check to businesses, in collection, use, and disclosure of information based on exigencies of individual businesses,” she suggests that respecting context as social domain equals “to respect contextual integrity, and, in turn, to respect information norms that promote general ethical and political values, as well as context specific ends, purposes, and values” (p. 848).

Although the above-stated argument is very much in line with the theories that focus on sustainability, this article argues that for the contextual integrity to be suitable for application in a social domain where transmission of data and information plays any role in the process of value proposition, creation, delivery, and capture, one necessarily needs to consider the use of the data and calibrate it with respect to the social domain as well. As previously mentioned, nowadays, we witness self-interested companies with varying degrees of multilateral non-generic complementarities being interdependently embedded in non-hierarchical structures and jointly creating value through redefined business models adapted for exponential data-driven growth (Jacobides et al., 2018; Bogers, Sims and West, 2019; Iansiti and Lakhani, 2020b). In the environment that consists of ecosystems, the assumption that the contextual role of an actor is bounded, defined, and fixed is no longer valid. An actor can have multiple roles in multiple

contexts and can use the data and information in multiple, non-contextual ways. Even data aggregates can ultimately result in far-reaching impacts on individuals as well as society. Moreover, when actors A and B both individually transmit data and information in conformity with contextual integrity, the conformity cannot be guaranteed if these actors combine and/or accumulate the data and information, for instance for the purposes of value proposition, creation, delivery, and capture. Based on that, it is necessary to argue that a business model which is based on transmission of data and information cannot be considered sustainable unless it operates in compliance with contextual integrity, while contextual integrity cannot be considered applicable in business environment unless the use of data is considered. This proposition is hence elaborated in the following section.

7. Mutual embeddedness of contextual integrity and business models for sustainability

As manifested by the stream of literature discussing business models for sustainability (Schaltegger et al., 2016), the relationship between business models and sustainability has received an increasing amount of scholarly attention. With the almost exponential rise in information technologies, the issue of protecting privacy as a social value has increased in importance and popularity, especially in the areas of technology and philosophy. Considering the current state of global affairs, as one of the most suited approaches to privacy protection can be considered the theory of contextual integrity (Nissenbaum, 2010). Synthesizing the two so far siloed but mutually relevant theories, this article posits that businesses that want protect privacy in a sustainable way need to treat privacy as a social value constituted by two key elements, i.e., appropriate flow of data and information and appropriate use of data and information. While appropriate flow of data and information is rigorously addressed by the theory of contextual integrity, the appropriate use of data and information by businesses can be

addressed by the theory of business models for sustainability. The suggested synthesis is schematically demonstrated in Figure 1.

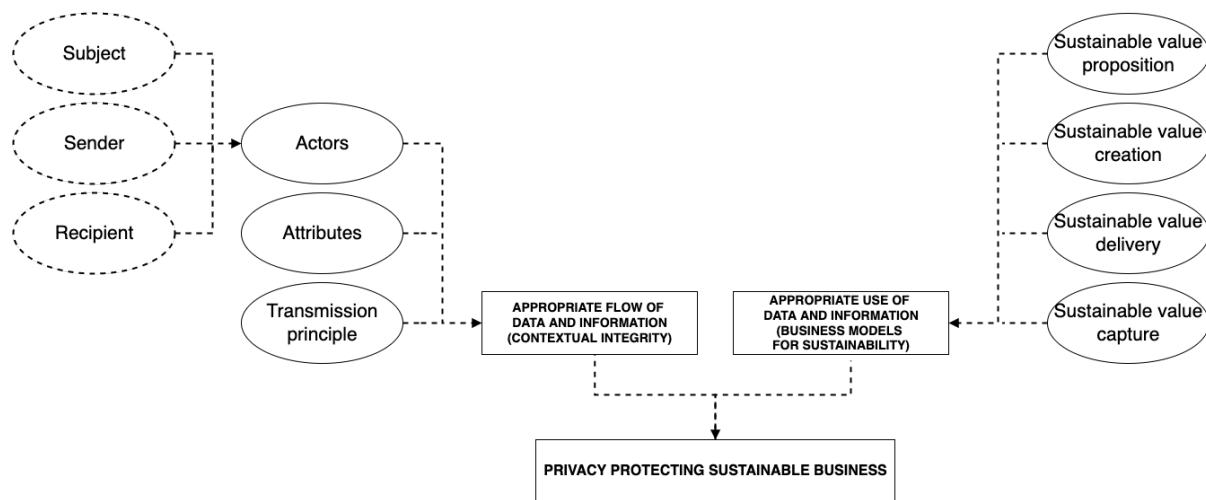


Figure 1. Business models for sustainability and contextual integrity – schema of synthesis

Based on this assumption, there needs to be a close, proactive interplay between the prescriptive elements of the theories mentioned above. Therefore, on the basis of the augmented contextual integrity decision heuristic and the business models for sustainability assessment questions rooted in the stakeholder value creation framework, a heuristic framework for privacy and sustainability in business models has been developed. This framework consists of a foundational dimension that facilitates mapping of the necessary indicators of privacy in business models for sustainability, followed by an assessment dimension comprising evaluation principles lined up in a continuum. The core purpose of this theoretical framework is to suggest a system of key considerations that needs to be in place when assessing whether a particular business practice sustainably protect privacy. The framework is illustrated in Figure 2 and the considerations are further elaborated in the following sections.

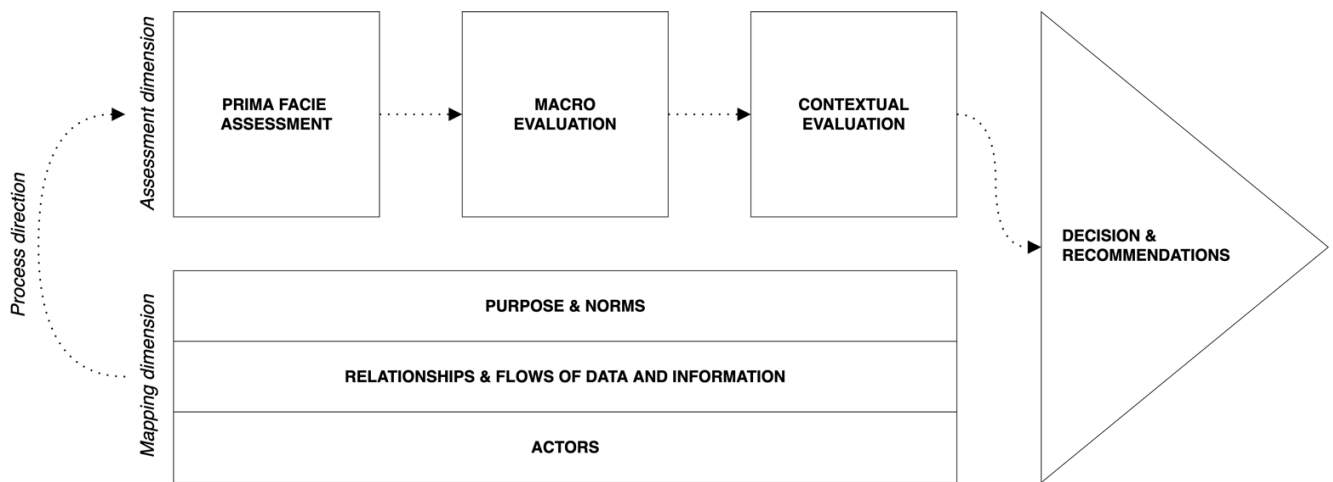


Figure 2. Heuristic framework for privacy and sustainability in business models

7.1. Mapping dimension components

7.1.1. Actors

In exploring the area of actors, first, there is a need to determine the boundaries of the context in question. Furthermore, it is also important to explore its sub-contexts and their potential impacts on that very context (Nissenbaum, 2010). Companies operating in different contexts interact with a number of distinct stakeholders that play a variety of roles in other contexts (Adner, 2017; Jacobides et al., 2018; Bogers et al., 2019; Iansiti and Lakhani, 2020b). For that reason, it is not only necessary to distinguish between employees, customers, business partners, financial stakeholders, and societal stakeholders (and possibly also other relevant stakeholders) (Stubbs and Cocklin, 2008; Aagaard and Ritzén, 2020; Freudenreich et al., 2020) – it is equally important to determine what is the nature of the information in transmission (Rachels, 1975), who is sending the data and information, who is the subject, and who is the recipient of the data and information (Nissenbaum, 2010). Most probably, the interests and expectations of these stakeholders might differ (Freeman, Pierce, and Dodd, 2000). Thus, it is crucial to determine to

what extent their interests are in collision or alignment and what the resulting implications or risks for the overall outcome could be (Freeman, 2010; Hörisch et al., 2014; Patala et al., 2016).

7.1.2. Relationships and Data Flows

Besides identifying the key actors, it is equally important to specify the flows of data and information that take place between them as the business model is being operationalized (Nissenbaum, 2010). These flows should be in line with the core principles of the business models for sustainability, i.e., adjusted in a way that pro-actively contributes creating to social, economic, and potentially also ecological value (Schaltegger et al., 2016). It is also required to determine the interests and vulnerabilities of the particular entities, who co-creates what value with whom, and who the recipient of the particular value is (Freudenreich et al., 2020). Furthermore, it is important to carefully consider the terms and conditions under which the transmission of data and information ought (and ought not) to happen (Nissenbaum, 2010). This principle must be in line with the contextual norms of the particular social domain and clearly understood by all the stakeholders. It is necessary to understand that in order to protect privacy in a sustainable way, the business model must be by design compliant with contextual integrity. Therefore, even if a person gives an explicit permission to the business to sell their data and information to a third party, if a social domain is not respected, the business should be considered neither sustainable nor protecting privacy.

7.1.3. Purpose and Norms

In order to be able to see whether a business model is protecting privacy, it is necessary to identify the entrenched norms of the particular social domain (Nissenbaum, 2010). Besides that, it must be explored whether the business model of interest provides sufficient foundations for the stakeholders to co-create value without violating these norms. Since the value operations are being carried out in an interrelated manner, it is pivotal to determine the joint purpose of all

the involved actors and whether the purpose is directed toward creating a sustainable value (Bocken et al., 2014; Lüdeke-Freund and Dembek 2017; Schaltegger et al., 2017; Upward and Jones, 2015). Importantly, the focus should be on the actual actions and real contributions toward sustainability, not communication strategies. Ultimately, it is necessary to explicitly specify what the joint purpose is and how it helps to achieve a particular sustainable development goal in a contextually appropriate way (Nissenbaum, 2010, Stubbs and Cocklin 2008).

7.2. Assessment dimension components

7.2.1. Prima Facie Assessment

After identifying the key components of the framework, it is necessary to evaluate the dynamic aspects of the business model, i.e., the operationalization of value-related activities in relation to the identified entrenched norms and joint purpose. The goal of the prima facie assessment is to determine whether the business model in question involves major discrepancies that would reveal its insufficiency straight away. This step involves making sure that all of the components are mapped to the fullest extent possible and determining whether they raise any issues by themselves. Are the data and information flows used for operationalization of the business model in line with entrenched norms? If not, does the business model have an innovation potential which could result in a significant sustainable improvement of the status quo? Does the business model have the capacity to facilitate the relationships that jointly create value in line with sustainability principles? Are the relationships ethical, respectful, and fair? If the business model is found to be in contradiction with these basic principles, it can be deemed unsatisfactory to comply with the idea of sustainable privacy protection in business as such. Finally, it is also crucial to consider that business models designed or innovated to exploit a new technology (e.g., AI) might operate in an environment where no norms have been

established yet. In such cases, the business model cannot be rejected *prima facie*, and can, therefore, be subjected to the next step of evaluation.

7.2.2. Macro Evaluation

The second step of the assessment part is evaluation of social, economic, and environmental macro factors affected by the business model. Besides considering whether the business model could harm autonomy and freedom (i.e., what is its effect on power structures within society, what are its implications for social hierarchy, justice, fairness, democracy, equality, and other factors pointed out by the theory of contextual integrity itself), there is also a need to consider whether the actors actually can ethically leverage the appropriate flows of data and information to propose, create, deliver, and capture value with and for stakeholders while being economically prosperous without harming the environment (or even pro-actively contribute to its recovery).

7.2.3. Contextual Evaluation

After determining how the business model impacts the environment from the higher perspective, its concrete impacts on the particular context within which it operates should be further determined. Furthermore, as the types of value that need to be proposed vary across the spectrum of stakeholders within the context, it is important to find out whether the proposition reflects the diversity of stakeholders sufficiently. Essentially, this phase of evaluation is set to ascertain whether the business model exploits data flows in a way that impacts the ecosystem of actors in a way that threatens the sustainability of the context *per se*.

7.2.4. Decision and Recommendation

When approaching the final phase of this high-perspective heuristic framework, it should be possible to carry out a fair judgement as of whether a particular business model protects privacy

while operating in line with the core principles of sustainable value proposition, creation, delivery, and capture. If the business model is not found suitable, it is important to implement changes and iterate until appropriate flow and use of data and information is achieved.

8. Conclusion and Discussion

This article posits that in order to operate sustainably, businesses playing any role in proposing, creating, delivering, or capturing value through transmission of data and information must approach privacy as a social value. Furthermore, they also need to protect it by ensuring that the flow and use of data and information across their ecosystems is appropriate. This means that the flow of data and information must be in line with the theory of contextual integrity (Nissenbaum, 2010), while the use of data and information must be in line with the theory of business models for sustainability (Schaltegger et al., 2016). While synthesizing these two rigorously developed streams of research, this article proposes a heuristic framework for privacy and sustainability in business models, which prescriptively operationalizes the theories in line with the augmented contextual integrity decision heuristic (Nissenbaum, 2010) and the stakeholder value creation framework (Freudenreich et al., 2020).

Firstly, this article unfolds the relevance of privacy protection for the stream of business model research directed toward sustainable development in a way that is theoretically rigorous, complementary with the stakeholder theory, and reflecting the emergence of ecosystems. This contributes especially to addressing the need for further research on specific sustainable value creation barriers identified by Lüdeke-Freund (2020), as well as extends the theory of business models for sustainability (Schaltegger et al., 2016; Freudenreich et al., 2020). Secondly, the synthesis contributes to the contemporary debate on privacy as a social value, mainly through identifying theoretically thorough avenue for adapting the theory of contextual integrity (Nissenbaum, 2010) to a social domain where value proposition, creation, delivery, and capture

with and for multilaterally interdependent stakeholders involves transmission of data and information.

Considering the foresight of increasing dependency on data processing, the success of cultivating the underlying fabric of our society is directly related to the effectivity of privacy protection mechanisms. Hence, from the perspective of future research, the developed framework can be especially useful for constructing narratives regarding how the inevitable technological progress can be leveraged in ensuring ultimate equity and inclusivity in the age of digital transformation. This article ultimately posits that the future of democracy in digital society leans upon the efforts to move beyond the chokehold imposed by the omnipresent centralization (cf. Hensmans, 2021). And despite the obvious drawback residing in the lack of empirical perspective, it may be suggested that the presented contributions can be also reflected in managerial practice. First of all, based on its prescriptive nature, it can be implied that professionals may use the heuristic framework for privacy and sustainability in business models to evaluate what elements in their business model portfolios have to be amended in order for their company to sustainably protect privacy. This proposition differs from the standalone theories especially by the fact that it postulates the mutual relationship between privacy protection and sustainability. In practice, this means that a business model that involves transmission of data and information cannot be considered sustainable unless it protects privacy.

Besides creating a stepping-stone for addressing the issue of sustainable privacy protection holistically, this synthesis also entails a number of implications. From a theoretical angle, this contribution proposes revision of the theory of contextual integrity by considering not only the flow of the data and information but also their use. This article addresses the use by considering how value is proposed, created, delivered, and captured by an organization and its stakeholders. However, the unprecedented data-processing operations are not detectable only in cases where actors are explicitly involved in business activities. For that reason, it

should be explored how the use of data and information can be addressed in cases of various backgrounds. Finally, this synthesis introduces the privacy research stream to the stream of business model literature and argues that under current circumstances escalated by the COVID-19 pandemic, there is a need for a genuine interdisciplinarity – one that builds on stable theoretical foundations rooted in diverse research domains.

This contribution is to be considered offering a vision delineating and emphasizing the privacy protection aspect for future sustainable transitions. And although this meta-perspective suffices the needs of an architect drawing up a “blueprint” (see section 2. Research design), it does not allow for diving deep into the particularities of the constituent fragments or thorough empirical discussions. For that reason, the synthesis should not be challenged only theoretically but also through further empirical research, possibly by investigating how businesses actually attempt to sustainably protect privacy, how privacy-centric focus impacts the business model development of companies in different ecosystems, and what role privacy plays in the business models of incumbents. Furthermore, there is a vast research potential in exploring how can companies in diverse ecosystems co-create and co-capture value through sharing data and information without compromising the so called “human-centricity” in general. Similarly, from a different angle, a promising research avenue emerges within the realm of startups and entrepreneurs that put privacy protection and social values as a keystone of their existence. Based on the proposition that privacy can be only protected when a business model is economically feasible, it is important to explore how can such entities become financially stable. What are the drivers and challenges of their efforts? What are the characteristics of their ecosystems and their relationship with the previously illustrated “oligopolies”? How do they interact with incumbents when entering established ecosystems? These questions need to be explored particularly in industries where privacy protection is outweighed by a higher cause goal of immediate importance and effect, such as healthcare (e.g., Grundy et al., 2019; Panch et al., 2019; Sharma and Bashir, 2020; Rezaei et al., 2021). Overall, it is obvious that attempts

to regulate AI-based ecosystems by imposing rules and sanctions that require the actors to revise their consent have no chance to succeed in improving the state of society. For that reason, comprehensive studies acknowledging the social domain as a context may have an immensely informative effect on regulations.

References – Article 2

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Article 3

Friends Close, Enemies Closer? The Role of Trust in Disrupting Ecosystems

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1. Introduction

Generally, disruption has been widely recognized as “a process whereby a smaller company with fewer resources is able to successfully challenge established incumbent businesses” (Christensen et al., 2015, p. 4). Being an issue revolving around a business model of an entrant paralyzing a well-established industry leader, research on this topic has traditionally taken place at an organizational level, refining and expanding the theory primarily by observing anomalies across different contexts (Christensen, 2006; Christensen et al., 2018). With the onset of digital transformation—a phenomenon characterized by the adoption of new business models driven by information and communications technologies—geographic, industrial, and organizational boundaries have become less distinct, value chains became increasingly modular, barriers of entry diminished, and connectivity of products increased (Furr et al., 2022; Sturgeon, 2021; Yoo et al., 2010). As a result, organizations found themselves manoeuvring through these highly digitalized spaces by forming ecosystems – sets of actors with varying degrees of multilateral, non-generic complementarities that are not fully hierarchically controlled and cannot be decomposed into an aggregation of bilateral interactions (Jacobides et al., 2018; Shipilov and Gawer, 2020; Adner, 2017). Generally, it has been argued that ecosystems have been changing the very nature of competition and rewriting the rules of strategy (Jacobides, 2019; Birkinshaw; 2019). In the words of Michael G. Jacobides, the “meteoric rise” of ecosystems can even be considered “one of the most important developments in the past few years” (2022, p. 99). Unsurprisingly, the upheaval also ripples through the domain of disruption, making the researchers switch their focus from technology, business models, and industries, to studying disruption as an ecosystem-level phenomenon (Adner, 2021; Cozzolino and Geiger, 2024).

Focusing on the process of disruption from a wider, interorganizational vantage point unveils a number of issues peculiar to the ecosystem level of analysis. Essentially, it could be argued the ecosystem perspective renders researching disruption through the lens of an organization – or even an industry – rather myopic or even incompetent of capturing several important nuances (Adner, 2021). Previously, disruption used to take place within industries (i.e., car industry); nowadays, companies tend to strategize to compete in terms of “jobs to be done” (i.e., mobility) – who does a better job wins the customer, irrespective of industry (Jacobides, 2018; Christensen et al., 2016; McGrath; 2019). In such environment, neither entrants nor incumbents operate in isolation; on the contrary, they are very much dependent on their external environment and constrained by resources controlled by others (e.g., financial, physical, information) (Pfeffer and Salancik, 1979). This dynamic vividly echoes in a paradox coined by Ansari, Garud, and Kumaraswamy as “disruptor’s dilemma” (2016). “Disruptor’s dilemma” essentially lies in the premise that to successfully impact dynamics of an existing ecosystem, the de novo entrants find themselves reliant on support of the very same incumbents embodying the status quo they ultimately seek to disrupt. In dealing with this paradox, the entrants are confronted with various forms of incumbent pushback, resulting in interorganizational relationships underpinned by a great deal of complexities. Number of researchers explored how the arising tensions could be mitigated; nonetheless, the phenomenon still remains largely underexplored (e.g., Snihur et al., 2018; Autio and Thomas, 2018; Dattée et al., 2018; Gurses and Ozcan, 2015).

In this context, an array of studies has continuously presented clear and convincing evidence that a factor which leads to a vast variety of positive interorganizational outcomes is trust (Villena et al., 2019). This resonates especially in ecosystems, interorganizational arrangements where hierarchical governance is absent (Jacobides et al., 2018). To illustrate, it has been argued that trust lies at the core of successful knowledge sharing in innovation

ecosystems based on supermodular complementarities (i.e., more of A makes B more valuable). Mostly related to the value-creation dynamics, trust is also considered to be a salient relational antecedent determining the general health of an ecosystem (Cobben et al., 2023), making it integral to the development and maintenance of strong, collaborative relationships among different ecosystem actors. Additionally, trust has been also determined to have a positive effect on cooperation (Gambetta, 1988; Stahl et al., 2011), reducing conflicts and costs of negotiation (Zaheer et al., 1998), lowering transaction costs and increasing competitive advantage (Dyer and Chu, 2003), willingness to take greater risks (Uzzi, 1997), flexibility and innovation (Lorenz, 1988), organizational adaptability and partnership performance (Gulati and Nickerson, 2008), satisfaction with interorganizational relationships (Gainey and Klaas, 2003), willingness to support partners during their growth stage (Wu et al., 2008), interfirm knowledge transfer (e.g., Faems et al., 2007), or knowledge accessing (Lui, 2009; Li et al., 2010). Despite the obvious potential of trust to act as a mediating factor in moderating interorganizational tensions, its role in “disruptor’s dilemma” – a paradox which revolves around a complex tangle of tensions between two contrasting types of organizations (i.e., entrants and an existing incumbent ecosystem) – is unexplained.

Facing the abundant narratives on the topic of incumbent response strategies, the literature discussing disruption of ecosystems is teeming with calls for contributions adopting the perspective of entrants (Ansari et al., 2016; Snihur et al., 2018; Kumaraswamy et al., 2018). In order to address the gap outlined above, this study answers the research question “How do entrants use trust to mitigate tensions with incumbents in ecosystem-level disruption?” by the means of an abductive research design (Dubois and Gadde, 2002). More specifically, it unfolds in two phases – an exploratory pilot and an instrumental in-depth single-case study (i.e., the case being a bounded phenomenon of entrants using trust to mitigate tensions with incumbents in ecosystem-level disruption) with multiple embedded subunits of analysis (i.e., the subunits

being the individual entrants representing particular roles within the UK insurtech ecosystem) (Stake, 2000; Yin, 2018). The article is then structured as follows. First, the theoretical framework – a central element of abductive research approach – provides a deep dive into challenges of entrants with a particular focus on tensions they experience vis-à-vis incumbent ecosystems (Snihur et al., 2018; Christensen et al., 2015; Lascaux, 2020) and delimits trust in terms of antecedents, bases, and consequences (Fulmer and Gelfand, 2012; Legood et al., 2023). Second, the methodology section introduces the adopted two-phase abductive research approach and explains its respective steps in detail. The final sections then answer the research question by providing a detailed account of the role of trust in ecosystem-level disruption and discuss the article in terms of their theoretical contributions, managerial implications, and further research opportunities.

In conclusion, this article makes several theoretical contributions. On the one hand, the article addresses the lack of focus on entrant's perspective by finding the relevance of trust in overcoming "disruptor's dilemma" (Ansari et al., 2016), specifically through mitigating the variety of emerging tensions (e.g., Snihur et al., 2018; Autio and Thomas, 2018; Dattée et al., 2018; Gurses and Ozcan, 2015). On the other, it also adds to the scarce discourse on disruption at an ecosystem level (Kumaraswamy et al., 2018), bringing previously unrelated yet highly relevant relationship of disruption and trust into the context of burgeoning literature on ecosystems (e.g., Cobben et al., 2022). Ultimately, this article manifests that rather than an isolated affair, disruptive innovation should be considered a collective dynamic process where the organizations shape and are shaped by the very environment in which they are embedded (Adner, 2006; Adner and Kapoor, 2010; Adner and Kapoor, 2016).

2. Theoretical framework

2.1. *Entrants' challenges in disrupting incumbent ecosystems*

Based on Cozzolino and Geiger (2024), ecosystem disruption can be defined as an “innovation challenging value-creation interdependencies in an ecosystem to the extent that the competitive advantage of one or more actors is threatened” (p. 2). The disruption can impact ecosystem actors in terms of technologies, products, business models, assets, or relationships – both with other actors and customers. Typically, disrupted actors may be incumbents; however, not exclusively – the affected entities can also include suppliers, complementors, and/or competitors. In line with the prior research (cf. Gans and Stern, 2003; Adner and Kapoor, 2016; Ansari et al., 2016; Ozalp et al. 2018; Snihur et al., 2018; Adner and Lieberman, 2021), this definition posits that an organization successfully disrupts an existing ecosystem when it gains a foothold by significantly affecting its value creation dynamics. On the other hand, an organization fails in ecosystem disruption when its technologies, products and/or business models fail to change the way value is created within a given existing ecosystem. Consequently, according to Cozzolino and Geiger (2024), it is crucial to emphasize that the outcome of ecosystem disruption is by no means a matter of dichotomous nature – the degree of the said disruption is a question of the number of disrupted actors/relationships and the extent of the threat the disruption poses to each to them.

Generally, this article aims to continue the discourse addressing the calls for contributions exploring entrant’s perspective from an ecosystem standpoint (Ansari et al., 2016; Snihur et al., 2018; Kumaraswamy et al., 2018, Cozzolino and Geiger, 2024). In particular, it is positioned in the context of the “disruptor’s dilemma” – “the tensions and challenges disruptors confront in seeking the support of the very firms they disrupt” (Ansari et al., 2016, p. 1837). At the core of this paradox lies the resistance of the incumbents embedded

in the ecosystem facing the disruption. Due to the nature of the change, the ability of actors to predict all the contingencies is generally impeded (Weber and Mayer, 2014); therefore, this paradox is underpinned by a great deal of uncertainty (Snihur et al., 2018). As the traditional groupings (e.g., predominantly vertically integrated linear supply chains) are challenged, it often triggers an immune response in the form of resistance on the side of incumbents (Amit and Zott, 2012; Pache and Santos, 2010). Threatened by the risk of losing resources or position, the incumbents may resist directly (e.g., by introducing new products) or indirectly (e.g., by maintaining connections to key institutions that may impede the entrants' progress) (Aldrich and Baker, 2001; Gurses and Ozcan, 2015). As a result, the entrants find themselves facing heterogeneous strategies adopted by the incumbents who attempt to prevent the disruption from happening (e.g., Bergek et al., 2013; Markides, 2006).

To demonstrate, perhaps one of the most common incumbent responses is to adjust their position within the existing ecosystem (Ansari et al., 2016). Here, the entrants might be for instance challenged by a separate organizational unit, created for the purpose of exploiting the innovation question outside of the incumbents' core business (Christensen, 1997; Gilbert, 2006). In cases where new, dominant technology is introduced, entrants may face efforts of incumbents to accommodate its rise by repositioning the old technology in the demand environment, typically by retrenching into a niche position within its original environment or by relocating it into a new market application (Adner and Snow, 2010). Alternatively, the new entrants may need to cope with incumbents' organizational ambidexterity, a strategy where a company competes in mature as well as emerging markets through simultaneous exploration and exploitation (O'Reilly and Tushman, 2008). Considering the fact that the entire ecosystem is the subject of disruption, the ability of entrants to deploy the intended innovation in a viable manner is often hampered by incumbents' mutually dependent relationships with actors that maintain socio-technical regimes (Geels, 2014). It has also been recognised, that entrants

introducing transitional technology are exposed to resistance in the form of incumbents' fierce investments in extant capabilities leading to a purposeful deceleration of the disruption process (Adner and Kapoor, 2016). Following the introduction of a new dominant design, incumbents can also extend their efforts to resurrect the demand for the legacy technology by redefining the boundaries of its market as well as meanings and values associated with it (Raffaelli, 2019). A substantial challenge may also lie in the incumbents' push for licensing the entrant's technology or even acquisition of the firm as such (e.g., Marx et al., 2014; Kapoor and Klueter, 2015). Orchestrators or platform managers may further resort to applying pressure on entrants through enveloping their platform (i.e., swallowing their network by offering its platform functionality as a part of a more attractive bundle) or creating a platform that is completely new (e.g., Eisenmann et al., 2006).

As argued by Kumaraswamy, Garud and Ansari (2018), to attract the needed support of the incumbent ecosystem, the entrants can counter the above-illustrated responses by framing. Conceptualized by Goffman (1974: 11), frames are "principles of organization which govern the subjective meanings we assign to social events", or simply "schemata of interpretation" enabling individuals to "to locate, perceive, identify, and label" what happens around them (Goffman, 1974: 21). At an interorganizational level, framing can be understood as multi-layered and having a dual role (Diehl and McFarland, 2010). On the one hand, it constitutes a background structure of shared reality where changes can be rendered meaningful and understandable (Gray et al., 2015). On the other, it can serve as a strategic tool of communication and persuasion for mobilizing support and legitimacy (i.e., "the social acceptability, plausibility, and credibility beyond material resources and capabilities" Thomas and Ritala, 2022, p. 516) within an ecosystem (Cornelissen and Werner, 2014; Gurses and Ozcan, 2015). In the effort of to garner support and secure complementors in the new ecosystem dynamics, the entrants find themselves in a situation where their proposed frame

(i.e., disruption as an opportunity) is essentially antithetical to extant frame of the existent incumbent ecosystem (i.e., disruption as a threat frame). Attempting to change the frame of an existing incumbent ecosystem and create a disruption-conducive shared reality, the entrants may engage in an alignment process of frame transformation. In such a process, “new values may have to be planted and nurtured, old meanings or understandings jettisoned, and erroneous beliefs or "misframings" reframed” (Goffman, 1974, p. 308). As a result, the incumbents might have an opportunity to reposition themselves and continue being relevant by becoming a complementor instead of a resistor (Öberg, 2023). Notably, this stands in contrast to the traditional approaches towards disruptive innovation (i.e., entrants outperforming and replacing incumbents while causing disarray in a given sector (Adner, 2002; Christensen, 1997; Kilkki et al., 2018).

In the process of frame transformation, the entrants find themselves in a need to collaborate with competitors, hence engage in a conflicting logic of cooptation (i.e., “a paradoxical relationship between two or more actors simultaneously involved in cooperative and competitive interactions, regardless of whether their relationship is horizontal or vertical”, Bengtsson and Kock, 2014). Resultingly, the entrants end up being confronted with navigating multilateral tensions, which may be mitigated by trust (e.g., Chin et al., 2008). To illustrate, for instance, it has been argued that trust boosts willingness to continue increasing collaborative links (Luo, 2007), serves as an intervening mechanism through which cooptation intensity enhances relationship performance (Raza-Ullah and Kostis, 2020), streamlines knowledge flows (McEvily and Marcus, 2005), tones down the fear of opportunism (Suarez-Villa, 1998), fosters technology innovations (Park et al., 2014), and, overall, improves the outcomes of competitive collaborations that lead to positive organizational outcomes (Lascaux, 2020; Czakon and Czernek, 2016). Despite further studies highlighting the importance of trust in achieving successful collaboration with competitors (e.g., Lado et al., 1997; Ritala et al., 2009;

Cheng et al., 2008; Bengtsson et al., 2010), the role of trust in “disruptor’s dilemma” remains unexplored, and the lack of understanding of how entrants leverage trust in gaining support of the existent incumbent ecosystem they aim to disrupt remains unaddressed.

In summary, the theoretical underpinnings described in this section can be visualized by the means of a tentative theoretical framework illustrated in Figure 1. Central to this synthesis of literature related to the so-called “disruptor’s dilemma” is that the existing incumbent ecosystem adopts a different frame towards disruption than the entrants. To disrupt the existing incumbent ecosystem while gaining its support, the entrants thus need to transform the extant frame of the incumbents and create a shared reality, where disruption is seen as an opportunity (or even a necessity). Doing so entails navigating a clash of different cooperative forces, resulting in a variety of tensions and challenges, which may likely be mitigated by trust.

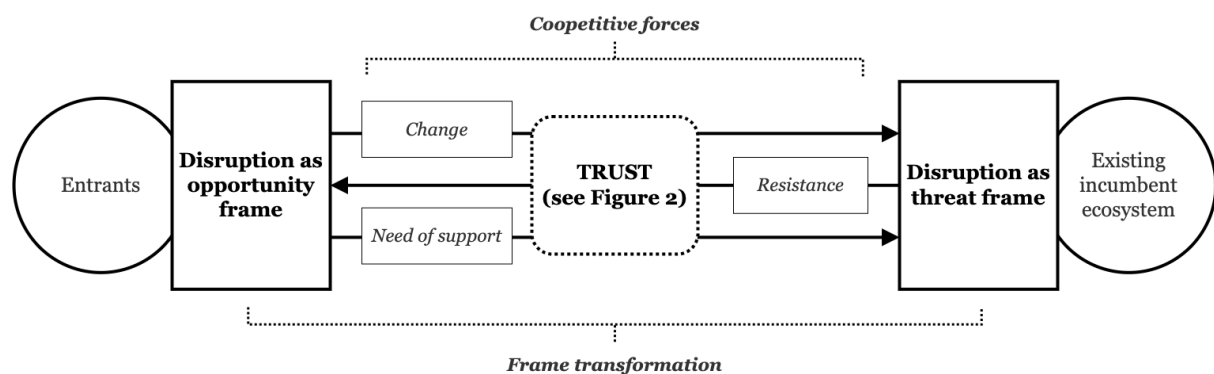


Figure 1. Dynamics of disruptor’s dilemma and the position of trust

2.2. Dynamics of interorganizational trust

Trust is a fundamental construct of organizational science that has been studied for decades (e.g., Hosmer, 1995) and from variety of theoretical angles. One of the most commonly used definitions has been developed by Rousseau, Sitkin, Burt and Camerer (1998), who define trust as “a psychological state comprising the intention to accept vulnerability based upon positive

expectations of the intentions or behaviours of another (p. 395).” As suggested by Fulmer and Gelfand (2012), it can be differentiated between trust in referents (i.e., interpersonal, team, and organization), which can be observed at multiple levels (i.e., individual, team, organizational). In particular, this study explores the role of trust on an ecosystem (i.e., interorganizational) level, with referents being entrants as a set of trustors (i.e., those who elicit trust) and incumbents as a set of trustees (i.e., those who are targeted by trustors). To further clarify, this level of trust involves the collective trustworthiness perceptions and willingness to accept vulnerability among members of a certain type of organization (e.g., actors in the established incumbent ecosystem) towards another specific type of organization (e.g., entrants aiming to disrupt that ecosystem). Unlike individual-level trust, which is a personal belief about the trustworthiness of a specific other, interorganizational trust needs to be understood as a collective phenomenon. It encompasses shared beliefs and attitudes towards a group of external entities (e.g., entrants), and is shaped by a variety of factors discussed in the following paragraphs. This conception of trust recognizes that an organization's willingness to engage in vulnerable actions (e.g., supporting the entrants who aim to disrupt the established incumbent ecosystem which the organization is embedded in) depends not only on the assessments of individual members but also on the collective perception of the other organizations' trustworthiness. In the context of the explored paradox, the focus is being to put specifically on the antecedents (i.e., what specific qualities and actions on the side of entrants lead to trust on the side of incumbents), dimensionality (i.e., what is the elicited trust based on), and consequences (i.e., what are the effects and outcomes of the elicited trust on the existing incumbent ecosystem).

In terms of antecedents, they can be marked out in terms of characteristics of trustor; behaviour and characteristics of trustee; shared characteristics between trustor and trustee; processes of communication; structural and networks characteristics; organizational

characteristics, and characteristics external to the organization (Fulmer and Gelfand, 2012). These rather general groupings then encompass a variety of context-specific specific factors that make organizations trust one another. To illustrate, interorganizational trust can, for instance, originate in the identity of an institution, i.e., organizational attributes which the trustors perceive as central, enduring, and distinctive (Maguire and Phillips, 2008; Albert and Whetten, 1985; Ashforth and Mael, 1996). Stahl, Larsson, Kremershof and Sitkin (2011) further recognize communication quality, cultural tolerance, and cultural sensitivity as factors playing an important a role in interorganizational trust building. Kasper-Fuehrer and Ashkanasy (2001) then argue that business ethics, common business understanding, reliability of information, and communication technologies are also central to such process. It has also been suggested that trust between organizations is positively influenced by organization-level integrity (Palanski and Yammarino, 2009), high levels of joint dependence (Gulati and Sytch, 2007), shared principles (d'Iribarne, 2003), prior and prospective experience (Inkpen and Currall, 2004; Inkpen and Tsang, 2005), and network reputation (Glückler and Armbrüster, 2003). According to Caldwell and Clapham (2003) and Gullett, Do, Canuto-Carranco, Brister, Turner and Caldwell (2009), it is honesty in communication, task competence, quality assurance, interactional courtesy, legal compliance, and financial balance, that makes an organization trustworthy.

Concerning dimensionality, the literature has been essentially divided into two streams; while most of the empirical contributions understand trust as being unidimensional (i.e., in line with Mayer, Davis and Schoorman, 1995), the majority of theoretical work considers trust to be multidimensional and based on cognition or affect, (i.e., in line with McAllister, 1995). Recognising this disconnect, Legood, van der Werff, Lee, den Hartog and van Knippenberg (2023) have proposed that the trust itself is unidimensional but has cognitive and affective bases. While cognition-based trust can be defined as “trust that is based on any type of

cognition including perception of, and judgement about, characteristics of another party, the quality of the relationship, and the social environment in which interactions are taking place” (p. 4), affect-based trust can be defined as “trust that is based on experiences of emotion and mood which is either specific to a particular relationship, or more generalised, incidental affect which influences trust in that relationship” (p. 5). These bases co-exist in an interplay, where the outcome is a matter of degree rather than quality (i.e., high trust or low trust), with qualitative differences in terms of context-specific consequences.

In respect of consequences, the literature differentiates between a number of different categories, spanning the impact of trust on attitudes and preferences; knowledge sharing and organizational learning; communication, cooperation, and conflicts; viability, and performance (Fulmer and Gelfand, 2012). From an interorganizational perspective, trust is generally considered to be an important agent in achieving critical organizational outcomes and an essential lubricant of successful organizational relationships (Dirks and Ferrin, 2002; Kramer and Tyler, 1996; Gill et al., 2005). It is positively associated with performance and facilitated by distributive fairness and partner similarity. The relationship of trust and performance then becomes stronger when the alliance declines in size (Robson et al., 2008). In complex endeavours with expected ambiguous outcomes, organizations are more likely to choose a partner based on the degree of interorganizational trust (Dekker and Van den Abbeele, 2010). Trusting environment is often emphasized to be a of high importance, as organizations become more accepting when it comes to contingency adaptations, which leads to an increase in innovativeness and flexibility (Lorenz, 1988). Companies hence become more willing to support their partners (Wu et al., 2008), less defensive hence more accepting in terms of the influence that trustees have on them (Zand, 2016), and the satisfaction with their partner as well as the relationship itself increases (Gainey and Klaas, 2003). Trust has been also proposed to have a positive effect on sustaining cooperation by compensating for insufficiency of

contractual mechanisms (Lyon, 2006). Nonetheless, while trusting relationships reduce the need to deploy contractual safeguards as well the costs that are associated with such governance mechanism (Gulati, 1995), as Blois (2003) argues that “firms in their relationships with other institutions should never follow an unquestioning form of strong trust” (p. 183), because “blanket trust” may result in overlooking red flags signalling failures on the side of partners.

In summary, trust is deemed to be highly contextual and sensitive to technological and societal change (Putnam, 2000); therefore, unfolding its role in light of the current structural shifts in organizational interactions is critical and highly warranted (e.g., Lumineau et al., 2022). Overall, it is obvious that a majority of the extant literature falls short of acknowledging some conspicuously resonant problems. First, the antecedents and consequences of trust are deemed to be quasi-isomorphic (i.e., applicable across the different levels of observation) (Fulmer and Gelfand, 2012). However, the literature has so far failed to acknowledge the said quasi-isomorphism, therefore, cross-fertilization of antecedents and outcomes across the levels of analysis has been encouraged. Second, while affect-based trust has been a subject of research for many, the contributions largely fail to explicitly refer to specific emotions or actual affective content (Legood et al., 2023). Finally, considering the fact that literature lacks “more nuanced ways to consider both of these bases of trust and their interplay” (Legood et al., 2023, p. 26), the knowledge on their dynamics remains heavily underdeveloped.

The theoretical underpinnings described in this section can be visualized by the means of a tentative theoretical framework adapted to the explored phenomenon as illustrated in Figure 2. As stated, the focus is being put on three aspects of trust, which have the potential to unearth its role in the said paradox, i.e., antecedents, dimensionality, and consequences. The key rationale of this synthesis is that different antecedents shaped by the trustors (i.e., entrants) elicit one-dimensional trust on the side of trustees (i.e., existing incumbent ecosystem), which

is based on the interplay of cognition and affect. This trust then leads to context specific consequences (e.g., particular impact of trust on the paradox).

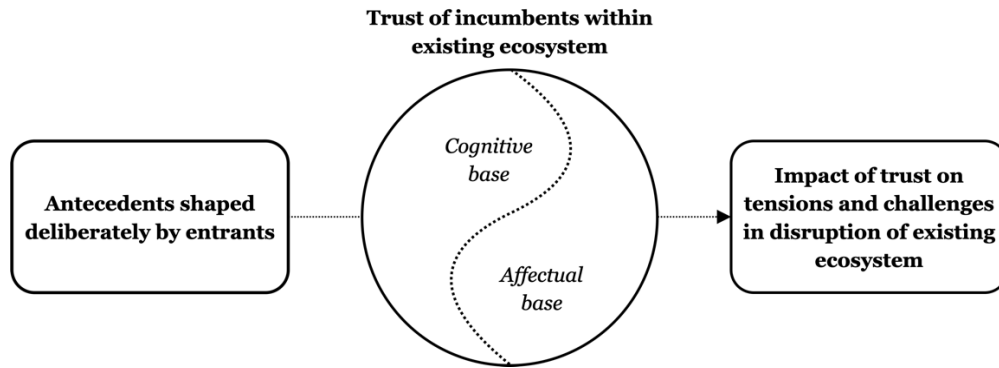


Figure 2. Dynamics of interorganizational trust adapted to the focal research context

3. Methodology

Generally, the research follows an abductive research approach (cf. Tavory and Timmermans, 2014) in line with Dubois and Gadde (2002). As argued in Reichertz (2004), abduction can be described as a “cerebral process, an intellectual act, a mental leap, that brings together things one had never associated with one another” (p. 162). Such process involves continuous confrontation of data and extant theoretical knowledge; a systemic combination inductive and deductive steps to achieve conceptual leap (Klag and Langley, 2013). In practice, the theory development as such manifests itself through parallel iterative processes of data collection, analysis, and search for complementary theories (Locke, 2010). According to the work of Sætre and Van de Ven (2021), this approach entails an author moving from unexplained anomalies towards plausible explanations via a generative process of creating and evaluating explanations that would render the anomalies understandable. Following the proposed rationale, this study has been conducted in two sequential phases – an exploratory pilot and an instrumental in-

depth single-case study with multiple embedded subunits of analysis (see Table 1 for overview).

	Purpose	Interview themes	Data	Emergent results
Phase 1	<ul style="list-style-type: none"> • Observing and confirming phenomenon • Determining suitable research context • Refining theoretical positioning • Identifying potential contributions • Gaining context-agnostic insights regarding a case (i.e., bounded phenomenon) 	<ul style="list-style-type: none"> • General strategic challenges of entrants • Issues in ecosystem-level disruption 	<ul style="list-style-type: none"> • 14 interviews with 14 executives from 13 entrant ventures (see Appendix 2) • 7 interviews with facilitators of ecosystem-level disruption (see Appendix 3) • 7 interviews with innovation experts (See Appendix 4) • Publicly available archival data and documents 	<ul style="list-style-type: none"> • Entrants require to get access to the resources under the control of incumbent ecosystems and strategically leverage trust to gain it • Context suitable for studying the bounded phenomenon in Phase 2 is insurtech • Findings of Phase 2 will likely be relevant in the literature on “disruptor’s dilemma”
Phase 2	<ul style="list-style-type: none"> • Generating and evaluating hunches • Gaining in-depth understanding of the role of trust in disrupting existing ecosystems • Gaining highly contextualized insights to develop 	<ul style="list-style-type: none"> • See Appendix 5 	<ul style="list-style-type: none"> • 31 interviews with 31 executives from 18 UK actors (see Table 2) spanning the full spectrum of entrant roles in UK insurtech ecosystem (see Figure 3) • Publicly available interviews (e.g., YouTube, podcasts) • Internal and publicly available archival data and documents 	<ul style="list-style-type: none"> • The role of trust in ecosystem-level disruption (see Figure 4)

Table 1. Two sequential phases of abduction

3.1. Phase 1 – Exploratory pilot

The sole purpose of the rather inductive exploratory pilot has been to observe and confirm an anomaly – “a novel or unexpected phenomenon that cannot be explained or is poorly understood using existing knowledge” (Sætre and Van de Ven, 2021, p. 684) – and to determine a specific research context suitable for its in-depth analysis (i.e., Phase 2). The fieldwork has commenced with a set of a theoretically anchored initial themes focused on understanding the strategic challenges of entrants so far unaddressed by literature. To keep the focus on the phenomenon, the sample have been kept fairly context-agnostic and included and 14 executives leading 13 entrant ventures operating across different industries (e.g., healthcare, energy, fintech) (see Appendix 2). The faculty of disruption has been affirmed by the subjects’ participation in an initiative called Next Generation Internet, which aims to shape the future Internet as an interoperable platform ecosystem that fosters diversity and decentralisation while growing the potential for disruptive innovation (European Commission, 2018). Beyond a €312m investment into entrants, the purpose of the Next Generation Internet initiative has been to provide support by means of mentoring their ideas to a real business (NGI, 2022). Due to the small size of the targeted subjects, one informant per venture has been selected deliberately in all cases, and all of the interviews were enriched by extensive archival data. Ultimately, the resulting dataset (i.e., 14 semi-structured interviews conducted in 2020 – 2022) has unearthed an important finding – generally, entrants require to get access to the resources under the control of incumbents and strategically leverage trust to gain it. Juxtaposing this finding with extant literature on disruptive innovation and trust has shown its relevance in terms of potential theoretical contribution in the realm of “disruptor’s dilemma”. Ultimately, this finding bounds a phenomenon constituting a case to be studied in Phase 2 (i.e., entrants using trust to mitigate tensions with incumbents in ecosystem-level disruption). To determine the most suitable context for studying the bounded phenomenon in more detail, 7 facilitators of ecosystem-level

disruption (i.e., coordinators specifically tasked to select, fund, mentor and coordinate the entrants backed by the Next Generation Internet initiative) and 7 senior-level industry experts operating the area of innovation (e.g., Deloitte, Grundfos, Wolt) were interviewed (see Appendix 3 and 4). The resulting dataset (i.e., approximately 14 hours of semi-structured interviews conducted in 2020 – 2022, supported by vast secondary data) has ultimately yielded another critical finding – a context suitable for studying the said phenomenon is insurtech (see section 3.2.2. for details).

3.2. Phase 2 – Instrumental in-depth single-case study

In line with the terminology adopted by Sætre and Van de Ven (2021), after firmly establishing the anomaly and determining a context suitable for its studying by the means of Phase 1, the research has progressed into the phase of developing plausible explanations via generating and evaluating ideas (i.e., developing a number of hunches in response to the anomaly and selecting which to pursue further) – Phase 2.

3.2.1. Methodological positioning

To outline the methodological positioning of Phase 2, it relies on an instrumental single-case study research design (i.e., the case being a bounded phenomenon of entrants using trust to mitigate tensions with incumbents in ecosystem-level disruption) with multiple embedded subunits of analysis (i.e., the subunits being the individual entrants representing particular roles within the UK insurtech ecosystem) (Stake, 2000; Yin, 2018). Such a research design allows for a rich and detailed understanding of a bounded phenomenon; nonetheless, it needs to be acknowledged that the multiple subunits of analysis present a risk of it being misinterpreted as a multiple-case study. For that reason, the following paragraphs respectively introduce the case

study as a research method, reflect on the framing of Phase 2, and clarify why perceiving it as a multiple-cause study undermines its intended purpose.

Generally, the case study research method involves in-depth examination and analysis of a particular bounded system (e.g., phenomenon, individual, group, organization, or event) based on extensive data collection (Creswell, 2007; Miles and Huberman, 1994). Yin, for instance, (1984, p. 23) defines the case study research method “as an empirical inquiry that investigates a contemporary phenomenon within its real-life context; when the boundaries between phenomenon and context are not clearly evident; and in which multiple sources of evidence are used”. According to Merriam (1998), a case study design then provides an in-depth understanding of a situation and its meaning for the actors involved; therefore, ultimately, “the interest is in process rather than outcomes, in context rather than a specific variable, in discovery rather than confirmation” (p. 19). The case study approach is usually employed to provide detailed, holistic account of complex, real-life issues, thus, it is generally considered to be well in line with interpretivism; nonetheless, exploring its nuances, it is obvious that case studies typically fluctuate on a spectrum ranging from pure interpretivism to interpretivism with distinct positivistic attributes (cf. Gehman et al., 2018).

As it is the instance of Phase 2, case studies leaning towards interpretivism in its pure form, usually take shape of a single-case design (cf. Gioia et al., 2013) and focus on processes (e.g., Corley and Gioia, 2004). Their aim is to generate concepts, explore their relationships, and understand their meaning. The distilled theory hence unfolds an explanation of “how” things are done to realize a particular process (cf. Langley, 1999). Single-case studies typically focus on one unique case (possibly with multiple embedded subunits of analysis) that offer an exceptional learning opportunity (Yin, 1984). Ultimately, as far as the actual value of a single-case study is concerned, according to Stake (2000), the interest in a given case can be either intrinsic or, as it is in case of Phase 2, instrumental. The value of an intrinsic single-case study

lies in learning about a specific case, which is not to be abstracted in any way. Therefore, the case is not selected because it represents other cases or because it illustrates a particular problem. Thus, the purpose of an intrinsic single-case study is not to theorize, but to understand a particular case by itself. In contrast, the value of an instrumental single-case study then lies in learning about a more general issue or developing a theory. The case itself facilitate an understanding of a particular phenomenon, therefore, serves as a means to pursue an interest external to the case itself. In an instrumental single-case study with embedded sub-units of analysis, the researchers embed sub-units (e.g., individual ecosystem actors), to delve into various facets and intricacies of the main case (e.g., a specific, bounded, ecosystem-level phenomenon). Although limited by their generalizability, the findings thus tend to be of broader applicability and relevance. Finally, single-case studies are typically well suited to utilize a theory building approach developed by Gioia, Corley and Hamilton (2012) (cf. Gehman et al., 2018).

As previously mentioned, the applied instrumental single-case study research design with multiple embedded subunits of analysis may be easily misinterpreted as a multiple-case study. Multiple-case studies lie on the other side of the interpretivist spectrum, incorporating positivistic elements (cf. Eisenhardt, 1989) and inherently focusing on variance (e.g., Brown and Eisenhardt, 1997). As such, these studies typically explore relations between variables and outcomes, and aim for developing a generalizable, testable, nomothetic theory determining “which” factors matter, and “how much”. In multiple-case studies, data are analysed for insights both within each case and across cases (Merriam, 1998). In this research design, cases are deliberately chosen to try to replicate insights that one finds within individual cases or to represent contrasting situations (Yin, 2018). This is typically done by iterative tabulation and through the lens of replication logic (i.e. “the logic of treating a series of cases as a series of experiments with each case serving to confirm or disconfirm the hypotheses (Eisenhardt, 1989,

p. 542). Resultingly, cases that support the emerging relationships increase confidence in their validity, while cases that refute these relationships create room for the particular theory to be refined or expanded.

In conclusion, the method employed in Phase 2 should not be misinterpreted as a multiple-case study because it explores a singular, bounded phenomenon (i.e., entrants using trust to mitigate tensions with incumbents in ecosystem-level disruption) by the means of embedded subunits (i.e., individual entrants representing particular roles within the UK insurtech ecosystem). These subunits are not independent cases; rather, they are facets of the single complex case, intended to deepen understanding of the case as a whole. The instrumental nature of this research aims to provide insight into a general issue (i.e., determining how entrants use trust to mitigate tensions with incumbents in ecosystem-level disruption) via one specific instance, rather than to compare across different cases to establish broad, generalizable findings. The methodology is centred on comprehending the issue in terms of “how”. As such, it is structured to develop a theory grounded in the detailed nuances of the case, not to test hypotheses across multiple cases.

3.2.2. Contextual positioning

As outlined in section 3.1., the case to be studied in Phase 2 is a phenomenon bounded as “entrants using trust to mitigate tensions with incumbents in ecosystem-level disruption”. Followingly, the context suitable for conducting the said case-study has been determined to be the UK insurtech ecosystem (cf. Palmié et al., 2020). The reasons this context is constitutes a conducive environment for studying such a case are elaborated in the following paragraphs.

Generally, as an early adopter of the key information and communication technologies, the area of financial services has been focal for scholarly investigation for many years (Scott et al., 2017; Arner et al., 2015). The severity of the impact of digital technologies on the

financial sector has led to a wide adoption of the term “fintech”, which can be defined as “incremental or disruptive innovations in or in the context of the financial services industry induced by IT developments resulting in new intra- or interorganizational business models, products and services, organizations, processes and systems” (Puschmann 2017). Within this realm, one of the areas experiencing a fundamental shift in its modus operandi is insurance (Catlin et al., 2018). The distinct nature of the insurance business rooted in its focus on risk management has given rise to a phenomenon of “insurtech” (Alt et al., 2018), which comprises “innovations of one or more traditional or non-traditional market players exploiting information technology to deliver solutions specific to the insurance industry” (Stoekli et al., 2018, p.289). Seeing opportunity to address the insufficient capacity of the traditional companies to keep up with the unprecedented behavioural changes characteristic to the 4th Industrial Revolution, insurtechs (i.e., insurtech businesses) have essentially started to integrate the latest technologies (e.g., Internet of Things, distributed infrastructure, artificial intelligence) along the traditional insurance value chain.

On a basis of the exploratory pilot, the following explanatory in-depth case study has been positioned specifically in the context of UK insurtech ecosystem. This context can be considered appropriate for several reasons. First, following the reasoning of Christensen, Raynor and McDonald (2015), the focal disruption originates in low end as well as new market (Christensen and Raynor, 2003; Dewald and Bowen, 2010; Christensen et al., 2015). To briefly illustrate, respectively, we can see insurtechs covering the needs omitted by incumbents (e.g., personalized offers, data-based pricing, increased user experience) while creating market where none existed through turning non-consumers into consumers (e.g., embedded and on-demand insurance, flexible insurance for gig workers). Furthermore, despite the indisputable digital transformation of the financial services sector as a whole (e.g., Arner et al., 2017), it is apparent that insurtechs still do not fully catch on with mainstream customers (e.g.,

Krishnakanthan et al., 2021). Second, analysing the search trends, it can be observed that insurtech has started to receive attention around 2015. Since then, the venture activity in this space have been continuously rising, with all-time record-breaking 566 deals and \$15.4 billion in capital investments in 2021 (CB Insights, 2022). Besides a considerable growth in the size of an average investment, this amounts to 21% increase in the number of deals and 90% increase in funding. Consequently, this means that the topicality of the phenomenon allows for examining the entrants' perspective in the course of its occurrence, hence gaining a real-time insight. Third, based on Trowbridge (1975), insurance as such can be understood as an arrangement through which an entity can protect itself from negative financial consequences of an uncertain future event. In the heart of insurance lies the transfer of risk from a customer to a coverage provider, who evaluates the risk and charges premium for carrying it under certain conditions. This way, the risk of entities is pooled, and losses shared on an equitable basis. Considering the fact that it has been widely recognised that a central and dynamic component of such process is trust (e.g., Schanz, 2009; Guiso, 2012; The Geneva Association, 2019; Courbage and Nicholas, 2020), it can be expected for it to manifest itself in salient ways also during the said ecosystem-level disruption. This would allow for capturing its nuances in detail.

Finally, it is necessary to emphasize that due to the nature of the research method, the findings need to be understood as providing insights into a general issue by the means of one specific instance. Rather than broadly generalizable, the effort should be perceived an indicative point of orientation reliable in the context described above.

3.2.3. Sample, data collection, and data analysis

As previously clarified in section 3.2.1., the research design of this case study focuses on a single case (i.e., a bounded phenomenon of entrants using trust to mitigate tensions with incumbents in ecosystem-level disruption) which is being studied by the means of multiple

embedded subunits of analysis (i.e., the individual entrants representing particular roles within the UK insurtech ecosystem). To focus specifically on the sample, the selection of the subunits has been carried out through a snowball method (Breweton and Millward, 2001) on a theoretical, non-probabilistic basis (Glaser and Strauss, 2017; Taherdoost, 2016). Generally, allow for nuanced theorizing at an interorganizational level of abstraction, the sample consists of entrants playing different roles in the same ecosystem. In order to render a comprehensive understanding of the case, the said actors have spanned the full spectrum of entrant roles within the studied ecosystem (see Figure 3), providing a rich insight into how they use trust to mitigate tensions with incumbents in ecosystem-level disruption (cf. Insurtech UK, 2021).

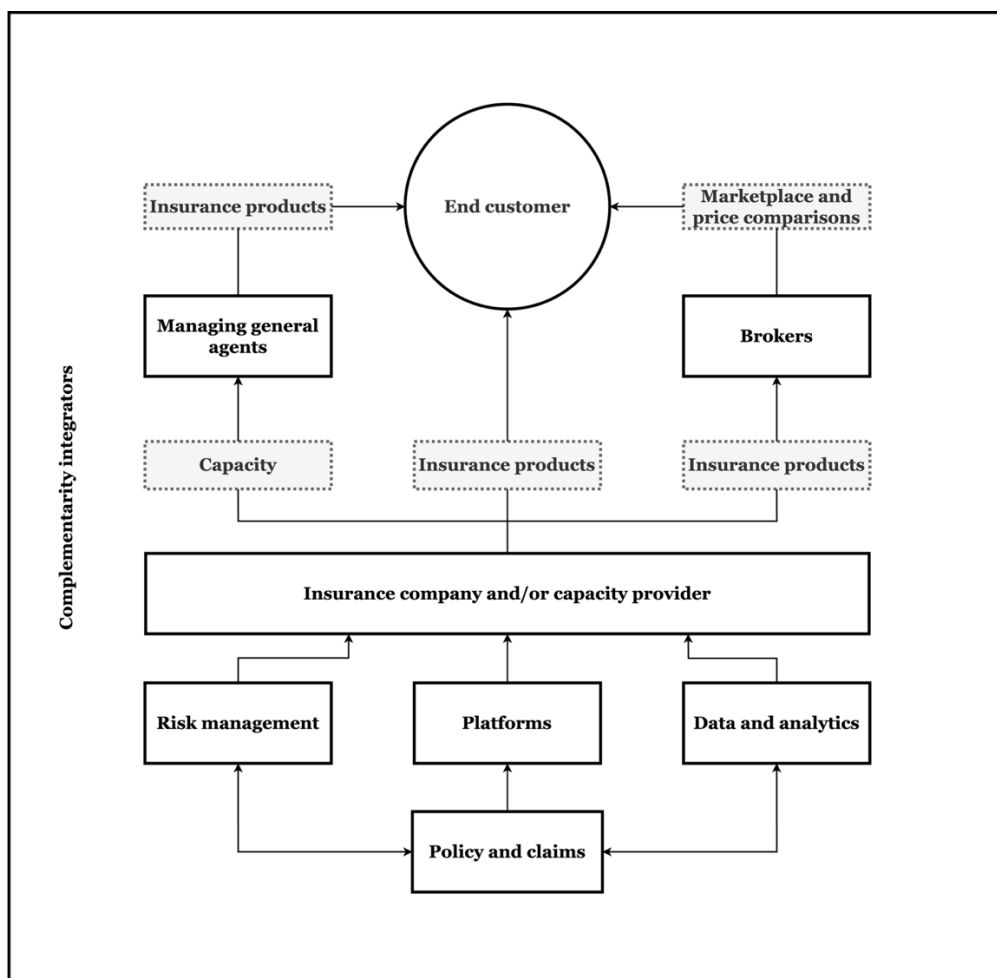


Figure 3. Overview of actors in UK insurtech ecosystem

Ultimately, as indicated in Table 2, 31 C-suite informants from 18 insurtech companies were interviewed in 2021 – 2022, yielding approximately 30 hours of data (for final interview guide see Appendix 5). Followingly, the resulting dataset was triangulated using publicly available interviews and documents either provided by informants or accessed online. Emphasis on the archival data has been put especially in cases where limitations of informant availability were encountered (e.g., actors focused on claims). The data has been coded and structured in line with Gioia, Corley, and Hamilton (2012) – open coding was used to generate 1st order concepts, followed by axial coding to form 2nd order themes, and structuring the dataset while distilling aggregate dimensions (see Appendix 6 for fully-fledged data structure) (e.g., Strauss and Corbin, 1998). The decision to stop sampling was based on achieving theoretical saturation, i.e., a point where no further aggregated dimensions could be identified (Glaser and Strauss, 2017). Finally, reflecting back on the employed process of abduction (Sætre and Van de Ven, 2021), an individual is generally limited in evaluating hunches (Harvey and Kou, 2013); therefore, this study has also benefitted from regular, biweekly sessions of intensive collegial sparring with scholars spanning different backgrounds, a conference presentation, and a paper development workshop.

Position	Company	Ecosystem role (see Figure 3)
Co-Founder and Chief Executive Officer	SafeGuard	Insurance company and/or capacity provider
Chief Commercial Officer	SafeGuard	
Co-Founder and Chief Data Scientist	SafeGuard	
Co-Founder and Chief Revenue Officer	SafeGuard	
Director General Insurance	InsurX	Platform
Product Owner Insurance	InsurX	
Director of Product Management	InsurX	
Co-Founder and Chief Commercial Officer	SmartCover	Broker
Head of Partnerships and Marketing	FutureProof	Insurance company and/or capacity provider
Head of Product	FutureProof	
Head of Growth and Operations	FutureProof	
Global Head of Ecosystem Development	CentralOne	

Co-founder, Chief Executive Officer, and Managing Partner	CentralOne	Process facilitator/complementarity enabler
Founder	Brickeroo	Platform
Global Head of Partnerships	CoverAge	Managing general agent
Chief Executive Officer	CoverAge	
Global Chief Financial Officer	CoverAge	
Co-Founder and Chief Executive Officer	InsurFlow	Platform
Co-Founder	LifeShield	Broker
Co-Founder and Chief Executive Officer	InSure360	Platform
Founder	PolicyBoost	Policy
Co-Founder and Director	InsureNow	Data and analytics
Head of Global Communications	RiskGenie	Risk management
Founder and Chief Executive Officer	RiskGenie	
Founder and Chief Executive Officer	Nexus.ai	Managing general agent
Chief Marketing Officer	Nexus.ai	
Product Consultant	Nexus.ai	
Head of digitally driven insurance advisory service	DigiSure	Managing general agent
CEO and Co-Founder	IntegraTech	Platform / process facilitator / complementarity enabler
Founder	CalmCorp	Managing general agent
CEO	InsuredUp	Managing general agent

Table 2. Overview of informants involved in Phase 2 (ecosystem roles included)

4. Findings

As previously emphasised, this article is deliberately positioned at the interorganizational level of analysis, adopts the perspective of entrants, and focuses on a single case (i.e., a bounded phenomenon of entrants using trust to mitigate tensions with incumbents in ecosystem-level disruption), which is being studied by the means of multiple embedded subunits of analysis (i.e., the individual entrants representing particular roles within the UK insurtech ecosystem). Correspondingly, it provides contextual insight in terms of how a set of homogeneous ventures with fewer resources bounded by their drive to disrupt an established ecosystem use trust to mitigate tensions with a set of homogeneous actors constituting that very ecosystem. In

summary, the study has discovered that entrants indeed use trust to mitigate tensions with incumbents in order to achieve ecosystem-level disruption. As to unveiling how such strategic efforts play out in practice, it has been identified that to gain the trust of said incumbents, the entrants do need to nurture it on two levels – not only with the established ecosystem, but also with the customers. On both of the said levels, the antecedents comprise of cognitive and affective components. On the incumbent side, the entrants engage in signalling homogeneity and reframing innovation, while on the customer side, they take part in signalling legitimacy and reframing of the ecosystem’s value proposition. The customer and incumbent trust simultaneously reinforce one another, meaning that having trust of customers plays a crucial role in gaining trust of incumbents and vice versa. Consequentially, as the tensions get mitigated, the entrants have the leeway to transform the contradictory frames into new shared reality. Contrastingly to the traditional firm-centric notion of disruption (Christensen, 1997), a key premise of such dynamics is that to disrupt an established ecosystem, it might not be favourable for the entrants to completely displace the individual incumbents, as the resources they control might be crucial for their strategic efforts and not attainable otherwise (Ansari et al., 2016). In line with the developing notion of “Mark III” put forward by Jacobides, MacDuffie, and Tae (2023), this way of framing disruption enables incumbents enabled to understand the disruption as an opportunity to reposition themselves, take on new roles, and continue being relevant as complementors. Resultingly, while the established ecosystem is disrupted, the incumbents who choose to adapt are not. This dynamics is illustrated in Figure 4 and further discussed in the following paragraphs.

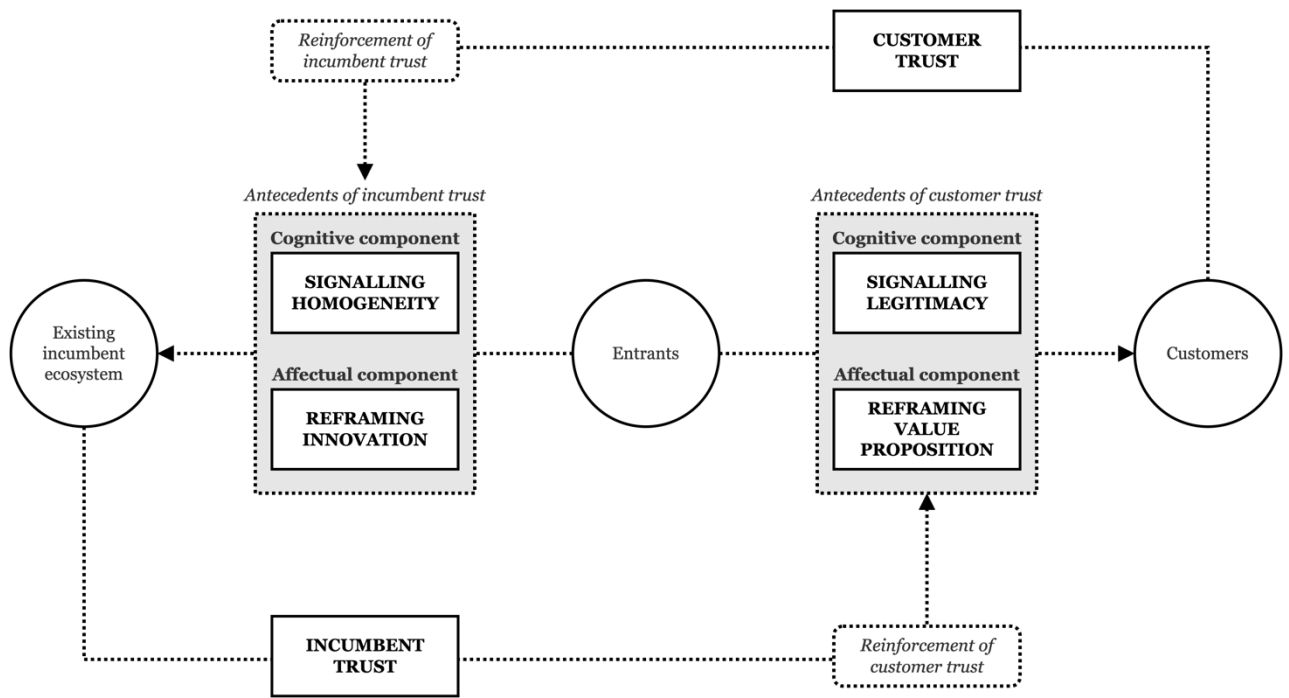


Figure 4. The role of trust in ecosystem-level disruption

4.1. Trust between entrants and incumbents

Typically, the incumbents tend to strategically leverage the resources unavailable to entrants (e.g., data, capital, customer base) or even purposefully create upstream bottlenecks (Adner and Kapoor, 2010). In the endeavour to disrupt the incumbent ecosystem, gaining access to such resources is of vital importance to entrants; therefore, instead of focusing on gaining competitive edge, they opt for pivoting towards creating value for the individual incumbents. Due to the absence of track record, their success is however contingent on gaining their trust. This dialectic can be illustrated using the words of Co-Founder and Chief Executive Officer of a managing general agent “The really difficult part is that you can't have a track record until you've got risk capital. But they won't give you the capital to you got a track record. And that's the thing that goes around in circles forever. So, ultimately, it is all about trust.” As the incumbents begin to trust the entrants, they let them increase their involvement in their

business. Complementarities of unique and supermodular nature are generated (Jacobides et al., 2018) and, seeing the need for change, the incumbents are challenged to shift their institutional logic and take on new roles underpinned by multilateral dependencies (Öberg, 2023). As Chief Executive Officer of a managing general agent stresses, “Everyone has this thing about, oh, you know, insurance companies need to be disrupted. I mean, we have to partner with insurance companies, because we borrow their balance sheets to sell the product. So, it's much more nuanced relationship. We actually need to collaborate. Extensively.”

4.1.1. Signalling homogeneity

As previously foreshadowed, the trust of incumbents is anteceded by the entrants' deliberate effort to signal their homogeneity with the existing ecosystem and reframe the prospective innovation. As far as signalling homogeneity is considered, the goal of entrants is to construct an isomorphic image, so the incumbents recognize them as professional, legitimate, and not too dissimilar (DiMaggio and Powell, 1983; Suchman, 1995). Generally, insurtech is perceived as a force of rather ungraspable dimensionality, alien to the *modus operandi* of their traditional counterparts. For that reason, to substantiate some common denominators, it is essential for the entrants to build up a record of successful incumbent collaborations. As Chief Commercial Officer of a managing general agent indicates, “I think until the [new ecosystem] does have some successes, there will be hesitancy about working with insurtechs. To build trust, it takes history, brand, reputation, transparency, and all those things. And, by definition, we do not have any of them. We're trying to build them out. But it doesn't happen overnight, unfortunately. I wish it did. It is one of the biggest challenges for [the whole ecosystem].”

An essential factor of evoking the perception of legitimacy is demonstrating sufficient investment backing and demonstrating dyadic partnerships with a well-established incumbent, possibly even outside the said domain (e.g., insurtech partnering with a retailer on embedded

insurance). In the words of Global Head of Ecosystem Development of a process facilitator focusing on developing commercialization strategies for insurtech entrants, “Once you've got one or two partners who themselves are trusted, then you're kind of like a member of a trusted club – they validate and verify for you, essentially. So that kind of ticks that box that you would otherwise always have to tick first yourself, in terms of demonstrating trustworthiness. And when you skip that process, and you go straight into talking about solutions, it becomes a lot easier.” Creating such alliances often requires extensive negotiations and, ultimately, substantial short-term compromises on the side of entrants. The incumbents are by default very much risk averse and reluctant to innovate, therefore, the initial interventions often need to be of an incremental character, typically rooted in a simple optimization. And, as a CEO and Co-Founder of an insurtech software platform emphasizes, convincing the leadership of the incumbent is a key factor of being successful in this regard – “You have to get the credibility, you have to get the respect from them. And you simply cannot do this unless you've got executive sponsorship within those organizations.”

While initiating the dialogue, entrants need to pay close attention to avoid being perceived as opportunistic or predatory (Daymond et al., 2022); therefore, they are required to spend extensive amounts of resources on educating the incumbent (e.g., explaining the pricing models), demonstrating operational reliability, and displaying fairness. Detrimental to this discourse is a high level of transparency, alignment of organizational values, and focus on fostering cross-organizational relationships on an individual level (Phillips et al., 2004). As Co-founder, Chief Executive Officer, and Managing Partner of an insurtech venture lab focused on enabling ecosystem complementarities aptly points out, “... but at the end of the day, there will be two people, two individuals talking with each other. One must not forget about it. And what you find is, sometimes when a value proposition is very people-dependent, when people change jobs, the startup initiative [on the incumbent side] disappears.”

Due to the trial-error nature of the partnerships, honest failures may often be misinterpreted as manipulation, therefore, entrants need to be exceptionally upfront and elaborately descriptive in terms of the individual decisions taken. Typically commencing as a project-based endeavour, if successful, the effort takes up a recurrent tendency. The incumbent starts to see the potential in supporting the innovator and continues its engagement with an increased degree of agency delegated to the entrant. As Global Head of Partnerships of a managing general agent summarizes, “Over the years, [the incumbents] have given us more and more responsibility. For instance, they delegated claims authority on us, allowing us to lead the way essentially. Whereas when we first started, we were more shackled and controlled, to make sure that that we weren't going to do anything that risked their reputation.”

4.1.2. Reframing innovation

As far as the reframing is concerned, the goal of entrants is to affect the mood and emotions of the incumbents, so they feel positive about accepting the vulnerability and motivated to take part (Legood et al., 2022). This lies mainly in conveying the potential of said innovation to create value for the incumbents themselves, as well as the urge to move forward as a sector. As Chief Executive Officer of a broker describes “The insurance industry hasn't changed in about a hundred years. Some of the companies are still writing policies that they were writing in 1920. Even the policy wording hasn't changed. Because the model works for them, there's no incentive for the corporate to change the way that it works. And likewise, there's no incentive for any of the parties within the chain, to try and disrupt or change it, because they're all taking a slice.”

Entering an extensively resistant environment consisting of rigid strategic ties between actors of firmly established roles, entrants approach the process as an incremental disintegration of traditionally linear value chains. At the heart of coping with such a siloed mentality lies demonstrating palpability of the innovation's benefits and the prospect of

creating superior value by deploying novel technologies in an unprecedented manner. This constitutes constructing positive narrative about the value proposition shift in terms of increasing the quality of offerings facilitated by novel applications of technology. The entrants can do so by leveraging projective storytelling (cf. Garud et al., 2014; Bartel and Garud, 2009) and continuously fulfilling the expectations they set. Importantly, collectively grafting technology into a fossilized system leaning on routine processes and legacy regimes requires conveying the advantages of digital technologies in the language of the incumbents (i.e., in terms of minimizing costs and errors, emphasizing mainly the opportunity to create cheaper, effective, and more flexible personalized offers for the end customer). As Chief Commercial Officer of a managing general agent illustrates, the incumbents' understanding the concept of digital technologies may be significantly distant from reality – “Artificial intelligence, for instance. This is a term that definitely needs more trust associated with it. Because, you know, we do use a hell of a lot of it and everything that we do is built on data. Still, I'd say most companies that I know of, that say they use artificial intelligence – you'd be lucky if they use Excel...”

With a clearer comprehension of the arising sectoral change, incumbents then start embracing the presence of entrants and recognizing the downsides of their own inertia and path dependency. Considering the absence of sufficient dynamic capabilities to evolve (e.g., Haftor and Costa, 2023), the incumbents eventually feel the need co-exist with the entrants in a symbiotic relationship so they can stay relevant in the succeeding ecosystem. As Director of Operations of an insurtech specializing in life insurance stresses, “The big insurance companies are so ingrained to not take on extra risk, that they would never try and change the status quo. They would never try and innovate within the space. ... They start to realize that in order for the industry to progress and move forward, they have to work with teams like us. They have to

work with companies that want to change the space and want to innovate and want to make it better for the customer. Because otherwise it would never change.”

Demonstrating the tangibility of the innovation’s potential and proving the competence of leading mutually successful collaborations with incumbents the entrants begin to snowball the trust of other established organizations by leveraging the status of their existing partners (including stakeholders spanning various communities, non-profits, professional associations, or even public sector entities). As Founder of policy focused insurtech accents, “I believe there are two aspects to trust. One is before somebody actually gets involved with you, right? So, when they don't know you. And here we just try to show all the good things, like our associations with top universities, with top companies, competencies, transparency, living by example... And two, once they've got involved with you. Then it's just about perfect execution and really good delivery.” As the ecosystem gets redefined, its trustworthiness can be then also nurtured through a variety of forums and associations, where shared practices and meanings are developed further (Thompson et al., 2018). A typical example of such an arrangement can be, for instance, Insurtech UK, i.e., largest formal insurtech alliance in the world operating as a trade association for the community of insurtech startups in the UK aiming to transform the industry as a whole (Insurtech UK, 2021).

While the positive narrative gets reinforced, the ecosystem still faces the issue of orchestration. Considering the absence of hierarchical governance mechanisms, the entrants need to align the heterogeneous actors towards a focal value proposition without the control of the key resources or processes (Shipilov and Gaver, 2020). As Co-Founder and Chief Revenue Officer of a managing general agent mentions, this process takes time – “It’s probably a generation slower in insurtech than it is in fintech. It took about 20 years for banks to trust fintechs to run core product processes.” In dialogues with incumbents, the entrants themselves may often resort to creating trust through inducing pressure and the “fear of missing out”. Chief

Executive Officer and Co-Founder of an ecosystem integrator describes such practice as a “fact-based stick approach” – “We go into these places at the CEO level. And we say, right, if you don't support this [ecosystem value] proposition, somebody else is going to. Do you want to be the one that turned the Beatles down? Do you want to be the one that did not back the disruption? ... And that is kind of the dynamic you have to put into it. There is a carrot and a stick. I'm sorry, I love the carrot philosophy, but it is always the stick that works.” Consequently, the challenge of orchestration then creates an opportunity for emergence of new actors focused exclusively on identification, creation, and integration of ecosystem-wide complementarities, hence capitalizing on limiting frictions and streamlining value creation for the benefit of everyone involved.

Finally, and importantly, despite the interorganizational nature of the issue, the ecosystem value proposition is in no way secluded from the external environment; on the contrary, it requires innovators to construct new value networks in interaction with the end customer mind (Brandenburger and Nalebuff, 1996; Teece, 1986). Similarly, the findings suggest that in developing trust with incumbents, trust of customers plays an imperative role. To elaborate, on the one hand, when customers trust the new ecosystem value proposition, the trust of the incumbent ecosystem gets reinforced. First, trust of customers evokes the perception of professionalism (e.g., competency to deliver value proposition), legitimacy (e.g., being recognized as a valid means of insurance), and exhibiting similarities to incumbents (e.g., in terms of the ability to serve the same target customer while being compliant with the same regulations) (DiMaggio and Powell, 1983; Suchman, 1995). As Head of a digitally driven insurance advisory service denotes, “Absolutely [we have to be trusted by customers in order to be trusted by partners]. We've got to focus on performing well at both ends. ... If we're doing a good job and customers trust us, if there's a good relationship with them, then it reflects on our relationship with our partners. Some of the [incumbents] even do due diligence on us

regarding this.” Second, it also contributes to reframing the disruption, hence creating a shared reality of perceiving it as opportunity (e.g., interest of customers in the new ecosystem value proposition allows for taking advantage of repositioning). This is indicated, for instance, by a CEO and Co-Founder of an insurance software technology platform – “The consumer wants to buy digitally; I don't think you can argue with that. And that is where the insurance industry can't meet the customer. If you create the gap between customer expectation and industry's capability to fulfil it, there's a vacuum. We fill that vacuum. ... And insurance companies are increasingly becoming balance sheet banks.” On the other hand, when customers do not trust the new ecosystem value proposition, there is no chance for them to adapt it; therefore, the incumbent ecosystem does not need to care about the disruption in the first place. In other words, quoting CEO of a managing general agent, “I think it's hard to get a big partner until they can see they've got lots of customers and the customers are happy.”

4.2. Trust between entrants and customers

4.2.1. Signalling legitimacy

As previously noted, the trust of customers is anteceded by the entrants' deliberate effort to signal their legitimacy and reframe the existing ecosystems' value proposition. As far as the legitimacy signalling is considered, the main goal is to cope with the lack of ecosystem identity and overcome the liability of newness (Stinchcombe, 1965; Singh et al., 1986). In these efforts, the entrants focus on achieving customer adoption of the ecosystem value proposition (Thomas and Ritala, 2022), mainly by facilitating comprehensibility of the new ecosystem identity, proving its viability and manifesting its distinctiveness to the incumbent ecosystem (cf. Patvardhan et al., 2015). Therefore, in other words, the entrants try to make the customers recognize that the new ecosystem value proposition is diametrically different but reliable and superior to what they have been used to. Quoting Co-Founder of an insurtech focusing on

brokerage, “It takes time [to gain customer trust]. And it is the hardest thing to achieve. To do so, you've got to be sure that you are able to articulate a really powerful value proposition in the first instance. That’s the price of the ticket to enter the game.”

Peculiar to signalling legitimacy is the entrants’ strategic engagement in frequent interactions with customers. The reason for this is twofold – to cultivate distinctiveness to incumbents, and to continuously create value on multiple fronts (i.e., not only when a claim is made). In words of a Founder of a managing general agent, “If you are a brand-new brand into this space, you are not going to build up that reputation, brand, and trust within twelve months or two years. We are now five years in, and we still encounter that, oh, we don't know you very well, and we haven't heard whether you pay claims or not... You know, so we do we have to do a lot of additional marketing to get to people. It comes with a big cost, to get people comfortable with us.” Central to this effort is the creation of common customer base for which they can subsequently compete, so they can move forward as a whole. As Head of a digitally driven insurance advisory service explains, “Actually, we expect and hope that, there'll be a few more competitors in the future. I think it would help to build a bit of trust. We want to be able to be in competition with somebody else. Because then, we can really show we’re the best rather than just one of the very few options.”

In the same vein, the entrants create products dedicated solely to the purpose of generating more touchpoints. This is conspicuous especially in insurance, where, in some cases, people do not get the value for the purchased product in their lifetime (i.e., in life insurance). As Chief Operating Officer of a life-insurance focused insurtech summarises, “We offer free mental health, grief, and bereavement support. That's a moment of trust between us and the consumer. We offer wills that we write completely for free, so that we can give customers a physical product within a day. They see the value and the tangibility of what our company can do for them as a brand and then inherently they trust the insurance, because they

trust us as a brand. So, it's hugely important because that's what insurance is. It's a promise.” Such products also contribute to solving the “chicken-egg” problem of gathering sufficient amount of quality data to offer a product appealing enough, which is impossible without customers actually using the product at the outset.

An essential element of signalling legitimacy to customers is emphasizing the improved performance of the new ecosystem, especially in contrast with the performance delivered by the incumbents (e.g., Aldrich and Fiol, 1994). The entrants hence devote a significant amount of work to demonstrating proofs of concept on real use cases. As Global Chief Financial Officer of a managing general agent operating in the area of bike insurance states, “So, let’s say that want to give our customers this really cool new app that detects if they have a crashed on their bike and phones their emergency contacts, but it will hit our profit margin. In the short-term, we won't be as profitable; however, in the long-term the long-term, more customers might stay with us. We’ll be more valued and trusted. We’re basically just finding different ways to leverage a proof of concept, add value and keep those touch points going.” Additionally, entrants also tackle the asymmetry of information rooted in incumbent legacies by introducing flexibility in parts of the known business models (e.g., adjustable life insurance or real-time car insurance) or even introduce fully data-driven business models that are completely unprecedented (e.g., predict and prevent an event from happening rather than covering particular loss or parametric claims triggered by event itself). To demonstrate quoting Product Owner (Insurance) of a financial services software platform, “If you're in a storm area, everyone's claiming at the same time. So, there are massive peaks in terms of demand. But that's where things like parametric claims can come out. If there's a flood in the area, you can pay out automatically. As soon as you have the data, send something to the customer and say, hey, we know there's been a storm in your area, here's 200 quid to get some get some basic repairs done...”

In insurance, new actors emerge to specialize on combining varied, unstructured, and non-standardized datapoints through an API and transforming them into valuable assets sold through digital marketplaces. This enables the entrants to come up with highly personalized offers that address some of the principal pain points, all while requiring almost no customer input. Creating value incomparable to the value created by the traditional insurance – an industry infamous for unreliability, obstructions, and bureaucratic procedures – the entrants need to be careful about deploying technology in a way that renders the new proposition trustworthy. Quite similarly to their relationship with incumbents, the entrants hence need to acknowledge the present dominant design of insurance services and consistently dedicate resources to education. As Head of Product of a life insurance focused insurtech states, “Education is a big one. Because of the amount of damage that's been done in the industry, the perception people have about it. ... So, we educate through the content on our website, all our social media channels, our advertising aims to educate, and we educate within the product flow, everywhere.”

4.2.2. Reframing value proposition

As to the reframing, the goal of entrants is to affect the mood and emotions of the customers, so they feel positive about accepting the vulnerability to engage with novel, unfamiliar offerings (Thomas and Ritala, 2022; Legood et al., 2022). In case of insurance, the customers lost trust in the sector as incumbents have built reputation of not delivering their value proposition. Here, the value is delivered not at the point of purchase, but at the point of an actual claim and, according to insurtechs, the customers believe that the incumbent ecosystem tries to find ways to “bend the deal”. Distrust of customers then transforms into fraudulent behaviour against companies themselves, resulting in a mutually disadvantageous cycle of manipulative and hostile interactions. Consequently, customers adopt a defensive attitude and so do insurance companies. To tackle this, insurtechs leverage customer data to improve the

value proposition to the degree bearable by the underwriter or reinsurer in question. Citing Director of Operation of an entrant aiming to revolutionize life insurance, “There is always back and forth around what we can do. They don't often see the reason behind why we want to do the things the way do because we come at it from a completely different angle.” By making such compromises, the value proposition improves incrementally, but the customer base grows gradually. More data is generated, allowing for further improvements to the value proposition. The better experience the customer has, the more the underwriter trust the entrants to make additional changes. This is relevant especially when constrained by regulations, as the Director continues “If you want to disrupt an unregulated industry, you don't do whatever you want. You can get from zero to hundred within the first within the first build. With us, it really is about taking small steps that are impactful for the customer, but not massively, negatively increasing the risk that the underwriter and the reinsurer are taking on.”

From a broader perspective, customers need to engage with new value proposition, which results in the entrants facing uncertainty (cf. Dattée et al., 2018; Snihur et al., 2018) For instance, sometimes, the entrants improve the hitherto incumbent-provided service to the degree where customers find the proposition almost hard to believe. Customers often do not trust the superior offer simply because the quality of the improved service is hardly comparable with the status quo. To cite Co-Founder of a digital pay-as-you-go life insurer, “That that's one of the barriers that you have, when you're an insurtech. Customers just feel that it sounds too good to be true. It's a reasonable challenge.” For that reason, it is a common practice for the entrants to initially integrate human elements in an incomparably efficient and effective fully digital process, just for the sole purpose of making the customers feel safe, secure, and confident. As Head of Partnerships of an AI-driven, customer-facing insurtech emphasizes, “We obviously offer a direct route to buy insurance. But, just recently, I've learned that people still want to phone in and make sure that you're a real company. They want to make sure that

what they're seeing on your website is real. And that right there's a definite lack of trust that [insurtech] is legitimate.”

Another aspect of contributing to the said reframing is selling white-labelled products through trusted companies with an already established customer. Consequently, the customer takes advantage of an insurtech product bought from a well trusted brand without prejudice about its legitimacy. As Chief Executive Officer and Co-Founder of a full-cycle platform provider illustrates explaining their relationship with a leading global retailer, “They do 7.7 million transactions a day. And they've never sold an insurance policy until now. And our conversation with them that says you should be selling insurance to customers? Because you've got a trusted brand. You've got a massive customer reach. You're doing 18,000 transactions on your website every day. Why aren't you selling insurance? The answer comes back always to say it's regulated. The industry is opaque, doesn't understand digital. The costs and inertia associated with buying building infrastructure and putting people resources in place to go across that insurance is too hard. The problem that we solve is we say we do all that for you.”

Finally, in developing trust with customers, trust of incumbents is essential. On the one hand, being trusted by well-established actors reinforces the trust of customers. First, it creates perception of legitimacy (e.g., trusted companies partnering with entrants helps to develop their identity and to elicit trust in the new ecosystem value proposition). As Global Head of Partnerships of a managing general agent stresses, “From the consumer side, for some people, our partnership with [a globally recognized and trusted incumbent within the same domain] was all the due diligence they needed to do. And it is the same with [a national governing body of the domain]. Our partners basically doing the due diligence for our consumers, in a way. Or certainly in their minds they are.” Second, trust of incumbents helps to reframe the ecosystem value proposition (e.g., trusted companies partnering with the entrants to co-create value proposition as a part of one ecosystem helps to elicit positive feelings about accepting the

vulnerability to engage with unfamiliar offerings). As illustrated by an example shared by Global Chief Financial Officer of a managing general agent operating providing bike insurance states, “So, we know that most insurance is sold through comparison engines these days. And when the customers look at those engines, and see a name that triggers a response, they are like, oh yeah, I can see that they're connected to [an insurance incumbent]. I know I can trust them; they’ve got a good reputation. I think that's really important, and it triggers an immediate reaction.” On the other hand, however, when the trust of incumbents lacks, again, there is no disruption to talk about in the first place. As Director of Operations of insurtech operating in the area of life insurance highlights, “If these corporates didn't trust us, they would block us from getting to market. We would never be able to release a product because they would just say, no, we don't want to work with you. We have to prove that we're trustworthy, to actually work with them, and then, we have to prove that the product works, so that we can further develop it”.

5. Conclusion and discussion

As far as the theoretical contributions are concerned, by exploring how entrants leverage trust to mitigate tensions with incumbents in ecosystem-level disruption, this article contributes to several different literature streams. From a broader perspective, this article is one of the first contributions bridging the areas of trust (Fulmer and Gelfand, 2012; Legood et al., 2023) and disruptive innovation (Christensen et al., 2015). To elaborate, on the one hand, it addresses the lack of focus on entrant’s perspective by finding the relevance of trust in overcoming “disruptor’s dilemma” (Ansari et al., 2016), specifically through mitigating the variety of emerging tensions (e.g., Snihur et al., 2018; Autio and Thomas, 2018; Dattée et al., 2018; Gurses and Ozcan, 2015). On the other, it also adds to the scarce discourse on disruption at an ecosystem level (Kumaraswamy et al., 2018), bringing previously unrelated yet highly relevant

relationship of disruption and trust into the context of burgeoning literature on ecosystems (e.g., Cobben et al., 2022). Ultimately, this article manifests that rather than an isolated affair, disruptive innovation should be considered a collective dynamic process where the organizations shape and are shaped by the very environment in which they are embedded (Adner, 2006; Adner and Kapoor, 2010; Adner and Kapoor, 2016).

Zooming in on specific areas of the work, the study shows that understanding the role of trust in ecosystem-level disruption entails tapping into literatures far beyond disruptive innovation and trust. In particular, it the cognitive component of creating trust with incumbents lies in signalling homogeneity – a concept inherent to institutional perspective (e.g., DiMaggio and Powell, 1983; Suchman, 1995). Furthermore, the cognitive component of creating trust with customers draws a parallel to research on ecosystem legitimacy emergence, specifically to the work of Llewellyn D. W. Thomas and Paavo Ritala (2021). This research shows that facing customers, the entrants need to cope with the lack of ecosystem identity and overcome the liability of newness. Similarly to emergence, the customers also play a legitimating role and the entrants also need to stir up a collective action leading to adoption of the new value proposition. More specifically, it has been discovered that entrants disrupting an established ecosystem also need to extensively engage in discourse, establish normative legitimacy, and build up collective identity. This suggest wider applicability of their findings and creates an opportunity for exploring the similarities, differences, and interactions between processes of collective action in emergence of an ecosystem versus disruption of an ecosystem that is well established.

Despite treating the concept as an “independent variable”, this study can also offer some marginal contributions to the research on trust. Fulmer and Gelfand have recognized that “an integration of trust research across multiple levels in organizations [has been] sorely needed” (2012, p. 1168). Following their multilevel–multireferent framework (i.e., differentiating

between trust at a level of analysis and trust in a referent) this study shows that in order to explain the role of trust between entrants and incumbents in ecosystem disruption (i.e., trust between organizational referents studied at interorganizational level), it is necessary to understand how entrants (i.e., organizational referents) build trust with customers (i.e., interpersonal referents). This demonstrates that insight in the role of trust in an ecosystem-level phenomenon is achieved by examining its antecedents and consequences across different referents. Positioning study (and the researched phenomenon) at an interorganizational level while discussing trust not only between organizations (see section 2.2.) but also between individuals and organizations might seem anything but rigorous. Nonetheless, the reason for doing so is twofold. First, in line with abductive research approach, crossing levels of abstraction allows for creating novel associations. In this case, the reinforcing dynamics of customer and incumbent trust in ecosystem-level disruption concurs the argument that the antecedents can indeed be seen as quasi-isomorphic and their cross-fertilization across the levels of analysis offers unique insights which result in otherwise unattainable findings (Fulmer and Gelfand, 2012). Second, the study also supports the view of trust as unidimensional construct that is based on the interplay of cognition and affect, and offers an insight into the dynamics of their interplay (Legood et al., 2023). To gain the trust of incumbents, the entrants need to gain trust of customers. In both instances, the trust is anteceded by certain actions which elicit rational evaluation or emotional response leading to intention to accept vulnerability – a phenomenon of single dimension across both levels of observation. This acceptance then ultimately leads to a context specific and, in this case, strategically intended consequences – disruption of incumbent ecosystem. Finally, the findings also speak to the extant literature on individual’s trust in organization by adding “mitigating tensions with incumbents” into the wide array of positive outcomes.

The research may be also found pertinent in literature beyond trust and disruption, namely the arising stream of theorizing on the topic of “nondisruptive creation” (i.e., creation of new markets where none existed before and, in doing so, fostering economic growth without a loss of jobs or damage to other industries, enabling business and society to thrive together, Kim and Mauborgne, 2023). This research puts forward that incumbents do not necessarily need to perish – they can become complementors in an ecosystem disrupted by outside ventures by strategically leveraging their control over the resources. In other words, it is an ecosystem that gets disrupted, not necessarily an incumbent belonging to that ecosystem. While the ecosystem value proposition becomes different, the incumbent can thrive, just in a different role. This phenomenon is very much in line with the thinking of Jacobides, MacDuffie, and Tae (2023), which moves from a dichotomic understanding of disruption (i.e., entrants against incumbent) to notion of Mark III – a relationship characterized by a much tighter connection between incumbents and new entrants. Creating an opportunity to a new dimension of interorganizational theorizing, this finding has three crucial implications on the extant theory. First, it points out the need to differentiate between levels of disruption. Disruptive innovation at the interorganizational level (e.g., Adner, 2021; Ansari et al., 2016; Kumaraswamy et al., 2018) can be understood as “nondisruptive creation” at the level of organization or individuals. For that reason, when researching disruptive innovation, researchers need to be careful not only about using the term in a way it was intended to be used (cf. Christensen et al., 2015), but also about referring to an appropriate level of level of abstraction. Followingly, contributions comprehensively mapping the disruptive innovation research landscape may be especially useful to steer the future research in a more rigorous direction. Second, this insight also it problematizes the use of the concept of industry in the context of ecosystems, including research on ecosystem-level disruption. As previously established, the emergence of ecosystems has indeed blurred the traditional boundaries of industries and markets (Adner and

Euchner, 2022). This point resonates especially well in the line of thinking proposed by Rita G. McGrath (2019), who encourages to lose the notion of the concept of industry and think about competition in terms of “arenas” – chunks of resources controlled by different stakeholders who have, in the words of Clayton Christensen “jobs to be done” (Christensen et al., 2016). Adopting this perspective, a company that “gets the job done” wins the customer, regardless the industry. For that reason, the most popular camera could be a mobile phone, biggest advertiser could be a search engine, and most used insurance might could be a software platform provider. In their future work, researchers hence need to be careful about using the concept of an industry in a correctly applicable way. Furthermore, this ultimately also opens up an opportunity to revisit the boundary conditions of industry as a concept and determine its meaning in the light of the so called “ecosystem economy” (Jacobides, 2019). Third, this finding opens door for exploring a new type of incumbent response strategies – complementarity instead of resistance.

In terms of managerial implications, based on the strong interest of various industry reports (e.g., Aguiar et al., 2021) it is believed that the article is highly relevant for disruptive leaders as well as defending incumbents. Facing the rigidity of and incumbent ecosystems requires the heterogeneous entrants to align towards common goal of frame transformation. In doing so, they also face long-standing legacies (cf. Wessel et al., 2016), which need to be tackled in a systematic manner. This article can thus be leveraged as a comprehensive overview of the key aspects of how to exercise trust-building to challenge the status quo within arena of operation. First, managers of entrants can interpret and employ the developed framework to facilitate coping with issues of similarly cooperative character. This point aptly resonates especially in highly regulated sectors, where entrants need to enable the institutionalized change and legitimize their innovations through leveraging public interest (Gurses and Ozcan, 2015). Second, managers of incumbents may choose to use this piece as an inspiration to focus

on finding relevant roles in new ecosystems, rather than defending positions in the slowly declining linear value chains. Days of the “fight for the biggest slice” seem to be over, thus rewiring the mindset to bake a pie that everyone can munch on comes as a critical asset. Such a change in attitude may not only reduce the incurred opportunity cost but can also help to develop increasingly informed and resilient strategies, hence raising the level of competition and maximizing the quality of the resulting outcome for the society as such. In the same breath, it is however necessary to add that while poor management of trust exposes company to risk, too much trust may be highly counterproductive also (Wu, 2014). For that reason, it is always necessary to avoid the so called “blanket trust” and remain critical and reflecting.

Naturally, this article suffers from several limitations. First and foremost, it is built on a single-case study design using an abductive method of qualitative enquiry, which aims to understand a process by making sense of an extensively rich dataset collected in a rapidly evolving environment. Therefore, besides the inherent issues with high contextuality and limited geographical generalizability, the findings may also suffer from drawbacks related to temporality. In line with Kumaraswamy, Garud and Ansari (2018), the further contributions aiming to develop understanding how entrants use trust to mitigate tensions with incumbents in ecosystem-level disruption might consider pursuing processual explanations. Relatedly, while being fit for the purposes of this article, a single-case study research design is incapable of capturing variance, especially in regard to comparisons in terms of similarities and differences. As extensively elaborated in section 3, while developing a broadly generalizable theory lies beyond the intended scope of this study, the case (i.e., a bounded phenomenon of entrants using trust to mitigate tensions with incumbents in ecosystem-level disruption) could benefit greatly from being studied by a method rooted cross-case analysis and the in the logic of replication (e.g., Eisenhardt, 1989). In the same vein, the case could be also studied from the perspective of incumbents, contributing to the streams researching disruption in regard to

response strategies (e.g., Chandy and Tellis, 2000; Leifer et al., 2000; Macher and Richman, 2004; Tripsas, 1997), interdependencies (e.g., Öberg, 2023), and disruption through complements (e.g., Adner and Lieberman, 2021; Jacobides et al., 2023). Additionally, the case could resonate as a phenomenon of interest for scholars focused on organizational dissonance (e.g., Latheef and Werner, 2013), especially in terms of institutional logic and identity.

Followingly, while trust is acknowledged as a factor playing a significant role in ecosystem-level disruption, this study does not provide evidence that would explain its effects in terms of quantitative measures. To allow for unveiling further nuances of the studied phenomenon, future research may thus consider using this contribution as a springboard for designing a study that would complement the findings through application of a suitable quantitative approach. The findings also provide marginal knowledge on the role of trust in the process of frame transformation (Goffman, 1974), while highlighting the importance of frame transformation in the process of ecosystem-level disruption as such. However, this issue has been touched upon only superficially; therefore, due to the broad relevance of the framing theory, bringing the concept of trust in the literature focused specifically on reframing can yield results interesting in a variety of research fields.

Finally, and importantly, the adopted level of analysis results in an incapacity of the study to account for different organizational nuances. Exploring the interaction between two respective homogeneous groups of actors through the lens of disruption (i.e., set of entrants and set of incumbents) results in filtering out some of the salient intricacies (e.g., differences in business models, differences in component complementarity). Despite being beneficial in terms of feasibility and parsimony, such a design choice fails to account for some of the key organizational aspects and limits the detail of the distilled insights. For that reason, it would be highly recommended to combine the proposed multi-case approach with a sampling method

purposefully designed to unveil which specific organizational factors impact the developed conceptual framework and how.

References – Article 3

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Conclusion

In its essence, this collection of articles is grounded in the perspective that to be successful in their endeavours, companies rely on their ability to manage their dependencies with other organizations. Reflecting the widespread adoption of new business models enabled by information and communications technologies, companies started to organize themselves in ecosystems. Characterized by varying degrees of multi-lateral, non-generic complementarities that are not fully hierarchically controlled, the emergence of ecosystems has shaken the business landscape, leaving the actors vis-à-vis a variety of unprecedented challenges affecting different aspects of their operations. In light of this actuality, this dissertation set out to answer the research question “What challenges do organizations face in navigating ecosystems and how can they tackle them?”. It had done so by the means of three individual articles. More specifically, delving into the realms of open innovation, business models, and disruptive innovation, each of the articles respectively focuses on one of the said challenges and provides a detailed insight into how organizations can tackle them. A detailed summary of these contributions is provided in the following sub-sections.

1. Article 1

1.1. Summary of findings

Published in the *Industrial Marketing Management* journal as “Governing the Interplay of Inter-Organizational Relationship Mechanisms in Open Innovation Projects Across Ecosystems” (Aagaard and Rezac, 2022), Article 1 answers the research question “How do orchestrators govern the interplay of interorganizational relationship mechanisms in open innovation projects across ecosystems?”. By the means of a multiple-case study of large multinational technology-intensive companies, it proposes a sequential, closed-loop model consisting of three sequential phases of interorganizational relationship (IOR) governance in

business-to-business (B2B) open innovation (OI) projects across ecosystems – ex-ante, co-development, and ex-post (Gurca et al., 2021; Majchrzak et al., 2015; Olander et al., 2010). Each of the phases can be respectively explained by different aggregated dimensions. The nature of these dimensions is determined by complexity and uncertainty; oscillations between complementarity and substitution of IOR governance mechanisms; and a variety of factors determining the governance success of orchestrators.

- **Evaluating Prerequisites.** Initially, companies assess each other, balancing relational governance's dominance with contractual governance to protect against misuse of shared knowledge (Cheah and Ho, 2021). This stage often involves network effects and tailoring governance mechanisms to ecosystem actors (Gesing et al., 2015; Roehrich et al., 2020; Steils et al., 2021).
- **Establishing Foundations:** Contractual governance takes precedence here, laying the groundwork for developing relational governance. This phase highlights the differences in governance approaches and organizational forms (Temel and Vanhaverbeke, 2020).
- **Shifting Mindset.** Dominated by relational governance, this phase involves managing knowledge-sharing tensions and developing capabilities for co-creation (Markovic et al., 2021; Bocquet and Mothe, 2015; Cohen and Levinthal, 1989; Dattée, Alexy, and Autio, 2018; Gurca et al., 2021; Rouyre and Fernandez, 2019; Temel and Vanhaverbeke, 2020; Yap and Rasiah, 2017). Dysfunctionalities can arise from management's insufficient engagement or poor operationalization at the team level (Kim et al., 2015; Tang et al., 2021).
- **Jointly Creating and Capturing Value.** This dimension sees a compensational interplay between contractual and relational mechanisms. Trust becomes crucial for

innovation, highlighting the OI paradox where formal bonds are secondary (Dahlander et al., 2021; Du, 2021). Dysfunctions arise from the intangibility of outcomes and fragility of relational mechanisms (Shen et al., 2020; Dyer and Singh, 1998; Malhotra and Murnighan, 2002; Poppo et al., 2008; Zhou and Xu, 2012; Cannon et al., 2000).

- **Launching Interorganizational Spinoffs.** Finally, actors decide on scaling the relationship either through a separate legal entity or maintaining a non-hierarchical structure with dominating relational governance (Shah, 2006; West, 2003; West and O'Mahony, 2008; Du, 2021; Gesing et al., 2015).

Overall, the study reveals that IOR governance interplay varies across different OI B2B project phases and environments (Cao and Lumineau, 2015; Olander et al., 2010). It is crucial for firms to manage the functionalities and dysfunctions of contractual and relational mechanisms for successful value creation and capture (Howard et al., 2019; Huber et al., 2013; Carson et al., 2006; Klein-Woolthuis et al., 2005). As elaborated in the following section, the findings extend beyond connecting existing theories, unveiling new insights into the governance of OI projects in ecosystems.

1.2. Summary of contributions

Overall, this study contributes to four theoretical research streams:

- **Project-Level Perspective on OI.** This paper shifts the focus from the firm-level to the project-level in studying OI, addressing a gap identified by previous research (Bagherzadeh et al., 2021; Markovic and Bagherzadeh, 2018). This approach allows

for an examination of the varying nature of openness in heterogeneous projects (Lee et al., 2019; Majchrzak et al., 2015) and offers new insights into the governance of OI projects. It builds on Chesbrough and Bogers (2014) to understand the interactive nature of OI projects and contributes to West and Bogers (2014) by exploring “coupled OI” in ecosystems where coopetition occurs.

- **Dynamic View of B2B OI Management.** This paper advances understanding of how B2B OI management evolves across different project stages (Markovic et al., 2021). It delves into tension management (Bagherzadeh and Brunswicker, 2016; Bogers, 2011; Rouyre and Fernandez, 2019), exploring the balance between formality and informality in organizational actions. This responds to the discussions by Gurca et al. (2021) and addresses calls from West (2014) and Teece (1986, 2006) for more research on OI at an interorganizational level. The paper also demonstrates how firms apply selective openness strategies to balance their goals with community engagement, contributing to the literature on IP rights and community governance (Shah, 2006; West, 2003; West and O'Mahony, 2008).
- **Interplay of Contractual and Relational Governance in IOR.** Addressing a gap in knowledge (Benítez-Ávila et al., 2018), this paper provides new insights into how contractual and relational governance interplay differently across five dimensions of OI in various industries (Olander et al., 2010; Cao and Lumineau, 2015). It agrees with Roehrich et al. (2020) on the differing governance expectations of organizations with varied structures and objectives, and sheds light on how OI project phases influence the contract-relational governance interplay, responding to Howard et al. (2019).
- **Governance in OI Ecosystems.** Finally, this paper contributes to the understanding of governance in dynamic OI ecosystems (Autio and Thomas, 2018; Shipilov and Gawer,

2020; Tiwana et al., 2010). It expands upon West (2014) and Adner (2006), showing how actors manage IOR in self-organizing ways within ecosystems where hierarchical control is minimal (Bogers et al., 2017; Brunswicker and Almirall, 2015; West, 2003). This addresses the call for dynamic theories on how open governance affects the innovation process (Bogers et al., 2017)

In addition to the theoretical contributions, the study also provides implications relevant for managers. In particular, the model elucidates how large, technology-centric multinational corporations can effectively manage the dynamics of IOR mechanisms in OI projects across ecosystems. It can serve as a practical tool for orchestrators, aiding them in establishing appropriate governance structures, fostering collaborative processes, and developing suitable project infrastructures. Moreover, it can guide organizations in harmonizing the diverse interests of complementors towards a unified value proposition. Managers can use this model to assess the progress and determine the current stage of IOR governance in their ongoing OI projects, allowing for strategic reflection on future steps to achieve value co-creation and co-capture. Finally, the model can be employed as a “stop-go” framework. This ensures that all necessary preconditions are in place before advancing to subsequent stages, thereby laying a solid foundation for effective co-creation and co-capture of value.

1.3. Summary of limitations and avenues for future research

The study acknowledges several limitations and suggests potential areas for future research:

- **Informant bias.** The study relies predominantly on interviews with senior managers, who may suffer from a variety of biases, including self-selection bias or recall bias.

This level-specific perspective could differ from observations at other organizational levels. Based on that, to gain a more comprehensive understanding, future research could explore IOR governance across various organizational levels and contexts (including different industries and company sizes).

- **Methodological expansion.** While the study used documents to triangulate data for validation, the absence of a longitudinal approach limits the capacity of the work to enable for a fully-fledged process theorizing. Future studies could thus consider such methods to refine the proposed model and verify the proposed dynamics. Notably, the knowledge on the sequential phases of IOR governance in B2B OI projects could be explored further, particularly through diverse qualitative methods like ethnography and action research. Additionally, applying different theoretical lenses would likely provide a more holistic and nuanced understanding of the phenomenon, leading to more impactful managerial implications.
- **Trust, stakeholders, and context.** Trust (e.g., Fulmer and Gelfand, 2012), identified as a critical element in OI projects within ecosystems, presents a promising opportunity for future research in this context. Furthermore, adopting a stakeholder theory perspective, as suggested by Freeman (2010) and expanded by Freudenreich, Lüdeke-Freund, and Schaltegger (2020), could enrich the understanding of IOR governance, especially in terms of OI paradox (e.g., Du, 2021). Exploring the impact of digital transformation and examining ecosystems with varying characteristics, such as highly regulated or “walled garden” ecosystems (cf. Jacobides, 2020), would be insightful. Finally, it could be beneficial to explore the phenomenon across ecosystems orchestrated by organizations of different size (e.g., SMEs), maturity (e.g., startups), type (e.g., quadruple/quintuple helix actors), and structure (e.g., flat hierarchies).

2. Article 2

2.1. Summary of findings

Published in Journal of Business Models as “The Role of Privacy Protection in Business Models for Sustainability: A Conceptual Integration from an Ecosystem Perspective” (Rezac, 2022), Article 2 answers the research question “How can companies propose, create, deliver, and capture value while protecting privacy in a sustainable way?”. In particular, this synthesis paper contributes by identifying and bridging the gap between business models for sustainability (Schaltegger et al., 2016; Freudenreich et al., 2020) and contextual integrity (Nissenbaum, 2010), proposing a novel angle on how these theories intersect and impact one another in the context of ecosystems emergence. Besides formulating and underscoring the relevance of privacy protection in the context of sustainable business development, this article puts forward two propositions. First, it posits that the theory of contextual integrity needs to be revised. Second, it argues that the research stream on sustainable research modelling needs to pay more attention to the externalities caused by the increasing dependency of businesses on sharing and processing resources such as data and information. Ultimately, by linking two distinct yet interrelated and rigorously developed research streams, a heuristic framework for privacy and sustainability in business models is drawn up as a system of key considerations for managers to apply in assessing and planning business operations. This framework includes a foundational dimension for mapping privacy indicators and an assessment dimension with evaluation principles. As elaborated below, its primary aim is to establish key considerations for assessing sustainable privacy protection in business practices:

2.1.1. Mapping dimension components

- **Actors.** The mapping dimension begins with defining actors within a business context, considering their roles and impacts (Nissenbaum, 2010; Adner, 2017; Jacobides et al.,

2018; Bogers et al., 2019; Iansiti and Lakhani, 2020b). It involves differentiating stakeholders and understanding the nature of information they exchange (Rachels, 1975; Freeman et al., 2000; Freeman, 2010; Hörisch et al., 2014; Patala et al., 2016; Stubbs and Cocklin, 2008; Aagaard and Ritzén, 2020; Freudenreich et al., Schaltegger, 2020).

- **Relationships and Data Flows.** This part specifies data and information flows among actors, ensuring alignment with sustainability principles (Nissenbaum, 2010; Schaltegger et al., 2016; Freudenreich et al., 2020). It includes understanding stakeholders' interests, their co-creation of value, and compliance with social domain norms.
- **Purpose and Norms.** Identifying entrenched norms and the joint purpose of stakeholders becomes crucial for sustainable value creation (Bocken et al., 2014; Lüdeke-Freund and Dembek 2017; Schaltegger et al., 2017; Upward and Jones, 2015; Nissenbaum, 2010; Stubbs and Cocklin, 2008).

2.1.2. Assessment dimension components

- **Prima Facie Assessment.** This initial evaluation checks if the business model aligns with entrenched norms and sustainability principles. It examines the ethicality, fairness, and sustainability of relationships and data flows, also considering models related to new technologies.
- **Macro Evaluation.** This step evaluates the broader social, economic, and environmental impacts of the business model, including its effects on autonomy, freedom, and societal structures, in line with the theory of contextual integrity.

- **Contextual Evaluation.** This stage assesses the specific impacts of the business model within its operational context, ensuring adequate representation of stakeholder diversity and maintaining sustainability.
- **Decision and Recommendation.** In this final phase, a comprehensive judgment determines whether the business model aligns with sustainable privacy protection principles. If it does not, the article suggests making iterative modifications until the model achieves the appropriate balance in data flow and usage.

In summary, the article bridges the gap between the theory of contextual integrity and business models for sustainability. It offers a nuanced heuristic framework for evaluating the sustainability of privacy protection in business models from an ecosystem perspective. This framework aims to stand out for its comprehensive approach, considering both macro and micro-level factors and emphasizing proactive, ethical, and sustainable data and information handling in business practices.

2.2. Summary of contributions

The article asserts that for businesses to operate sustainably while handling data and information, they must view and protect privacy as a social value. The particular contributions could be then summarized as follows:

- **Extension of business model and privacy research.** This article unfolds the relevance of privacy protection for the stream of business model research focused on sustainable development in a way that is theoretically rigorous, complementary with the

stakeholder theory, and reflecting the emergence of ecosystems. This contributes especially to addressing the need for further research on specific sustainable value creation barriers identified by Lüdeke-Freund (2020), as well as extends the theory of business models for sustainability (Schaltegger et al., 2016; Freudenreich et al., 2020). Furthermore, the synthesis also contributes to the contemporary debate on privacy as a social value, mainly through identifying theoretically thorough avenue for adapting the theory of contextual integrity (Nissenbaum, 2010) to a social domain where value proposition, creation, delivery, and capture with and for multilaterally interdependent stakeholders involves transmission of data and information. in scenarios where stakeholder interdependence involves data transmission.

- **Theoretical synthesis and framework development.** The article synthesizes the theory of contextual integrity (Nissenbaum, 2010) with the theory of business models for sustainability (Schaltegger et al., 2016). It proposes a heuristic framework that operationalizes this synthesis. This framework guides businesses in aligning data flow and usage with privacy protection and sustainability principles.

Characterized by its prescriptive nature, the heuristic framework for integrating privacy and sustainability into business models may serve as a vital tool for practitioners to systematically evaluate and adjust aspects of their business model portfolio, ensuring both robust privacy protection and sustainable business practices. The underpinning synthesis then marks a significant departure from the standalone theories, especially by the fact that it postulates the mutual relationship between privacy protection and sustainability. In practice, this means that in ecosystems, a business model that involves transmission of data and information cannot – and should not – be considered sustainable unless it protects privacy.

2.3. Summary of limitations and avenues for future research

This article presents several limitations and avenues for future research. In essence, the synthesis calls for a more nuanced and empirical exploration of sustainable privacy protection in various business and social contexts, emphasizing the need for interdisciplinary approaches and deeper empirical research to understand and address the complexities of privacy in the digital age. The summary of these aspects is as follows:

- **Limitations rooted in meta-perspective.** While the current approach suffices for creating a conceptual "blueprint", it lacks depth in exploring the particularities of constituent fragments or thorough empirical discussion. For that reason, the synthesis should not be challenged only theoretically but also through further empirical research. This may be done by investigating how businesses actually attempt to sustainably protect privacy, how privacy-centric focus impacts the business model development of companies in different ecosystems, and what role privacy plays in the business models of incumbents.
- **Limitation in addressing unprecedented data-processing operations.** The current approach focuses on business models; therefore, it may not be sufficient for detecting data-processing operations that are not explicitly involved in activities directly related to business. Future research should explore how data and information use can be addressed in contexts where the actors use data and information without the ultimate goal of monetary value appropriation (e.g., public sector entities).
- **Integration of privacy research with business model literature.** The synthesis introduces privacy research into the business model literature, highlighting the need for

genuine interdisciplinarity under the current pandemic-influenced circumstances. This calls for stable theoretical foundations rooted in diverse research domains.

- **Theoretical revision of contextual integrity.** The article proposes revising the theory of contextual integrity, so it considers not just the flow of data and information but also their use.
- **Call for human-centric discussions.** This article ultimately posits that the future of democracy in digital society leans upon the efforts to move beyond the implicit tolerance of the chokehold imposed by the omnipresent centralization (cf. Hensmans, 2021). Considering the increasing dependency of businesses on data processing, the success of cultivating the underlying fabric of our society is directly related to the effectivity of privacy protection mechanisms. From the perspective of future research, the developed framework can be especially useful for constructing narratives regarding how the inevitable technological progress can be leveraged in ensuring ultimate equity and inclusivity in the age of digital transformation.
- **Opportunity in exploring the context of privacy-focused ventures.** A promising research avenue emerges within the realm of ventures that put privacy protection and social values as a keystone of their existence. Based on the proposition that privacy can be only protected when a business model is economically feasible, it is important to explore how can such entities become financially stable. What are the drivers and challenges of their efforts? What are the characteristics of their ecosystems and their relationship with the illustrated “oligopolies”? How do they interact with incumbents when entering established ecosystems? These questions could be studied particularly in arenas where the long-term quest of protecting privacy is outweighed by a goal of

immediate importance and effect (e.g., Grundy et al., 2019; Panch et al., 2019; Sharma and Bashir, 2020; Rezaei et al., 2021).

- **Regulating AI-based ecosystems.** The article argues that the current attempts to regulate AI-based ecosystems through consent-based rules and sanctions are unlikely to improve societal conditions. For that reason, it suggests that comprehensive studies acknowledging the social domain as a context may have an immensely informative effect on regulations.

3. Article 3

3.1. Summary of findings

Published in proceedings of the European Academy of Management Conference (EURAM) 2023 (Trinity College, Dublin) as “The Role of Trust in Ecosystem-Level Disruption” (Rezac, 2023), Article 3 is currently in the process of being developed into a fully-fledged publication. Answering the research question “How do entrants use trust to mitigate tensions with incumbents in ecosystem-level disruption?”, it unfolds in two phases – an exploratory pilot and an instrumental in-depth single-case study (i.e., the case being a bounded phenomenon of entrants using trust to mitigate tensions with incumbents in ecosystem-level disruption) with multiple embedded subunits of analysis (i.e., the subunits being the individual entrants representing particular roles within the UK insurtech ecosystem) (Stake, 2000; Yin, 2018). Resultingly, the study posits that that entrants indeed use trust to mitigate tensions with incumbents in order to achieve ecosystem-level disruption. To gain the trust of said incumbents, the entrants need to nurture it on two levels – with the established ecosystem and with customers. On both of the levels, the antecedents comprise of cognitive and affective

components. On the incumbent side, the entrants engage in signalling homogeneity and reframing innovation. On the customer side, the entrants take part in signalling legitimacy and reframing of the ecosystem's value proposition. The customer and incumbent trust simultaneously reinforce one another; therefore, the trust of customers plays a crucial role in gaining trust of incumbents and vice versa. The dynamics has been encapsulated within in a framework portraying the role of trust in ecosystem-level disruption. This framework comprises several key components:

3.1.1. Trust between entrants and incumbents

- *Signalling Homogeneity.* Entrants in the market signal their homogeneity with existing ecosystems to gain trust from incumbents (DiMaggio and Powell, 1983; Suchman, 1995). This involves constructing an isomorphic image to appear professional and legitimate. Insurtech, often seen as alien to traditional operations, necessitates entrants to establish common ground through successful collaborations. This process requires demonstrating investment backing and forming partnerships with established incumbents, sometimes in different domains, to gain credibility. The creation of these alliances often involves extensive negotiations and short-term compromises by entrants. Entrants must also avoid being perceived as opportunistic, requiring significant resource investment in educating incumbents and demonstrating operational reliability (Daymond et al., 2022). High transparency, alignment of values, and fostering individual cross-organizational relationships are crucial (Phillips et al., 2004). Entrants need to be upfront in their dealings to avoid misunderstandings in the trial-error nature of these partnerships. Initially project-based, successful collaborations can lead to incumbents delegating more responsibility to entrants.

- *Reframing Innovation.* Entrants aim to positively influence incumbents' emotions and attitudes towards innovation (Legood et al., 2022). They focus on demonstrating how innovation creates value and the necessity of sectoral advancement. This involves breaking down rigid value chains and showing the palpability of innovation benefits, using storytelling and expectation fulfillment (Garud et al., 2014; Bartel and Garud, 2009). Entrants must convey technology advantages in terms familiar to incumbents. As incumbents recognize the disadvantages of inertia and their lack of dynamic capabilities (Haftor and Costa, 2023), they begin to see the need for a symbiotic relationship with entrants. Trust-building also involves leveraging existing partnerships and demonstrating successful collaborations. The evolving ecosystem's trustworthiness can be nurtured through forums and associations (Thompson et al., 2018). However, without hierarchical governance, entrants face the challenge of aligning diverse actors towards a common value proposition (Shipilov and Gawer, 2020). This orchestration process may involve creating a sense of urgency or 'fear of missing out'. Ultimately, the ecosystem's value proposition must consider the external environment, including customer trust. Customer trust impacts incumbents' perceptions of entrants' professionalism and legitimacy and frames disruption as an opportunity (DiMaggio and Powell, 1983; Suchman, 1995).

3.1.2. Trust between entrants and customers

- *Signalling Legitimacy.* Entrants signal legitimacy to customers to overcome the liability of newness and lack of ecosystem identity (Stinchcombe, 1965; Singh et al., 1986). They focus on making customers recognize the new ecosystem value proposition as distinct yet reliable, aiming for customer adoption (Thomas and Ritala, 2022; Patvardhan et al., 2015). Strategic engagement in frequent interactions helps cultivate

distinctiveness and continuous value creation. This process involves creating products that generate more touchpoints, crucial in industries like insurance where customers might not immediately perceive the value. Entrants emphasize improved performance over incumbents and dedicate substantial efforts to demonstrate real use case proofs of concept (Aldrich and Fiol, 1994). They tackle information asymmetry by introducing flexible and data-driven business models. Acknowledging the present dominant designs, entrants must carefully deploy technology to ensure trustworthiness and focus on customer education.

- *Reframing Value Proposition.* Entrants aim to positively influence customer emotions to engage with novel offerings (Thomas and Ritala, 2022; Legood et al., 2022). This involves addressing customer distrust in the sector, often caused by incumbent behaviours, and incrementally improving the value proposition. Leveraging customer data, entrants make compromises to enhance the value proposition, gradually growing the customer base and increasing trust from underwriters. Sometimes, the improved services are so advanced that customers find them hard to believe, necessitating artificial integration of human elements into digital processes for reassurance. Selling white-labelled products through trusted companies helps overcome prejudices about legitimacy. Trust from incumbents is also essential; it creates perceptions of legitimacy and helps reframe the ecosystem value proposition, influencing customer engagement. However, lack of trust from incumbents can hinder market entry and development of products.

In conclusion, Article 3 presents a contemporary view of disruption, contrasting with the traditional firm-centric notion (Christensen, 1997). It suggests that in disrupting an established ecosystem, entrants might not need to completely displace incumbents. Instead, utilizing the

resources controlled by incumbents could be strategically beneficial for entrants (Ansari et al., 2016). This perspective aligns with the developing idea of “Mark III” (Jacobides et al., 2023), framing disruption as an opportunity for incumbents to reposition themselves, assume new roles, and remain relevant as complementors in the ecosystem. Ultimately, while the ecosystem undergoes disruption, incumbents who adapt can maintain their relevance.

3.2. Summary of contributions

The article offers theoretical contributions in several domains:

- **Bridging trust and disruptive innovation.** By the means of an exploratory pilot and an instrumental in-depth single-case study (i.e., the case being a bounded phenomenon of entrants using trust to mitigate tensions with incumbents in ecosystem-level disruption) with multiple embedded subunits of analysis (i.e., the subunits being the individual entrants representing particular roles within the UK insurtech ecosystem), this study constitutes a deep dive into a how entrants use trust to mitigate tensions with incumbents in ecosystem-level disruption. While doing so, the article integrates the domains of trust (Fulmer and Gelfand, 2012; Legood et al., 2023) and disruptive innovation (Christensen et al., 2015), addressing the entrant’s role in the “disruptor’s dilemma” (Ansari et al., 2016) and the related tensions (Snihur et al., 2018; Autio and Thomas, 2018; Dattée et al., 2018; Gurses and Ozcan, 2015).
- **Ecosystem-level perspective on disruption.** It contributes to the discourse on disruption at an ecosystem level (e.g., Cozzolino and Geiger, 2024), exploring the relationship between disruption and trust in the context of ecosystems (Cobben et al., 2022). Followingly, it posits that disruptive innovation should be considered a

collective dynamic process where the organizations shape and are shaped by the very environment in which they are embedded (Adner, 2006; Adner and Kapoor, 2010; Adner and Kapoor, 2016).

- **Broader theoretical relevance.** The cognitive component of creating trust with incumbents lies in signalling homogeneity – a concept inherent to institutional perspective (e.g., DiMaggio and Powell, 1983; Suchman, 1995) – the cognitive component of creating trust with customers draws a parallel to research on ecosystem legitimacy emergence (Thomas and Ritala, 2021). To illustrate, the article shows that facing customers, the entrants need to cope with the lack of ecosystem identity and overcome the liability of newness. Furthermore, similarly to the said emergence, the customers also play a legitimating role, and the entrants also need to stir up a collective action leading to adoption of the new value proposition. Finally, it has been discovered that entrants disrupting an established ecosystem also need to extensively engage in discourse, establish normative legitimacy, and build up collective identity. This suggests wider applicability of the findings and creates an opportunity for exploring the similarities, differences, and interactions between processes of collective action in emergence of an ecosystem versus disruption of an ecosystem that is well established.
- **Adoption of multireferent approach towards trust.** Following the multireferent framework by Fulmer and Gelfand (2012) (i.e., differentiating between trust at a level of analysis and trust in a referent), this article argues that in order to explain the role of trust between entrants and incumbents in ecosystem disruption (i.e., trust between organizational referents studied at interorganizational level), it is necessary to understand how entrants (i.e., organizational referents) build trust with customers (i.e., interpersonal referents). This demonstrates that insight in the role of trust in an

ecosystem-level phenomenon is achieved by examining its antecedents and consequences across different referents.

- **Adoption of multilevel and unidimensional approach towards of trust.** The reinforcing dynamics of customer and incumbent trust in ecosystem-level disruption concurs the argument that the antecedents can be seen as quasi-isomorphic and their cross-fertilization across the levels of analysis offers unique insights which result in otherwise unattainable findings (Fulmer and Gelfand, 2012). The study further supports the view of trust as unidimensional construct that is based on the interplay of cognition and affect and offers an insight into the dynamics of their interplay (Legood et al., 2023).
- **Nondisruptive creation and the concept of industry.** The article highlights the emerging concept of “nondisruptive creation” (Kim and Mauborgne, 2023), where new markets are created without harming existing industries, allowing both business and society to prosper. It suggests that in a disrupted ecosystem, incumbents don't necessarily fail but can adapt by becoming complementors, leveraging their resource control. This aligns with Jacobides, MacDuffie, and Tae's (2023) view, which shifts from a binary perspective of disruption (entrants vs. incumbents) to a more interconnected relationship coined as “Mark III”. Consequently, in the same vein, the article has three key implications for existing theories. Firstly, it highlights the need to differentiate disruption levels, recognizing that what is disruptive at the interorganizational level might be "nondisruptive creation" at the organizational or individual level (Adner, 2021; Ansari et al., 2016; Kumaraswamy et al., 2018; Christensen et al., 2015). Secondly, it challenges the conventional concept of industry in the context of ecosystems (Adner and Euchner, 2022; McGrath, 2019; Christensen et al., 2016), supporting a shift to thinking in terms of "arenas" where success is

determined by meeting customer needs, irrespective of industry boundaries. This necessitates a reevaluation of the industry concept in the evolving ecosystem economy (Jacobides, 2019). Thirdly, it proposes exploring new incumbent response strategies, favouring complementarity over resistance.

Based on a variety of industry reports (e.g., Aguiar et al., 2021) the article is also relevant for managers of disruptive leaders as well as defending incumbents. Facing the rigidity of and incumbent ecosystems requires the heterogeneous entrants to align towards common goal of frame transformation. In doing so, they face legacies (cf. Wessel et al., 2016) that require to be systematically dismantled. This article can serve as an overview of the key aspects that should be considered in leveraging trust-building to challenge the status quo. On the one hand, entrants can employ framework to cope with cooperative issues. This could especially resonate in highly regulated sectors, where entrants need to enable the institutionalized change and legitimize their innovations by leveraging public interest (Gurses and Ozcan, 2015). On the other hand, incumbents can use the framework to take the ownership of effective strategic repositioning.

3.3. Summary of limitations and avenues for future research

The study acknowledges several limitations and suggests potential areas for future research:

- **Single-Case Study Design and Contextuality.** The article adopts a single-case study design using an abductive method of qualitative inquiry, aiming to understand a process by making sense of an extensively rich dataset collected in a rapidly evolving environment. Therefore, besides the inherent issues with high contextuality and limited geographical generalizability, the findings may also suffer from drawbacks related to

temporality. Based on this, in line with Kumaraswamy, Garud and Ansari (2018), the future research might consider pursuing processual explanations. Relatedly, while being fit for the purposes of this article, a single-case study research design is incapable of capturing variance, especially in regard to comparisons in terms of similarities and differences. The case (i.e., a bounded phenomenon of entrants using trust to mitigate tensions with incumbents in ecosystem-level disruption) could, therefore, benefit from being studied by a method employing a cross-case analysis and replication (e.g., Eisenhardt, 1989). Furthermore, the case could be suitable for studying from the perspective of incumbents, contributing to the streams researching disruption in regard to response strategies (e.g., Chandy and Tellis, 2000; Leifer et al., 2000; Macher and Richman, 2004; Tripsas, 1997), interdependencies (e.g., Öberg, 2023), and disruption through complements (e.g., Adner and Lieberman, 2021; Jacobides et al., 2023). Finally, the case could constitute a fitting phenomenon for scholars focused on organizational dissonance (e.g., Latheef and Werner, 2013), especially in terms of institutional logic and identity.

- **Absence of quantitative measures.** This article acknowledges trust as a factor playing a significant role in ecosystem-level disruption; however, it does not provide evidence that would explain its effects in terms of quantitative measures. Future research may thus consider leaning towards positivism and complement the findings through the application of a suitable quantitative approach.
- **Limited insight in terms of frame transformation.** The findings provide limited knowledge on the role of trust in the process of frame transformation (Goffman, 1974), and highlight the importance of frame transformation in the process of ecosystem-level disruption. This matter, however, has been regarded only in a sweeping manner. For

that reason, discussing the concept of trust in the literature focused specifically on reframing can yield results interesting in a variety of research fields.

- **Limitations inherent to interorganizational perspective.** The adopted level of analysis results in a limited capacity of the article to fully reflect the different organizational nuances of the case. Exploring the interaction between two homogeneous groups of actors through the lens of disruption (i.e., set of entrants and set of incumbents) results in leaving out some of the salient intricacies outside the scope of the study (e.g., differences in business models, differences in component complementarity). Despite being beneficial in terms of feasibility, parsimony, and breadth, such a design choice fails to account for some of the key organizational qualities and, essentially, curbs the depth of the insights. For that reason, it is highly recommended to combine the proposed multi-case approach with a sampling method designed to unveil which specific organizational factors impact the developed conceptual framework, and how.

References – Conclusion

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Appendices

Appendix 1 – Declaration of co-authorship

Full name of the PhD student: Fabien Rezac

This declaration concerns the following article/manuscript:

Title:	Governing the interplay of inter-organizational relationship mechanisms in open innovation projects across ecosystems
Authors:	Annabeth Aagaard, Fabien Rezac

The article/manuscript is: Published Accepted Submitted In preparation

If published, state full reference: Aagaard, A. & Rezac, F. (2022). Governing the interplay of inter-organizational relationship mechanisms in open innovation projects across ecosystems. *Industrial Marketing Management*, 105(2022), pp. 131-146. DOI: [10.1016/j.indmarman.2022.06.003](https://doi.org/10.1016/j.indmarman.2022.06.003)

If accepted or submitted, state journal:

Has the article/manuscript previously been used in other PhD or doctoral dissertations?


No Yes If yes, give details:

The PhD student has contributed to the elements of this article/manuscript as follows:

- A. Has essentially done all the work
- B. Major contribution
- C. Equal contribution
- D. Minor contribution
- E. Not relevant

Element	Extent (A-E)
1. Formulation/identification of the scientific problem	C
2. Planning of the experiments/methodology design and development	C
3. Involvement in the experimental work/clinical studies/data collection	B
4. Interpretation of the results	B
5. Writing of the first draft of the manuscript	B
6. Finalization of the manuscript and submission	B

Signatures of the co-authors

Date	Name	Signature
14/07/2022	Annabeth Aagaard	

Date: 14/07/2022



Signature of the PhD student

Appendix 2 – Overview of entrant informants pseudonymized pilot sample

Entrant	Informant position	Product / service
1	CEO and Co-Founder	Open-source platform for content creators to manage, protect and license their work
2	CEO	Online identity management platform for creatives
3	CEO	Digital health solution utilizing machine learning to eliminate stress-related diseases
4	Coordinator	Privacy focused community management software
5	Founder	Independent, privacy focused email provider
6	CEO and Board Member	Consented data exchange platform using centralised and decentralised technologies
6	Co-Founder, CTO and Board Member	Consented data exchange platform using centralised and decentralised technologies
7	Founder	Distributed system for storing and accessing files, websites, applications, and data.
8	Founder	Data driven diabetes management
9	Founder	Open-source browser
10	Co-Founder and CEO	Contextual advertising
11	Founder and CEO	Open-source wiki platform
12	Founder and CEO	Mobile platform as a service for high-value communities and ecosystems
13	Co-Founder	Password management software

Appendix 3 – Overview of disruption facilitator informants – pseudonymized pilot sample

Facilitator	Position	Focus
1	Director of Strategy	Internet-pioneering foundation contributing to open information society
2	Project Manager/Project Lead/Director of Communities	Next Generation Internet project focused on decentralised technologies / funding facilitator
3	Project Coordinator / Project Manager	Next Generation Internet project focused on entrant mobility / funding facilitator
4	Programme Manager	Next Generation Internet project focused on establishing EU-US complementarities
5	Project Coordinator / Principal Researcher	Next Generation Internet project tasked to advise European Commission set out a strategy, as well as a policy and research agenda / innovation agency for social good
6	Project Manager / Project Coordinator	Next Generation Internet project focused on business acceleration
7	Project Coordinator / R&D Consultant	Next Generation Project focused on personal data portability / innovation consultancy

Appendix 4 – Overview of innovation expert informants – pseudonymized pilot sample

Position	Company	Focus
Head of Insurance and Risk Management	Wolt	A food delivery company specializing in real-time logistics optimization
Director of Sales	WasteHero	Waste management platform for local governments and waste collectors
Growth Product Manager, Performance Consumer Sales	Avast	Multinational cybersecurity software company
Ex-CEO	Major global fintech	Major global fintech disruptor
Head of Ventures	Grundfos	Global water technology company
Chief Innovation Officer	Deloitte CE	Leading global provider of audit and assurance, consulting, financial advisory, risk advisory, tax, and related services
Director, Head of Architecture, Data and Analytics / Non-Executive Director	FLSmith/JSC Agrobank	Provider innovative engineering, equipment and service solutions to the global mining and cement industries impact / joint-stock commercial bank

Appendix 5 – Final interview guide (insurtech)

STRATEGIC CHALLENGES IN INSURTECH

1. **To start off, could you give me a brief introduction to the story of your company?**
2. **How would you categorise yourself within the industry?**
3. **How would you describe your business model?**
 - Go through the different dimensions
 - Compare to traditional insurance (e.g., B2B2C/ embedded insurance)
 - Communication of value proposition
4. **How would you describe your go-to-market strategy?**
 - Competitors
 - Coopetition
5. **How are technologies changing insurance industry?**
 - General perspective - what is different compared to traditional insurance
6. **How does an insurance ecosystem look like?**
 - Actors and your position
 - Modularity, dependencies, and complementarities
 - Ecosystem value proposition
 - Dynamics
7. **How do you collaborate with other organizations to create value?**
 - Differentiate between entrants and incumbents
 - On what basis – why?
 - Dynamics
8. **How would you reflect on the key challenges in disrupting the insurance industry/ecosystem?**
 - Dynamics of disruption
 - General challenges in ecosystem orchestration (e.g., no hierarchy, no “keystone” actor, collective action)
 - Disruptor’s dilemma
 - Culture and mindset
 - Education
 - Knowledge flows and IP
 - Contractual and relational governance
9. **How important is trust in your business and why?**
 - Differentiate between end user (i.e., customer) and interorganizational (i.e., incumbents)
 - Role of trust (why important, e.g., legitimacy)
 - What constitutes trust (affective and cognitive base)
 - Creating and maintaining trust – explore dynamics
 - Antecedents and consequences
10. **How does type of investment influence the behaviour of insurtech?**
 - Pivoting

11. How and why do you share data across organizational boundaries?

- Challenges in the interoperability of infrastructures within/outside the insurance industry
- Challenges in data standardization within/outside the insurance industry
- Reluctance of customers/partners

12. How do you approach privacy protection?

- Privacy paradox
- Data ownership
- Effectiveness of informed consent
- Personalisation/convenience balance
- Third-party data aggregators

13. What is the role of AI in insurtech?

- Redefined business models
- Increased productivity and quality of touchpoints
- Challenges
- Predict and prevent
- Social and ethical risks
- Quality of data

14. How will the insurtech market develop in the next decade?

- Pandemics
- Current trends
- Distribution, claims, underwriting, pricing, ...

15. If you had a magic wand, what would you change in the industry?

16. What should be the key take-aways from the current state of insurtech/have we missed anything interesting?

17. For the sake of research validity, I aim to interview at least 3 people in each company. Would you connect me with some of your colleagues that would be willing to speak with me on this topic?

- Possibility of asking clarifying/additional questions

* Prompting notes in grey

Appendix 6 – In-depth case study data structure

