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Fostering conditions for digital entrepreneurship: The role of institutional entrepreneurs in driving FinTech ecosystem development

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ABSTRACT

This paper explores the role of institutional entrepreneurship in developing Digital Entrepreneurial Ecosystems (DEE). With much of the literature on DEE focused on organisational-level analysis, there is a need for further research that includes system-level analysis, and specifically research that explores how ecosystem actors support Digital Entrepreneurship (DE) by facilitating adaptation of the institutional environment. We analyse a single longitudinal case study of the Danish FinTech ecosystem, a DEE that developed in the context of a traditional, highly regulated industry and a turbulent global FinTech scene. FinTech DEEs have emerged across the world as a response to a global reshaping of financial institutions that resulted from the global financial crisis and ongoing technological shifts. We use this case to explore two questions: "what institutional forces influence the development of the DEE?", and "how do institutional entrepreneurs facilitate institutional changes to develop a DEE?" We find the development of the Danish FinTech DEE was enabled and shaped by changes to institutions that support: (i) new collaboration dynamics and mechanisms, particularly between incumbent firms and start-ups, (ii) adaptations to the regulatory framework, and (iii) the development of global connections. Institutional change required collective efforts, depending on different institutional entrepreneurs at different times. Neutral leadership of institutional entrepreneurs became crucial for institutional change. Furthermore, both system and organisation-level agencies influenced institutional change during the development of the DEE. As such, this study contributes to a better understanding of DEE development and, therefore, the conditions that foster DE in the FinTech field.

1. Introduction

Digital technologies have (disruptively) transformed many industries (Evers et al., 2023), leading to a new era for entrepreneurship, altering industrial dynamics and becoming a key driver of regional industrial renewal and economic growth (Gong et al., 2022; Lamine et al., 2023; Sussan and Acs, 2017). Technological advancements and extensive applications of digital technology have allowed entrepreneurs to enter mature industries with new forms of innovation (Nambisan, 2017). Frequently, dominant incumbent firms in mature industries, which are established firms usually constrained by legacy business models, need to reconfigure and renew their resources and operations and form new collaborations to respond to technological development (Simsek et al., 2024; Sund et al., 2021). Digital technologies also require non-firm industry actors, such as governments and industry support organisations, to respond to the emerging new industry dynamics and the disruption to how value is created and captured (Gazel and Schwienbacher, 2021; Simsek et al., 2024).

FinTech is widely considered as a set of disruptive digital technological innovations in the financial services industry across the world (Takeda and Ito, 2021). It gained momentum after the 2008 global financial crisis, resulting in industry-wide system-level changes (Honecker, 2024; Palmié et al., 2020). The FinTech scene has been marked by technological waves that generate a turbulent scenario requiring new entrepreneurs, incumbents and policy-makers to constantly adopt new practices and to collectively develop strategies to support entrepreneurs and firms navigating uncertain contexts (Kowalewski and Pisany, 2023; Palmié et al., 2020). The FinTech

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study approach. We chose the case study methodology as it is suitable for responding to "how" questions and performing investigations that consider the influence of contextual characteristics on the observed phenomenon (Yin, 2018). Moreover, the case study methodology has been identified as a necessary and appropriate approach to investigating both our theoretical topic (Benner, 2024; Uyarra and Flanagan, 2022) and our empirical research context (Mention, 2021).

We study the role of institutional entrepreneurs in changing institutions to drive the development of a high-performing Nordic FinTech Ecosystem in Europe, located in Denmark (ConnectPay, 2024). The Danish FinTech DEE emerged as a response to global advances in FinTech and internal pressures on incumbents (Rainmaking Innovation and Oxford Research, 2015). The context showcases particular challenges and opportunities that we present in this study. Yet, several discussions align this empirical context with the global FinTech scenario (Copenhagen Fintech, 2024; Ernst &Young & Copenhagen Fintech, 2020; Ernst & Young, 2021), making it a suitable case to make a broader contribution.

Following best practices for case study research (Piekkari et al., 2010), the case selection was further based on two criteria. First, given the study's goal, we sought a case of a FinTech digital entrepreneurial ecosystem in which, a priori, it appeared that the actions taken by ecosystem actors had influenced changes in formal institutions (e.g., regulations) and informal institutions (e.g., networks and culture). Second, we needed access to both secondary data on the development of the ecosystem and primary data on actors' perceptions and actions, supporting interpretations of cause-and-effect relations.

3.2. Data collection

We started our data collection by searching for secondary data that would give us a general overview of the case. The richness of secondary sources found in the empirical context allowed us to count on several types of materials, such as reports, videos, podcast interviews, government meeting minutes, and social media content. The main secondary data sources are described in Table 1.

While gathering initial knowledge from secondary data, we identified a first pool of potential interview participants. Given the criticism that the institutional entrepreneurship literature has overly explored institutional entrepreneurs as heroic figures, we followed recommendations to avoid such pitfalls (Hardy and Maguire, 2017) and sought to take different perspectives by focusing on diverse ecosystem actors to enable a broader view of collective change efforts. Our initial sample, therefore, included influential actors, FinTech entrepreneurs, researchers, and government agents mentioned in the documents analysed. This approach configured an initial purposive sample (Etikan et al., 2015). While conducting the initial set of interviews, we applied a snowball sampling technique (Berthod et al., 2016), where we asked the participants to suggest other ecosystem representatives who could be interviewed. Given the goal of our study, our primary focus was on investigating the actions of the organisations we could characterise as institutional entrepreneurs and the perceptions of their representatives. Our study draws on interviews with 14 separate participants (17 interviews in total), as summarised in Table 2, conducted between December 2022 and November 2024. All interviews were recorded and later transcribed. For confidentiality reasons, the names of participants are omitted, and organisations are classified by type. We supplement the primary data from interviews with two sets of observations (Bell et al., 2022) reported as field notes made by the first author: (i) notes from a three-day period visit to the main co-working space dedicated to supporting FinTech start-ups and the ecosystem community (November 2022), and (ii) notes from participation in the primary Nordic FinTech conference (September 2024).

Table 1
Secondary data sources.

Type	Year(s)	Title	Author(s)
Report	2015	CPH FinTech Hub - Study and recommendations for making Copenhagen a Nordic FinTech hub	Rainmaking Innovation and Oxford Research
Report	2020	Fintech partnerships	Ernest Young and Copenhagen Fintech
Report	2021	Copenhagen Fintech Successful cluster development	Ernest Young
Report	2024	Nordic Fintech Report 2024	Copenhagen Fintech
Meeting Minutes	2017–2023 (2)	Fintech Forum – Meeting Minutes (Referat) (several documents)	Danish Financial Supervisory Authority
Magazine	2022(2) - 2024(1)	Nordic FinTech Magazine (several editions)	Nordic FinTech Magazine, Editor in Chief - Cris Crespo
Blog post	2013	The Future of Money (in Denmark)	Chris Skinner for The Finansier
Blog post	2017	Insight: Singapore and Denmark sign fintech cooperation agreement	Ministry of Foreign Affairs of Denmark
Blog post	2019	Insight: Fintech is booming in Europe's most digital country	Ministry of Foreign Affairs of Denmark
Blog post	2021	Fintech Nation Denmark	Ministry of Foreign Affairs of Denmark
Blog post	2021	Fintech at The Crossroads: Realizing the Full Potential	Sebastian Kjaer for Nordic FinTech Magazine
Blog post	2021	Deciphering the Nordic Impact Fintech Map	Cris Crespo for Nordic FinTech Magazine Blog
Blog post	2023	Case: Successful Outreach at Singapore Fintech Festival Leads to Investment in Danish Start-Up	Ministry of Foreign Affairs of Denmark

3.3. Data analysis

We used a combination of thematic (Braun and Clarke, 2006) and narrative analysis (Colette and Lightfoot, 2004) to analyse our data. The study combines deductive and inductive methods as we start our investigation based on established theoretical frameworks and we also allow themes to emerge from our empirical data (Denis et al., 2010; Gliga and Evers, 2023). We followed recent recommendations for how to study agentic systemic industrial development processes that argue for the importance of understanding the case development over time, with the identification of main phases, critical junctures, key events, individual and collective actions (Sotarauta and Grillitsch, 2023, p. 91). We used the concept of opportunity spaces (Grillitsch and Sotarauta, 2020) to understand how actors perceived and harnessed opportunities for change.

Our analysis followed three steps. First, we focused on understanding the story of the Danish FinTech ecosystem. In this respect, we identified the main phases the ecosystem development, the contextual conditions related to time, space and agents' abilities that characterised the opportunity space in each development phase, and the major institutional change efforts that characterised each development phase. Second, we focused on understanding who did what. Thus, we identified the key organisational actors initiating and carrying out institutional change efforts (the institutional entrepreneurs) and the strategic actions they engaged in. In these first two steps, we coded the data into main themes related to the characteristics of the opportunity space, the focus of the institutional work in each phase, reflecting the main formal and informal institutions undergoing changes, and the strategic actions taken by the institutional entrepreneurs. Third, after understanding how the story unfolded, we focused on analysing the interplay between

Table 2
List of interview participants.

No	Informant role	Type of organisation	No of interviews	Length of the Interview (min)	Code
1	Co-founder/CEO	FinTech Firm	1	33	FinTech 1
2	Co-founder/Director	FinTech Firm	1	27	FinTech 2
3	Leader of department	FinTech Firm	1	25	FinTech 3
4	Co-founder/CEO	FinTech Firm	1	24	FinTech 4
5	Leader of department	FinTech Firm	1	25	FinTech 5
6	Co-founder/CEO	FinTech Firm	1	24	FinTech 6
7	Co-founder/Leader	FinTech Firm	1	39	FinTech 7
8	Professor in IT/Leader of department	University/FinTech Firm	2	23 (1st) and 43 (2nd)	University 1
9	PhD researcher with expertise in Banking	University	1	38	University 2
10	Mentor for FinTech Start-ups/Co-founder	Industry expert/FinTech Firm	2	54 (1st) and 47 (2nd)	Mentor 1
11	Executive Director	Non-profit Support Organisation	2	46 (1st) and 31 (2nd)	Ecosystem Representative 1
12	Leader of department – Corporate Partnerships	Non-profit Support Organisation	1	27	Ecosystem Representative 2
13	Leader of department - Community management	Non-profit Support Organisation	1	38	Ecosystem Representative 3
14	Financial Advisor	Government	1	50	Government 1

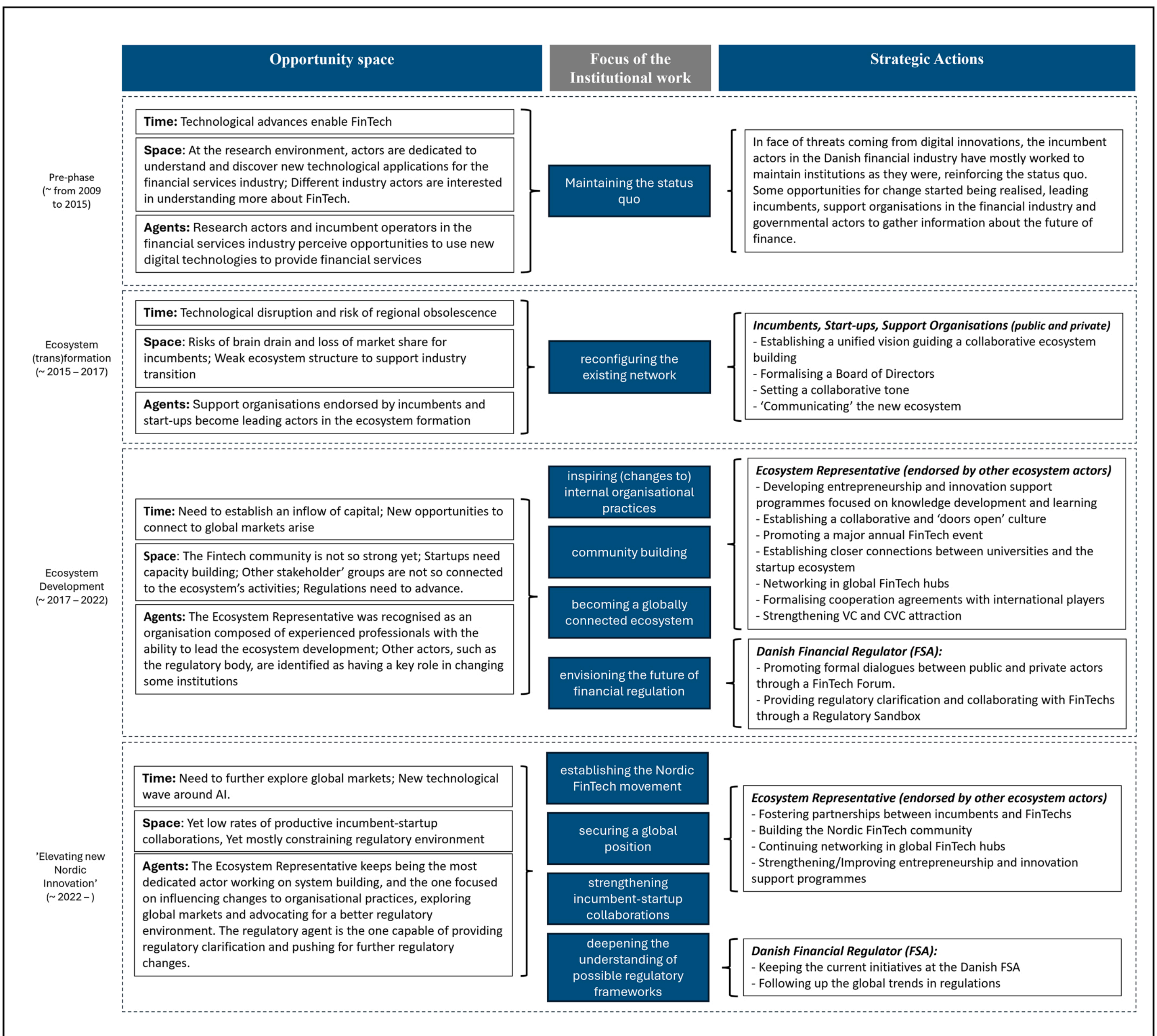

Fig. 1. Phases of Danish FinTech ecosystem development.

actors' agency to identify points of tension, alignment and the exercise of system and organisational-level agency.

4. Findings

We structure our findings by the development phase of the Danish FinTech DEE. For each stage of development, we present the opportunity space identified by the relevant actors, the focus of institutional change, and the actions taken to initiate these changes (Fig. 1).

4.1. Pre-phase: making sense of future industrial needs (circa 2009 to 2015)

Opportunity Space: The advent of digital technologies for financial services and their growing and accelerated rates of diffusion across the globe, derived from the global financial crisis, have disrupted the Danish financial industry and established incumbents (Rainmaking Innovation and Oxford Research, 2015). Concurrently, the possibility of Copenhagen becoming a global leader in research in digital technologies for financial services attracted support from academia. This resulted in the establishment, in 2009, of Copenhagen FinTech Innovation and Research (CFIR), a publicly funded collective Danish effort led by research representatives to advance knowledge about FinTech through research, innovation and education (Rainmaking Innovation and Oxford Research, 2015; Skinner, 2013).

CFIR was derived from the initiative of a group of visionary research actors who thought *"Denmark (and Copenhagen) was tier three [...] in terms of finance, [but] we can be in the centre of things because we just, you know, dig up. [...] not because it's impossible for others to do, but they're just not doing it. We [can] build effective collaboration with deep tech, [...] so we built up, actually, a major research centre on high performance [in finance]"* (University 1). Although CFIR relied on the participation of business actors, activities were clearly centred around research. Therefore, forming a FinTech ecosystem to support digital entrepreneurship and an industrial transition was not amongst its core of the activities during this phase. Yet, the presence of CFIR and the involvement of several financial industry actors, such as banks, laid the initial foundations for the establishment of a structured network that would support the FinTech ecosystem formation in the years to come (Ernst & Young, 2021). At the same time, some emerging digital-led ventures were gaining traction and pressuring traditional business models and institutions with their disruptive new offerings.

Focus of the Institutional Work and Strategic Actions. Incumbents initially sought to stop disruptions coming from new digital ventures as "*they worked to lobby the European Union and alliances [against them]*" (Ecosystem Representative 1). They acted as agents of structural maintenance (Jolly et al., 2020), focusing on maintaining the status quo (Fig. 1) by reproducing the existing institutional arrangement and keeping their privileged industry position by disregarding the importance of changes and countering pressure for change.

However, in the years following the formation of CFIR it was apparent that FinTech ventures were now part of the financial services industry. While these digital ventures had started challenging the status quo, leading to changes across the sector, other concerns arose about the future of jobs in the local market. The global FinTech scene was burgeoning, attracting skilled people from Denmark to work on tech-based companies abroad. Both Employee and Employer representatives of incumbent financial operators began to realise that there was a need for action: *"[in the end, the collective thought was] these new digital entities working in financial services, they will come no matter what. And either we could do nothing [...] and they will start providing services that will put the existing industry out of business or we could try to actually to work to have these new entities closer to Denmark, they start here, [...], it will also be new opportunities for people working in the existing sector, [there] will also be new innovation possibilities for the existing sector."* (Ecosystem Representative 1).

4.2. Phase 1: ecosystem (trans)formation (circa from 2015 to 2017)

Opportunity Space. By the end of 2015, a formal study was conducted to understand the potential for making Copenhagen a Nordic FinTech ecosystem. This study was commissioned by several actors, including the City of Copenhagen, the Financial Services Union of Denmark and the Danish Bankers Association (see the study in Rainmaking Innovation and Oxford Research, 2015). It was apparent that the incumbents needed to act in the face of the global turbulent FinTech phenomenon that was making the traditional financial sector in Denmark lag behind other bigger global financial centres embracing FinTech (Rainmaking Innovation and Oxford Research, 2015). It was time for a deeper understanding of what the new digital technologies could bring, to study the emerging consumers' needs and to work to reduce the gap between Denmark and other already established global FinTech ecosystems.

Regarding regional contextual conditions, the incumbents were already losing HR talent to international FinTech companies, and the local environment for FinTech start-ups was considered weak and underdeveloped. However, the overall institutional conditions for entrepreneurship and digitalisation were considered good, and the country held a high-quality-of-life reputation for keeping and attracting a qualified workforce. Within this scenario, the FinTech start-ups were natural change agents, pushing for the creation and transformation of institutions that would enable their development. Still, their capacity to mobilise other actors and resources towards change projects was limited. On the other hand, incumbents and the industry supporting organisations dedicated to the traditional financial sector held capabilities such as organisational legitimacy and access to resources that allowed them to act to harness and create opportunities strategically (Fig. 1). Their support for developing a FinTech ecosystem in Denmark facilitated the start of some institutional change endeavours, and hence, they also became institutional change agents (Ernst & Young, 2021).

Focus of the Institutional Work and Strategic Actions. Institutional work in this phase focused on reconfiguring the existing network (Fig. 1). Following the formal study's findings and recommendations, and under the leadership of the Financial Services Union of Denmark (Finansforbundet), industry actors, including the ones who commissioned the study, other FinTech start-ups and incumbent actors got together to set goals and strategic actions to develop a FinTech digital entrepreneurial ecosystem. The focus was on developing Copenhagen (and Denmark) as a globally connected and leading FinTech ecosystem in the European Nordic countries (Ernst & Young, 2021). The existing network (CFIR) established in the previous years supported the ecosystem formation: *"[the existing network – CFIR] then came as a point of where, actually, the main actors behind it, which was the financial sector in Denmark [...] they basically made an explicit decision, like, we need somebody who's coming, who's like, a startup type, [...] not necessarily, [...] exploring the research angle as a unique opportunity, [...] they decided they wanted to have somebody [...] who's working on establishing connections with other, you know, FinTech centres in the world and so on. [...] [they decided] it was more important to have the business side in place."* (University 1). In practical terms, the organisation that was once called CFIR would now operate under a different name – hereafter Ecosystem Representative Body (ERB), and represent the FinTech ecosystem, with closer attention to boosting the start-up movement.

The strategic actions taken (Fig. 1) were focused on developing a strong coalition of actors and creating alignment by establishing a collective vision for ecosystem development with the mindset that start-ups and the established incumbent actors operating in financial services were stronger together and would be capable of developing higher-level solutions by joining forces (Ernst & Young, 2021, pp. 10, 17). Therefore, to mobilise discussions and activities in a productive manner, the ERB worked to set a collaborative tone from the outset: *"[The ERB] contributed to a sober tone, and they quickly developed an agenda that focused on unity rather than division – with corporate-startup partnerships at the* *centre.*" (Jesper Nielsen, CEO of BEC Financial Technologies, as cited in Ernst & Young, 2021, p. 17). Moreover, a Board of Directors with representatives from different ecosystem stakeholders was established to keep productive discussions focused on a collaborative movement.

With the ecosystem's foundations in place, there was also a need to communicate the initial efforts and attract further attention to develop the start-up scene and the whole ecosystem. The ERB initially worked to clarify the movement and the ideas of FinTech. Furthermore, different structural components, such as some types of actors and resources, were lacking in the configuration of a fully formed and operating ecosystem (Interviewee 11). The ERB further worked to attract followers and generate momentum, creating a reinforcing effect (Baumgartinger-Seiringer et al., 2021).

It is important to mention that by looking at the system level, we identify the occurrence of more structural collective institutional change projects. Yet, other change projects initiated by specific firms or subgroups have occurred concurrently, targeting direct organisational benefits that would further influence other FinTech start-ups working in the same areas. For example, the start-up Lunar Bank was the first Danish FinTech to obtain banking and payments licences after the implementation of the European Union Payment Services Directive (PSD2). This process pushed for adaptations in different governmental processes and opened the way for other FinTech start-ups to follow. Given the highly regulated environment common to the financial industry, even the small changes and individual organisational achievements helped confer legitimacy to the regional FinTech movement and ignite further changes (Kumar et al., 2025).

4.3. Phase 2: ecosystem development (circa 2017 to 2022)

Opportunity Space. Following the ecosystem formation phase, the collective led by the ERB worked to implement the envisioned long-term framework. As activities developed, actors visualised a new opportunity space around global connections, boosting the start-up scene with a focus on capacity building and working towards improving regulations (Fig. 1). From the start, the FinTech ecosystem actors knew that the Danish context provided limited business opportunities in the financial field, as the internal market is too small. Besides, the constant changes to the digital technologies landscape increase uncertainty and turbulence in the global FinTech *agenda*, pushing local actors towards global integration. Consequently, the vision was to become a highly connected global FinTech ecosystem. It was now time to increase cooperation with global ecosystems. Moreover, there was an unexplored potential to strengthen connections to other Nordic countries and explore external markets as a stronger Nordic coalition (Interviewee 11, Interviewee 13). In addition, to support the growing innovation activities and FinTech start-ups forming in the region, there was a need to establish a strong inflow of capital (Ernst & Young, 2021).

In terms of regional contextual conditions, new FinTech start-ups were emerging, but the start-up 'scene' was still considered weak. Additionally, entrepreneurs needed capacity building, and the regulatory conditions for FinTech entrepreneurship development needed improvements (Interviewee 3, Interviewee 10, Interviewee 14). Interactions and collaborations between incumbents and fintech start-ups, and among ecosystem actors in general, were still incipient, culminating in a small community around FinTech. Further, although several actors had engaged in forming the ecosystem, their participation in its overall activities was not strong.

At this stage, two ecosystem agents came to the fore in driving changes: the ERB and the Danish Financial Supervisory Authority (hereafter Danish FSA), part of the Ministry of Industry, Business and Financial Affairs. These were the actors with the technical expertise and resources, including political capacity, to lead changes and development of the FinTech entrepreneurial and innovation scene and initiate dialogues for regulatory clarification and changes.

Focus of the Institutional Work and Strategic Actions. First, one focus of the ERB was on triggering changes in internal incumbents' and start-ups' organisational practices (Fig. 1) through open innovation processes by facilitating innovation through collaborations between start-ups and incumbents. To overcome diverse cognitive, pragmatic, and cultural organisational differences that could hamper the establishment of productive solution-driven collaborations between startups and incumbents, the ERB developed and implemented several programs to build capacity, promote knowledge sharing, and facilitate and intermediate relationships (Interviewee 1, Interviewee 6, Interviewee 7, Interviewee 12). Ultimately, the ERB expected both the incumbents and the start-ups to understand the other party's realities, to be prepared and trained to work together and to generate mutually beneficial outcomes (Ernst &Young & Copenhagen Fintech, 2020).

Another focus of the collective action was on strengthening the community (Fig. 1). Following the work of the forming coalition, in this second stage, the collaborative and 'friendly' community values and informal rules were reinforced, sustaining the collective work. The ERB worked as a guardian for the community's values and identity and, as a nonprofit association, held a neutral standpoint that facilitated its proximity to different ecosystem actors (Interviewee 13).

Lastly, the ERB led the efforts to establish a global network (Fig. 1). Alongside governmental authorities, they organised international missions and events to initiate relationships and formal cooperation with international ecosystems, such as those in Singapore. Such strategic actions helped establish commercial relationships, expanding opportunities for local start-ups and incumbents. Furthermore, the global FinTech scene has been constantly evolving as a result of economic uncertainty and technological waves, requiring businesses, governments and support organisations worldwide to unite efforts and foster collective learning. Therefore, beyond commercial reach, the establishment of global connections also resulted in the Danish FinTech ecosystem actors becoming exposed to the latest discussions about business, financial technology, regulation and overall FinTech trends, thus contributing to an expansion in the internal knowledge of the Danish FinTech ecosystem (Crespo, 2021; Ministry of Foreign Affairs of Denmark, 2023).

It was widely recognised that for the long-term development of the FinTech industry, changes to the regulatory environment are crucial. Yet, much must be learned and clarified before any legislative process can take place. Given the market pressures and opportunities for FinTech, the Danish FSA decided to support the growing ecosystem by establishing the Division of Fintech, Payment Services and Governance. Under this division, they created a FinTech Forum and the FSA Regulatory Sandbox (Interviewee 14) (Fig. 1). The FinTech Forum brought several ecosystem actors together and discussed the most relevant topics across finance, technology, and regulation. It has also functioned as an important bridge connecting actors in the Danish context to the discussions and changes in regulatory frameworks at the European Union (EU) level. Regarding the closer work with the start-ups, the FSA Regulatory Sandbox has focused on providing regulatory guidance and clarification for start-ups while functioning as a mutual learning process for both the start-up and regulator (Interviewee 8, Interviewee 10, Interviewee 11, Interviewee 14). Establishing a FinTech division marked the initial efforts of the FSA to envision the future of financial regulation in Denmark.

4.4. Phase 3: ecosystem legitimacy and growth: 'Elevating new Nordic innovation' (circa 2022 to present)

Opportunity Space. The efforts to become a globally connected FinTech ecosystem showed some positive results. Notwithstanding this, given the global advance of FinTech and the turbulent global investment environment, some of the ecosystem actors argue there is a need to expand business opportunities and improve Denmark's image as an attractive place for doing business (Ernst & Young, 2021). Alongside such efforts and considering the similar needs and goals regarding FinTech development among the European Nordic countries, it was time to strengthen the Nordic FinTech movement, moving to position the whole region as a strong global ecosystem (Interviewee 13). In terms of knowledge and competencies, a new technological wave around generative AI was recognised as critical for further FinTech development (Copenhagen Fintech, 2024).

Regarding regional contextual conditions, the ERB's capacity-building and community-building programs and activities developed with partners enhanced the skills and capabilities of actors, fuelling inter-firm collaborations within the ecosystem. Yet, although incumbents and start-ups have been meeting, discussing and sharing community ties, the sentiment is that most inter-firm collaborations have not reached a productive and solution-driven stage. Many start-ups reported scepticism about incumbents' intentions and mentioned relationship difficulties given the organisational differences and interests (Interviewee 4, Interviewee 5, Interviewee 7, Interviewee 10, Interviewee 11). On the other hand, incumbents have followed a learning curve in terms of working with open innovation standards and practices, which has generated frustration due to difficulties in implementing new co-developed solutions.

In the regulatory environment, the regulatory agents have created spaces for dialogue and closer interaction, improving knowledge about regulations and future possibilities for both sides. However, the raft of legislation coming from the EU was perceived as restrictive and complex for overall FinTech solutions development (Interviewee 1, Interviewee 3, Interviewee 10, Interviewee 14).

In the face of the challenges, the ERB and the Danish FSA continued to be crucial agents for leading institutional change, given their skills, legitimacy, and influence over key resources and other actors. However, to increase collaboration between ecosystem actors, attention has also been placed on the incumbent actors, who can effectuate changes in their own internal practices to enable collaborations. New agents, such as the Ministry of Foreign Affairs of Denmark, also started leading important work at the system level by increasing the attractiveness of the business environment in Denmark and launching Danish companies in international markets. In the regulatory environment, despite the work of the FSA and its close connection to groups and committees acting at the EU level in keeping the important work previously initiated, more profound changes would require actions from other agents, such as government lawmakers (legislative house).

Focus of the Institutional Work and Strategic Actions. In 2022, the "Copenhagen FinTech Week", the main event of the Danish FinTech ecosystem, first held in 2017, changed its name to "Nordic FinTech Week". The change was made to reflect the magnitude that the conference took over the years and to strengthen the identity of the Nordic FinTech Movement. Such action illustrates the strategies developed to foster the Nordic FinTech community and, in this way, solidify and expand the Danish FinTech ecosystem (Copenhagen Fintech, 2024). With the Nordic coalition stronger, further institutional work also focused on strengthening the global position of the Danish FinTech ecosystem (Fig. 1).

From the ERB perspective, institutional work has intensified with respect to strengthening and improving cooperation frameworks between start-ups and incumbents (Fig. 1). Incumbents' and start-ups' organisational practices have gained more relevance and need changes for effective cooperation (Ernst &Young & Copenhagen Fintech, 2020). Ecosystem actors now understand that the transformation of "old" incumbent practices supported by external formal institutional arrangements is easier to plan than implement. Still, actors recognise that most incumbents have started working with open innovation processes and that the overall levels of collaboration between start-ups and incumbents have advanced within the confines of EU legislation (Interviewee 1, Interviewee 12).

In the regulatory domain, the focus has remained the same: to deepen the understanding of the future of financial regulation (Fig. 1) while assisting FinTech start-ups and incumbents to navigate the regulatory environment. With the continuation of the work of the FinTech Division in previous years, the division has achieved permanent status and, therefore, it is now formally part of the long-term Danish governmental structure (Interviewee 14).

5. Discussion

We structure the discussion in terms of the two research questions: Section 5.1 addresses the first research question - what institutional forces influence the development of a DEE? Section 5.2 addresses the second research question - how do institutional entrepreneurs facilitate institutional change to develop a DEE? Fig. 2 summarises the role of institutional forces and of the institutional actors, and their related institutional work, during the development of the Danish FinTech ecosystem. In the upper part, the figure depicts the configuration of the Commercial Field, made up of incumbent businesses and new start-ups, at each phase of the ecosystem development. Fig. 2 captures the alignments and tensions between these commercial actors. In the lower part of Fig. 2, the Institutional Field is represented. This captures the primary institutional entrepreneurs, the focus of the institutional work of institutional entrepreneurs, and the resulting changing configurations.

5.1. The institutional forces that influence the development of a FinTech DEE

By taking a system-level perspective to analyse the evolution of the digital entrepreneurial ecosystem, we find a complex web of formal and informal institutions that were transformed over time. In the Danish FinTech case, beyond supporting the overall entrepreneurial needs, the DEE was developed to assist the technological transition in the financial industry more broadly. Three key institutional forces were (re)designed and implemented over time to develop the new DEE given the turbulent global FinTech context: i) collaboration dynamics and mechanisms between commercial actors (e.g. incumbents and start-ups) and between commercial and non-commercial actors (e.g. firms and universities, firms and governmental agents), ii) the regulatory environment, iii) global connections and practices in international co-operation. We discuss each of these forces below.

Collaboration dynamics and mechanisms. We know that the nature of digital entrepreneurship usually requires greater collaboration and integration of information, organisational processes and even technical infrastructure between commercial actors (Sahut et al., 2021), such as between incumbents and start-ups in the FinTech field (Alaassar et al., 2022; Kumar et al., 2025; Palmié et al., 2020). Our findings align with this tendency as we note that institutional entrepreneurs initially emphasised institutional change that built a productive collaborative environment supporting start-up-incumbent partnerships and community building throughout each stage of ecosystem development (Fig. 2). Moreover, the constantly changing digital technologies landscape requires industry actors to keep engaged with knowledge development and sharing activities. Several initiatives implemented within the ecosystem helped shape a business development culture based on collective learning and enhancement. Notwithstanding this, to support digital entrepreneurship and digital value creation, the DEEs also need to complement overall entrepreneurial support with activities that can specifically support the co-creation of digital solutions, such as joint business development, technological integration, and development of commercial partnership agreements (Bejjani et al., 2023). Therefore, the formal and informal institutions that relate to collaborative frameworks need to support these new types of commercial collaborations (Yáñez-Valdés and Guerrero, 2024). In the FinTech field, the DEE must be particularly capable of sustaining and facilitating collaborations between start-ups and incumbents, in which collective learning is an ongoing goal, joint solution development is incentivised, and use cases are shared as references within the ecosystem.

The regulatory environment. Similar to other FinTech ecosystems (Lin, 2022), in the Danish case, the regulatory aspects have been an

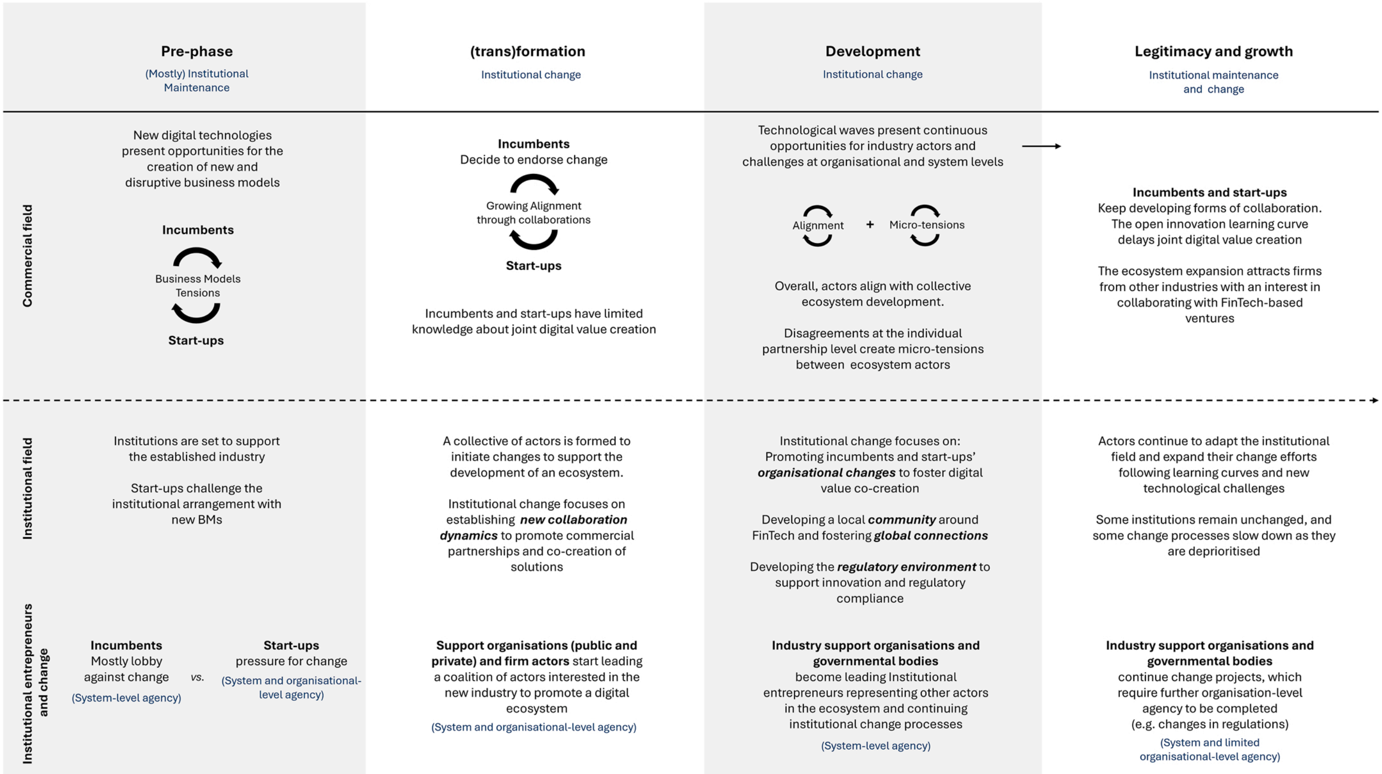

Fig. 2. Institutional forces and agency in the development of the Danish FinTech DEE

entry barrier for many start-ups, initially slowing the diffusion of new digital technologies and consequently facilitating the maintenance of the status quo. This initial moment is marked by tensions in the commercial environment between incumbents and start-ups (Fig. 2). A turning point was when Danish incumbents aligned their interests with start-ups and started to endorse the FinTech movement, contributing to institutional changes (Battilana et al., 2009).

As the regulatory environment tends to favour incumbent actors (Alaassar et al., 2021; Lin, 2022) many FinTech ventures that directly provide financial services depend on licensed incumbent commercial partners to operate. Even if they can operate independently, they often face regulatory restrictions and need to achieve legitimacy to gain trust from partners and customers to gain market traction (Alaassar et al., 2022). This scenario might hinder innovation developed by new ventures and discourage overall industrial development and innovation driven by incumbents. Thus, the configuration of the regulatory environment, especially the balance between supervision and regulation, is key to enabling entrepreneurial processes more broadly, fostering FinTech development (Kowalewski and Pisany, 2023). This suggests that in DEEs related to highly regulated industries, regulatory actors will need to play a greater role as institutional entrepreneurs to foster digital entrepreneurship than might be the case in other ecosystems characterised by fewer regulatory restrictions (Bejjani et al., 2023; Kumar et al., 2025). Furthermore, institutional entrepreneurs shaping FinTech DEEs could stimulate a new approach to regulation that sustains incumbent-start-up collaborative practices, including regulatory clarification and support for technology testing (Kowalewski and Pisany, 2023).

Global connection and international cooperation. The institutional environment in the Danish FinTech ecosystem was also substantially transformed by the work of institutional entrepreneurs to enable and constantly strengthen global connections, fostering opportunities for local businesses. The global nature of FinTech has been highlighted in previous studies (see for example Lin, 2022) as a characteristic of the FinTech phenomenon, which aligns with the global and turbulent nature of digital technologies and the impact of global technological waves on local new digital ventures creation and development (Acs et al., 2021; Sussan and Acs, 2017). However, extant literature has not advanced understanding of how these global connections materialise and are sustained over time. Our study has identified that as soon as the Danish FinTech ecosystem entered a development phase it expanded cooperation with other global ecosystems by, for example, establishing formal intentions of cooperation, realising international missions, joint events, and specifically by assisting local firms in establishing partnerships with international firms. These initiatives involved several industry support representatives and governmental actors that contributed to designing the formal and informal institutions (e.g. formal agreements, networking practices) that would sustain the global-local connections of the Danish FinTech DEE over time (Fig. 2). As a result, the local market benefited in terms of business solution development, commercial partnerships, funding availability, technical knowledge and regulatory framework references.

The institutional change processes involved in shaping the three key institutional forces were mostly undertaken in parallel following ecosystem actors' demands, denoting their interdependent nature in driving change. The development of a collaborative culture and collaboration practices is highly conditioned by the degree of technical knowledge and the actors' open innovation capacity. In turn, the internal knowledge pool and frameworks of reference are highly influenced by the global knowledge on FinTech and the sharing of practices at the international level. Besides, digital offerings have become more fragmented and therefore interconnected, boosting partnerships between firms at both local and global scales. Furthermore, at the pace the local regulatory environment facilitates or constrains new business development, it might also influence the degree of collaborative practices established between firms, given the needs or flexibilities related to licences and other legal compliance. The same might happen when it comes to international trade policies and cooperative agreements.

Based on this discussion, and building on the extant literature, we propose that:

Proposition 1. *Changing collaboration dynamics and mechanisms that enable and incentivise digital value co-creation and joint commercial development between commercial actors, particularly between incumbents and start-ups, facilitates the development of a DEE.*

Proposition 2. *Adapting the regulatory environment to enable innovation and commercial collaborations, while balancing supervision and regulatory restrictions, facilitates the development of a DEE.*

Proposition 3. *Developing institutional structures that support connections to global DEEs that enable and incentivise knowledge exchange (sharing of knowledge, practices and business opportunities) facilitates the development of a DEE.*

5.2. The institutional change processes facilitated by institutional entrepreneurs

Having identified the three key institutional forces, this section continues the discussion by focusing on how different actors who assumed the role of institutional entrepreneurs over time facilitated the development of Danish FinTech DEE (Fig. 2). During this DEE development, we first notice that the presence, endorsement and engagement of the many different actors condition institutional change efforts. Institutional change that supports a DEE can therefore be seen as a collective movement of institutional entrepreneurs. Second, given the collective nature of institutional change, neutral leadership capacity is key for developing a cohesive movement that counts on the support of actors with divergent interests. Third, the constant technological changes and advances in the global FinTech scene require local ecosystems to constantly adapt their institutional environments in a developmental process. This demands continuous work at both the system and organisational levels over time (Fig. 2), and hence the exercise of both system and organisational level agency by multiple actors.

A collective movement of institutional entrepreneurs. Our findings indicate that in the early development of this FinTech DEE ((trans)formation phase in Fig. 2), it was both individual organisations (e.g. pioneer start-ups) and collective groups (e.g. the forming coalition led by the labour Union) that initiated institutional change processes. As the DEE started gaining momentum and attracting attention, demands for change multiplied, and so did the number of institutional entrepreneurs that emerged over time. These findings align with previous studies (such as Hoogstraaten et al., 2020) that suggest that when looking at the development of a system over time, there is an increase in institutional entrepreneurship projects and the presence of more institutional entrepreneurs over time. Consequently, system-level agency becomes more distributed (Benner, 2024; Huggins and Thompson, 2023).

Although it has been suggested that institutional entrepreneurship is often the work of multiple actors (Grillitsch and Sotarauta, 2020), studies to date have primarily focused on the work of single organisational actors in changing one or several institutions, creating a heroic image of such actors (Hardy and Maguire, 2017; Tracey et al., 2011). Based on our empirical findings, our study advances the literature by contributing to a multi-actor view on institutional entrepreneurship and suggesting that this heroic view might be the result of macro-level narratives that tend to highlight the successful work of specific actors in leading the ecosystem development. By analysing the micro-level processes and understanding what sustains the work of such leading actors (for instance, the ERB in our case) and what distinguishes each role, we found that some powerful actors in the ecosystem transfer their power and/or responsibility for actions to the ones whom they trust to exercise the system-level agency they are not able or do not want to exercise themselves. By adopting a broader perspective, we see that besides mobilising other actors and resources on their own, these leading actors need to be supported by other actors who have the power to mobilise others and provide resources for the 'common cause'. Our findings further show that the type of organisations that led institutional change projects changed. While during the emergence phase of a DEE, the firms – incumbents and start-ups – were to the fore, over time, industry support organisations such as the ERB and the government became leading institutional entrepreneurs (Fig. 2). This suggests that the complementarity of institutional entrepreneurship efforts as enacted by distinct ecosystem actors with different roles is key to igniting continuous changes at the system level. When looking at the whole ecosystem's history, many institutional change processes might therefore entail both individual and collective efforts that add to the system development (Hoogstraaten et al., 2020).

The neutral leadership capacity of Institutional Entrepreneurs. The turbulent technological environment also required leaders to constantly manage their network of supporters by developing specific engaging activities and working on maintaining their organisational legitimacy. In terms of legitimacy-building activities throughout institutional work (MacKinnon et al., 2022; Uyarra and Flanagan, 2022), institutional entrepreneurs use the collective perceived conditions of the opportunity spaces to create discourses and narratives that help them justify needed changes and attract followers (Beer et al., 2023; Hardy and Maguire, 2017). Such discourses functioned as a means to achieve pragmatic legitimacy, which is related to how the changes would align with the actor's interests (Billing et al., 2024). Besides, institutional entrepreneurs' actions to clarify the meaning of "FinTech" and their constant efforts to gain and spread knowledge about new digital technologies enhanced collective cognitive legitimacy (MacKinnon et al., 2022).

Moreover, given the challenges in the development and implementation of new digital technologies through joint start-up-incumbent digital value creation, the close assistance of the ERB helped legitimise the collaborative processes and ease tensions. These legitimacy-building efforts confer authority, reputation and trustworthiness on the leading actors. This suggests that the presence of leading and *neutral* institutional entrepreneurs who are recognised by other actors as either domain experts or facilitators of collective domain knowledge development supports the development of a DEE. This also suggests that in fields marked by turbulence, institutional entrepreneurs who work on building alignment between actors with divergent interests and intermediating relationships can help stabilise tensions within business communities.

System and organisational-level agency. Finally, the exercise of system-level agency is intrinsic to institutional entrepreneurship. Nevertheless, our findings show that the exercise of a firm (or organisational-level) agency might directly affect the course of system changes, influencing system-level agency. How exactly these different types of agency occur along a system development is still an open debate in the literature (Benner, 2024; Blažek and Květoň, 2023). Our findings show these types of agency changed over time, and both incumbents and start-ups adapted internal practices to follow system changes, exercising organisational-level agency; at the same time, they were engaged with the collective movement, exercising system-level agency. Consistent with previous literature (such as Benner, 2024; Uyarra and Flanagan, 2022), we observed that institutional factors at the system level pressured actors to make internal changes and encouraged organisational-level agency in knowledge development and entrepreneurial functions. Furthermore, industry support organisations such as the ERB exercised system-level agency throughout the development of the ecosystem. Still, the nature of institutional change endeavours required these organisations to exercise organisational-level agency to adapt to the changes and continue their change projects.

During the advanced stages of DEE development (Fig. 2), we further observed that one key aspect for the continuation of institutional change efforts was the pace of adoption of new innovation practices by incumbents. While many incumbents kept open and engaged in collaborations with start-ups, they concurrently maintained their old practices either because of compliance requirements or due to a lack of willingness or ability to make more substantial changes. In this sense, their inability to continuously exercise organisational-level agency hindered the continuation of institutional change efforts. Our empirical findings thus align with previous literature that suggests that in industries in transition, the destruction of some assets (e.g., traditional organisation practices) might only happen during stages of consolidation of a new industry, which might have to be enforced by external conditions such as laws or technological obsolescence (Baumgartinger-Seiringer et al., 2021).

Adopting an integrated perspective, institutional entrepreneurs therefore facilitate the development of a DEE by first fostering and sustaining a collective movement, in which different actors take on the leadership at specific points in time and also support one another over time. This collective movement is facilitated by a neutral leadership capacity, in which actors bring together supporters with divergent interests. Lastly, at the pace institutional entrepreneurs focus on changing the system, they also foster continuous organisational changes that can enable system-level changes. Building on the extant literature on these domains, we therefore propose:

Proposition 4. *Institutional entrepreneurs that foster and sustain a collective institutional entrepreneurial movement facilitate the development of a DEE.*

Proposition 5. *Institutional entrepreneurs that are perceived as neutral parties by other ecosystem actors play a central role in the development of a DEE.*

Proposition 6. *Institutional entrepreneurs that foster organisational change and, therefore, organisational-level agency alongside the exercise of system-level agency consolidate institutional changes within a DEE.*

6. Conclusion

In this study, we investigated how an institutional environment is changed to foster the development of a DEE in the context of a traditional and highly regulated industry. In particular, we sought to answer the questions: 1) What institutional forces influence the development of a DEE? and 2) How do institutional entrepreneurs facilitate institutional change to develop a DEE? We adopted a system-level perspective, directing our analysis towards the actions undertaken by organisational actors to change institutions and hence support the development of a DEE around FinTech. We used the concept of opportunity spaces to understand how ecosystem actors perceived the contextual conditions and, based on these perceptions, harnessed or created opportunities for change to develop a DEE. Undertaking this approach, we focused on the role of actors' agencies in institutional change efforts.

6.1. Contribution to theory

We contribute to the literature on the intersection of DEEs and institutional entrepreneurship by showing underlying factors of how the institutional environment of DEEs is formed and changed to foster DE, and how the different ecosystem actors' interests and relationships help to delineate the conditions for DE development over time (Urbano et al., 2019; Zahra et al., 2023).

Given the turbulent nature of digital entrepreneurial processes within FinTech, we found that institutional entrepreneurs greatly emphasised the need to change institutions that would allow for (i) new collaboration dynamics and mechanisms between commercial actors, (ii) new regulatory frameworks, enabling innovation, and (iii) global connections and international cooperation. We further contribute to theory by empirically showing that both individual and collective institutional entrepreneurs have undertaken institutional change efforts over the development of the ecosystem, resulting in a collective institutional entrepreneurial movement. Institutional entrepreneurs also facilitate change when they become neutral leaders, aligning divergent interests. Furthermore, while we found that system-level agency is a key condition for initiating and carrying out institutional change efforts, we suggest that organisational-level agency should be exercised simultaneously. This might be especially critical in DEEs, as the nature of digital innovation is seen as dependent on greater integration between commercial partners (Sahut et al., 2021).

In addition, we contribute to enhancing understanding of FinTech DEEs governance structures and practices by showing specifically how institutional change endeavours required to advance FinTech might relate to different and specific institutional entrepreneurs over time. We also highlight that institutional entrepreneurship might act as a stabilising force in the current turbulent scenario, as the collective efforts undertaken by institutional entrepreneurs throughout the DEE development help bring industry actors together in a cohesive movement and expand global knowledge development and sharing.

6.2. Implications for research and practice

While the literature on institutional entrepreneurship has advanced understanding of what actions different ecosystem actors have taken to initiate and carry out change projects, how these efforts relate to the gains and/or create further challenges for these actors is less known. As the field advances, there is a need to account for the impact that change/maintenance projects bring to a larger set of actors in the system. Moreover, to solve the particular challenges of commercial integration presented by disruptive technologies, research needs to look at how institutional entrepreneurial endeavours can constantly shape and support change that allows for the transition between old and new models and their coexistence along the way. Studies might focus on questions such as: "How should partnerships between incumbents and start-ups be developed to achieve co-creation?", "What are the relationship challenges and how do they relate to commercial integration and co-design of solutions?", "How can intermediaries help sustain long-term commercial collaborations within FinTech DEEs?". In terms of regulations, there is an opportunity to explore how regulations relate to a collaborative culture within FinTech and what and how key regulatory trends can be better applied across different global ecosystems. In this sense, we particularly encourage further qualitative studies that can uncover the underlying factors associated with the processual dynamics within FinTech DEEs.

From a practical perspective, our findings imply that ecosystem actors might need to contribute more to the system development for their own benefit and survival. In traditional and regulated sectors, incumbent actors can play a key role as institutional entrepreneurs for digital entrepreneurship development, as their alignment with collective institutional change and their support to third parties might directly influence the system's capacity to foster digital entrepreneurship. Likewise, the capacity of FinTech start-ups to engage and co-develop solutions with incumbents and collectively articulate their needs for institutional change might be key to leveraging DEEs.

Moreover, our study has shown that the identification of institutional entrepreneurs with specific characteristics and the need for collective and individual efforts might be key to an ecosystem's positive performance over time. The capacity of ecosystem actors to assume leadership positions and also step down from such a role at specific junctures can bring cohesion and facilitate change. Still, the constant endorsement of different ecosystem actors and their ability to follow up with the system changes might be required for collective advancement. Besides, as the disruptive digital technologies have allowed for global commercial partnerships, the development of regional institutional arrangements that support establishing international partnerships seems more needed than ever before.

6.3. Limitations

As with any study, ours presents some limitations. By following the methodological tradition and focusing on deep contextualisation, our findings and results are directly connected to a specific case and might not be readily transferred to other cases. In that regard, both the regional and industry contexts generate specific combinations of system characteristics that need to be considered. We emphasise that the Danish FinTech ecosystem is part of a developed yet small nation and is a peripheral FinTech ecosystem in the global scene. We sought a diverse sample of both secondary and primary data sources. Still, our findings are also limited to the perspectives found through the ecosystem actors' narratives and the data published about the ecosystem. As observed in the literature (Haack et al., 2021; Hardy and Maguire, 2017), ecosystem actors tend to demonstrate alignment with macro-level narratives and sometimes omit failures, giving more emphasis to successful stories. While it was not the goal of our study to trace the contradictory stories and failure cases, we acknowledge their importance and potential additional perspectives they could have brought to this study.

CRediT authorship contribution statement

Luiza Stein: Writing – original draft, Visualization, Methodology, Formal analysis, Data curation, Conceptualization. **Natasha Evers:** Writing – review & editing, Visualization, Supervision, Funding acquisition, Conceptualization. **Colm O'Gorman:** Writing – review & editing, Visualization, Conceptualization.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Data availability

Data will be made available on request.

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