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The slow platform in a fast economy: Temporal frictions and the (un)making of an alternative e-commerce initiative

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Abstract

The Covid-19 pandemic constituted a critical juncture that opened a window of opportunity for digital platforms to experiment with socially, economically and environmentally oriented forms of innovation. Across sectors such as tourism, food and local logistics, alternative initiatives sought to develop sustainable counter-models to dominant corporate e-commerce systems. However, the post-pandemic return to established consumption patterns rapidly exposed the difficulties these experiments face in achieving a durable, transformative impact. This paper examines INDACO, a digital platform developed in Trentino during the pandemic, to analyse how temporality, scaling challenges and structural constraints shape the capacity of alternative digital platforms to realise their ecosocial objectives. Drawing on extensive ethnographic research and the multi-level perspective, we show how temporal frictions, coordination barriers and competitive pressures from incumbent platforms combined to produce a trajectory of mission drift and limited territorial embedding. By foregrounding the role of temporality in socio-technical transitions, this study contributes to debates on emergent social innovation, alternative organising and the structural limits faced by digital platforms seeking to contest entrenched economic regimes.

Keywords

Ecosocial innovation, platform economy, sustainability, temporality, sociotechnical transitions

Introduction

Current economies and societies face multiple sustainability challenges, ranging from ecological degradation to social and economic inequalities. Addressing these challenges requires a more equitable and inclusive distribution of resources and services. Increasingly, the responsibility for such transformations has shifted from public institutions to civil society and businesses, which often respond through processes of social innovation (SI) (MacCallum et al., 2009; Moulaert et al., 2013; Swyngedouw, 2009). In this context, platform capitalism (Srnicek and De Sutter, 2017) and the digitalisation of consumption play an ambiguous role. On the one hand, the platform economy is widely criticised for unsustainable practices, including high transport emissions, labour exploitation and adverse effects on local and small-scale economies (Pais, 2019). On the other hand, digital networks have the potential to promote sustainability by reshaping social relations and increasing resource efficiency, as illustrated in debates on the 'sharing economy' (Frenken, 2017). Although this potential has diminished over time (Frenken and Schor, 2017), the pervasive role of digital platforms in everyday life requires careful assessment of both the opportunities and risks they entail.

The COVID-19 pandemic represented a critical juncture for the platform economy. It created a window of opportunity for grassroots experimentation with alternative economic models (Dal Gobbo and Forno, 2025) to mitigate the adverse effects of pandemic conditions and reduce reliance on digital tools. However, the crisis also accelerated the infiltration of digital platforms into daily life, consolidating the dominance of corporate e-commerce and social media platforms (Culpepper and Thelen, 2020). As societies returned to 'normal', many transformative promises proved fragile: late capitalist patterns of production, consumption and power dynamics were largely reaffirmed, even intensified, by post-pandemic economic and geopolitical pressures.

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This study examines INDACO, a digital platform established during COVID-19 in Trentino (Italy) through a public–private partnership, which exemplifies both the potential and the constraints of ecosocial innovation (ESI) in the digital domain. Initiated by civil society actors, INDACO aimed to address social, economic and environmental challenges through technology that promotes integration and sustainability (Matthies et al., 2019; Stamm et al., 2017). Drawing on extensive ethnographic research conducted throughout the platform's development, the analysis examines how temporal dynamics, scaling challenges and structural frictions shaped INDACO's trajectory. Using the Multi-Level Perspective (MLP) (Geels, 2010) and the concept of *temporal frictions* (see Laamanen and Mikołajewska-Zając, 2024; Tsing, 2005), the study examines interactions across landscape, regime and niche levels, showing how contradictions and mission drifts (Ebrahim et al., 2014; Jones, 2007; Pansera and Rizzi, 2020; Weisbrod, 2004) emerge in the attempt to sustain alternative organising in competitive market environments (Schiller-Merkens, 2024; Walsh, 2023).

While prior research has examined the success and limitations of SI, ESI and alternative organising (e.g., Foramitti et al., 2020; Frantzeskaki et al., 2016; Sanders and McClellan, 2014), this study emphasises the temporal dimension as a critical determinant in the establishment, evolution and outcomes of innovative initiatives (Reinecke et al., 2020). It addresses the question: What roles do temporality, scaling challenges and structural constraints play in determining whether alternative digital platforms can achieve their social, economic and environmental objectives? By highlighting convergences and divergences across temporal and structural levels, the analysis underscores the importance of aligning temporal and strategic dimensions among actors pursuing socially just and transformative digital ESI amid the growing power of corporate platforms.

The paper is structured as follows: §2 reviews literature on social innovation and the platform economy and presents the theoretical framework; §3 outlines the methodology; §4 presents the empirical findings, which are further discussed in §5; and the conclusion summarises results, identifies strengths and limitations and proposes directions for future research.

Theoretical framework

Social innovation and sustainability in platform capitalism

Platform capitalism poses significant challenges to sustainability across ecological, social, economic and political dimensions. While it extends and intensifies the logics of capitalist growth and profit (Laamanen and Wahlen, 2019), it also reshapes power structures, creating unprecedented dependencies for consumers and producers (Culpepper and Thelen, 2020; Srnicek and De Sutter, 2017; Yates, 2023). However, digital platforms are sometimes seen as spaces for transformative change. For example, the 'sharing economy' can reduce material throughput through resource pooling (Frenken, 2017), while online platforms may facilitate access to sustainable choices, enable community building and reconnect producers and consumers locally (Bos and Owen, 2016; Triantafyllidou and Zabaniotou, 2022; Vilarinho et al., 2018).

Many such initiatives can be understood as social or ecosocial innovations (ESI): grassroots efforts emerging from civil society, public institutions or social entrepreneurship to address unmet societal and sustainability needs (Haxeltine et al., 2013; Matthies et al., 2019; Spaargaren, 2013). Characterised by their small scale, they allow experimentation and the inclusion of marginalised actors (Bock, 2012; Moulaert et al., 2013; Smith and Raven, 2012), as well as extending beyond profit logics to pursue collective goals like equality and sustainability (Gibson-Graham and Roelvink, 2009; Nicholls and Murdock, 2012). After such testing on small scale, they are disseminated if successful, and adapted through interaction with new adopters (Mulgan, 2006; Neumeier, 2017).

This is rarely a straightforward and linear pathway, however. Often, the values and spirit of ESI initiatives come into contrast with mainstream market dynamics. This is particularly evident in the case of the platform economy and digital ESI. The pursuit of social and ecological goals requires to follow logics such as small scale, slow pace and attention to the quality of labour, materials and logistics processes, yet this is in contrast with mainstream market imperatives in the platform economy, which ask for increasing speed, rationalisation, price dumping and exploitation of labour and resources to reduce costs. To be economically sustainable digital ESI initiatives find themselves to compete in and/or participate to these market dynamics, yet the clash between their objectives and commercial environment makes them 'inherently unstable' (Bousalham and Vidaillet, 2018; Cossey et al., 2023), and sometimes little efficacious (Acquier et al., 2017). This requires significant re-adjustments, sometimes leading to a complete restructuring or the failure of the projects themselves (Foramitti et al., 2020; Pansera and Rizzi, 2020). It is, for instance, widely documented that many organisations experience 'mission drift' – that is, a gradual shift from original goals or focus over time (Ebrahim et al., 2014; Jones, 2007; Weisbrod, 2004). It must nevertheless be noticed that digital innovation can also be steered by subjects in directions that favour social justice and inclusion, especially through Responsible Innovation. Social cooperatives in the platform domain have, for instance, shown the potential for democratically steering technological development towards socially desirable outcomes (Fortuny-Sicart et al., 2024).

Hence, digital ESI might be a space for the transformative agency of grassroots subjects, but it also entails profound contradictions (Kostakis et al., 2024; Mehmood and Parra, 2013). The harsh, monopoly-oriented platform economy is characterised by imperatives of continued and accelerated growth that are incompatible with ecological limits, planetary boundaries and social equity. At the same time, there is evidence for opportunities of responsible innovation from below. This leaves open the question of the extent to which digital ESI can enact effective transformative socio-ecological practices, and what the conditions for this transformation are (Banerjee et al., 2021; Pansera and Fressoli, 2021). This is true in particular in a post-neoliberal context in which institutions externalise to civil society their own responsibilities (Fougère et al., 2017; Swyngedouw, 2009), while grassroots experimental projects may or may not find opportunities for empowerment (Avelino and Rotmans, 2009; Gibson-Graham and Roelvink, 2009; Walsh, 2023).

Reading the tempos of a digital ESI project from the MLP perspective

So, what shapes opportunities for innovative platforms to build counter-power within the monopoly-oriented platform economy? While our analyses show that many aspects are involved, including flow of resources, narratives of change, social and material embeddedness, etc. (see Dal Gobbo and Forno, 2025), in this paper we concentrate on the *temporal dimensions* of innovation, since we find them particularly significant in the failure or success of digital innovation efforts. Organisational studies have long emphasised the role of temporal dimensions in innovation (Reinecke et al., 2020), examining how the timescales of organisational emergence, development and stabilisation shape opportunities and constraints for transformation in the digital economy. However, as Reinecke notes, time and temporality remain under-theorised, often treated as linear 'clock' time, while subjective, collective and culturally shaped experiences of time are largely overlooked. Törnberg (2018: 387) suggests that, akin to moments of social effervescence, socio-technical transitions occur when 'windows of opportunity' open. However, such openings are not sufficient on their own: opportunity structures are shaped by protected innovation spaces, the immediate socio-technical context and broader global conditions.

We argue that transition studies, particularly the Multi-Level Perspective (MLP) (Geels, 2002, 2010), provide valuable analytical tools for capturing interdependent temporal and structural dimensions and thus explain such under-theorised and under-explored dynamics (Hölsgens et al., 2018; Törnberg, 2018). The MLP conceptualises socio-technical processes as unfolding across intersecting levels. Innovations develop within 'niches', protected spaces where novel practices, technologies and values can be nurtured outside established institutional and market norms. These niches exist in relation to 'regimes': the relatively stable institutional, cultural, economic and material configurations that define dominant practices. Regimes are embedded in broader 'landscapes' – historical structures, social-ecological arrangements and disruptive events that shape systemic change (Geels, 2002: 1260). The societal impact of innovations depends on their capacity to extend beyond the niche and influence regime-level practices and structures.

While this tripartite heuristic facilitates understanding socio-technical change (Lawhon and Murphy, 2012), it has limitations (Genus and Coles, 2008). In particular, the predominantly unilinear conception of niche-to-regime interaction – where innovation 'moves' sequentially across levels – can obscure co-evolutionary and multilinear dynamics (Geels, 2019: 180). Moreover, as Geels (2014) notes, socio-technical transitions require attention to power, including discursive and narrative contestations (Avelino et al., 2017). We employ MLP categories as heuristic tools to map fluid and non-linear relationships. Moving beyond technical innovation alone, this study emphasises the social relations and practices through which transitions occur, considering both the internal characteristics of niches and the broader contextual conditions that shape their trajectories (Lawhon and Murphy, 2012; Schot and Geels, 2008).

In this context, the concept of *temporal friction* is of particular use. 'Ecologies of friction' have been identified by Laamanen and Mikołajewska-Zając (2024) as characterising platform economies: despite popular narratives of the digital as a frictionless space where both innovation and data smoothly flow from one space/user to the other, the authors notice that platforms' actual implementation and coming to the social domain are characterised by frictions that delay and sometimes impede their trajectories. We here show that these frictions have a decisively temporal dimension to them, or, in other words, that the *tempos* of digital innovation might clash with those characterising social domains across niche, regime and landscape levels. Niche innovations, in fact, happen within wider *timescapes* whose temporalities they reinforce, contest or subvert. With our analysis we suggest that examining niche-regime interactions through a temporal lens reveals tensions between the slower rhythms of transformative initiatives (niches) and the faster demands of competitive markets (regime), highlighting challenges of scaling, growth and production (Frantzeskaki et al., 2016). This explains the eventual 'mission drift' (Ebrahim et al., 2014) of the project.

Case study and methods

INDACO and its context

Our case study is located in the Trentino province, in the North of Italy. The province has an autonomous

administration that makes its economic and social policy management relatively independent from the central government. It actively promotes local projects and a widespread network of social and solidarity economy. Despite huge contradictions, it has constructed for itself the image of a 'green' region, attracting tourists for its mountain landscapes and historical and socio-cultural heritage. The birth of the platform's project was part of the provincial government's efforts to 'valorise' and 'invest in' the territory during the Covid-19 pandemic, aided by a 2021 province-funded grant of one million euros to support the digitalisation of local businesses. The project is named INDACO, an acronym for 'INnovazione DigitAle per il COmmercio elettronico trentino'. Its main objectives, self-stated in the project, were to strengthen Trentino's digitalisation in the economic sector, and to do this in a socially and environmentally responsible way – summarised in the idea of a holistic interpretation of 'sustainability'. In this sense, while participants did not explicitly attribute it the description of an 'eco-social innovation', the project is well aligned with ESI's definition of a technological innovation that also comprises social and ecological concerns, whereby changes on different levels (not only technical) should intersect in the pursuit of social and ecological goods

The project was developed within a consortium of seven subjects, highly varied in character, including small businesses and cooperatives, as well as key actors within the regional economy, both private and public. The project involved around 15–20 people, depending on the different stages of its advancement. Some of them formed the 'backbone' of the projects' structure, and they were the ones we interviewed (see below); others became engaged for specific objectives such as training and communication strategies; finally, some members of the team were more junior, and dedicated to specific tasks such as social media management or events organisation. The first author and third authors were themselves involved over the timespan of, respectively, 3 and 4 months in the project, with organisational and communication tasks. Overall, the subjects involved were mostly middle-aged white professional men, and only among the most junior collaborators were there young women, often involved in the project as part of University education or civil service. The University was a member of the project's consortium, involving the Department of Civil and Industrial Engineering for the platform algorithms, and the Department of Sociology and Social Research (where the authors were affiliated) for the evaluation of the project's social implications, the contextual conditions for development and rooting, and finally for the reflexive and critical appraisal of the project's trajectory.

Before getting to the details of our data collection and analysis, we think that a reflexive note should be elaborated. Our reflections, programmatically embedded in the project, emerged from an iterative, long-term involvement with the platforms' stakeholders, to whom our analyses and considerations were presented for feedback and reflection. Our position, compared to other stakeholders', was more 'decentred': despite being officially part of the consortium, as sociologists we were not directly invested in the pursuit of INDACO's economic success (as it was for other private stakeholders), nor in the elaboration of research outputs supporting the platform's functioning (as with Engineering Department's colleagues). Our work was programmatically one of observation and evaluation, and this allowed us to develop a more critical stance that enabled us to map the virtuous and less virtuous patterns of INDACO's development from a distance. While open to technological innovation as a tool for transitions, also given our academic background in sociology, STS and political ecology, we were partially sceptical of a narrative (which was becoming dominant within the consortium) that foregrounded technology and algorithms as *solutions* to socio-ecological problems. From this positionality we had the opportunity to provide feedback to stakeholders and a reflexive stance on the project's development.

Data and analysis

This study is based on an extensive process of participant observation carried out as part of the project, which allowed for an in-depth exploration of the dynamics and evolution of the platform, capturing the complexity of its processes and reconstructing the internal and external relationships that facilitated or hindered its ability to achieve eco-social innovation (ESI). Although the study is primarily based on qualitative data, a mixed approach was also used, integrating quantitative data to complement the analysis.

Qualitative inquiry. Participant observation was conducted by two of the authors within a consortium member company, spanning several months of the project's development (September 2021–July 2022). This included participation in online and in-person meetings, project planning, community-building, and communication activities. This involvement was structured almost as an 'internship' for the first author (as detailed by her research contract at the time) and was part of a Bachelor programme for the third. Participation provided first-hand insight into how INDACO's practices, meanings and narratives developed over time and the factors shaping their evolution. It allowed not simply to observe what was going on, but to experience being part of the consortium, with first-hand evidence of the relational and operational dynamics at the heart of INDACO's development. Fieldnotes and memos were triangulated with project documents, allowing the identification of narrative shifts and inconsistencies between internal and external representations. Documents analysed included the project proposal, which outlined initial values and objectives, and engagement and communication materials, such as 45 newsletter emails and 50 Facebook posts, together with the interactions they generated.

Table 1. List of interviews.

Int_number	Background	Role in the INDACO project
Int_1	Manager in a start-up company	Responsible for community development
Int_2	CEO of a large ICT company	Project leader
Int_3	Head of the Innovation Department at Federazione Trentina della Cooperazione	Liaison between FT and INDACO
Int_4	Director of a social cooperative	Project partner and co-initiator
Int_5	External consultant for FT	Consultant on digitalisation and market strategy
Int_6	Engineering professor	Researcher within the project
Int_7	Director of a social cooperative	Executive Director of INDACO Ltd
Int_8	Director General, Department of Economic Development, Research and Employment, Province of Trento	Main institutional figure responsible for project funding

Understanding external perceptions of the project was also considered critical for evaluating its socio-ecological mission. This was explored through one focus group and one interview with business owners (January 2023) who were subscribed to INDACO or in the process of subscribing. In summer 2023, seven in-depth interviews were conducted with key consortium actors to examine values, objectives and interpretations of INDACO's trajectory in relation to sustainability (see Table 1). These interviews show limited internal diversity, as all participants were white professional men, yet, as already mentioned above, they are a good representation of the project's governance, leadership and practical implementation. Finally, in November 2024, a provincial government representative was interviewed to provide insight into institutional perspectives and power relations.

Quantitative inquiry. Quantitative data were collected throughout the project, including an initial survey assessing consumer and business interest in the e-commerce platform, as well as ongoing metrics on new subscriptions and stakeholder involvement. This data supported monitoring of the project's progression and stakeholder engagement. Public perception and external pressures were also examined, including an analysis of media coverage. Twenty articles from local newspapers (l'Adige, Il Dolomiti, Trento Today) were analysed to assess potential impacts of adverse reporting on subscriptions, revealing largely repetitive coverage.

By the end of the project, we had collected extensive material on the trajectories and patterns of the project. A processual approach to data analysis helped us to emphasise our organisation's emergent and shifting nature, which we reconstructed through narratives to retain complexity (Langley and Tsoukas, 2010). Narratives are ways of organising reality by individuals and groups, configuring sensemaking operations. Focus on narratives allowed us to consider how reality is constantly constructed by actors through meaning-making, which is in turn traversed by power asymmetries. We map the temporal evolution of INDACO from the narratives on the project, but we also draw on the conceptual categories typical of MLP (niche, regime, landscape) to distinguish the multilevel engagement that shaped its innovation pathway. Based on emerging patterns, we singled out three relevant phases – 'temporal brackets' (Langley, 1999: 703) – in the project's evolution, which are mirrored in the analysis's sub-sections. These are key in understanding the passages shaping INDACO's trajectory and pinpointing phase-specific change mechanisms (Langley, 1999). From this analysis, the concept of 'temporal frictions' emerges, which we introduce in the discussion to show how the different *tempos* of ESI shape INDACO's evolution.

Analysis

The Nascent moment

The INDACO project was launched in 2020 during the Covid-19 pandemic – a significant landscape disruption (Geels, 2010) that acted as a 'game changer' (Avelino et al., 2017: 40), challenging established routines of daily life, commercial activity, production and consumption. Lockdowns strained local economies and limited vulnerable residents' access to essential services. At the same time, this upheaval created a 'window of opportunity' in which previously fixed arrangements became open to redefinition (Dunlap et al., 2024; Törnberg, 2018). However, it also intensified existing pressures to expand the platform economy: in this context, much of everyday life – from consumption to social interaction – became mediated by digital infrastructures (Dal Gobbo et al., 2021).

In Trentino, digital platforms were simultaneously perceived as a necessity and a threat to the local economy and to everyday life. This ambivalence pushed both institutional and civil society actors to invest in alternative digital infrastructures. As the provincial representative (Int_8) recalled, public funding for a regional platform was motivated by the need to help micro and small enterprises enter an e-commerce market dominated by large global players, whose economies of scale render individual investments prohibitively costly and expose small firms to competitive

dynamics that undermine the supplier–customer relationship.

Parallel to institutional efforts, civil society actors began mobilising informally. A manager of a social cooperative (Int_4) discussed with a business incubator professional (Int_1) and a university engineer (Int_6) the development of a platform to support vulnerable people – such as older adults and people with disabilities – during lockdown, while also sustaining local businesses. The manager of a large ICT firm (Int_2) was soon brought into the initiative. During these discussions, the provincial administration published the call for proposals that the group subsequently submitted: a call that pushed for sustainable innovations to relaunch the local economy, and to which the forming consortium replied with a project based on an idea of a platform that could blend social, environmental and economic aspects of sustainability. INDACO thus emerged as what we might call an 'eco-social innovation' (ESI) arising from a niche initiative situated at the crossroads of economic and institutional regimes. Its development reflected processes of multilinear contamination and co-emergence, with Covid-19 functioning both as a catalyst and an opportunity structure (Dal Gobbo and Forno, 2025).

At this stage, social relations played a crucial role. Existing friendship and professional networks enabled niche actors to develop confidence in their shared project and mobilise the necessary resources. A strong alignment of visions was evident: actors shared a common understanding of the project's objectives and the role of technology in achieving them. Their combined expertise in ICT, social entrepreneurship and industrial engineering provided the foundation for a digital response to COVID-19 that aligned with the broader socio-technical paradigm.

Interviewees emphasised that technological development was expected to generate a 'positive social impact' and 'influence social development' (Int_4). The project's mission was framed around 'SEEDS': social, economic, ecological and digital sustainability (Int_6). Economic sustainability focused on supporting small producers and retailers beyond the tourist season and enhancing local value (Int_1; Int_3). Environmental sustainability was centred on reducing emissions and packaging. Social sustainability was linked to strengthening local relations, for example, prioritising deliveries to shops in the various neighbourhood rather than directly to homes, to encourage interaction: 'not a closed door: I stay at home and wait' (Int_6). Digital sustainability involved redefining the consumer from a passive data point to an active participant in a digital 'community of practice'. This vision translated into a platform model deeply rooted in local needs: a service designed for Trentino-based producers and retailers, aimed at Trentino consumers. As the province stated (Int_8), the intention was to reinforce short supply chains, uphold ethical values characteristic of the region's cooperative tradition, integrate sustainable logistics even in mountain areas and stimulate a rethinking of retail trade through innovation.

Within this narrative, technology was framed almost as synonymous with sustainability (Bousalham and Vidaillet, 2018): a vector for innovation capable of realising SEEDS values through careful and responsible design. Yet, in line with a view of *eco-social* innovation, interviewees also underscored that technology is socially embedded: sustainability goals depend on altering social expectations, relationships and the material organisation of digital provisioning. It is in this context that temporal dimensions become crucial. As one explained:

> Amazon delivers in 24 h […] we would like to enter into an ecological sustainability agreement with the customer that says, 'Do you really need it within 24 h? We have agreed that it will arrive within 3 days'. If I don't deliver to your home but to your local shop, I arrive there with more goods and avoid wasting hours moving around the village. This improves economic sustainability and reduces fuel consumption and human effort. (Int_6)

There is a tight relation between enacting sustainable models and remodulating the timescapes of platform capitalism. While this is not, of course, the only dimension at play (e.g., community engagement, worker's rights, territorial embeddedness are also important), time was central in our interviewee's narrative as one key terrain on which INDACO differentiated itself from dominant platform capitalism. It is also one of the pivots around which other sustainability dimensions turned. A 'slow' business model, in fact, resists the acceleration of goods' circulation, thereby incorporating ecological limits, but also enables fairer treatment of workers who are not pushed to maximise their performances at impossible paces. Hence remodulating time was one key dimension of socio-economic responsibility, an approach consistent with a 'framework of sufficiency' (Niessen and Bocken, 2021). This orientation was informed by a stance that held that innovation trajectories were not to be dictated solely by market forces but adapted to local development needs. As one actor put it, the project represented 'a great opportunity for Trentino to provide a systemic response to a global trend […] the digitisation of the sales process' (Int_3). Rather than being overwhelmed by dominant players, local businesses could 'join forces' to enter the digital marketplace with greater autonomy (Int_3; Int_8).

However, the project proposal also articulated a competing narrative aligned with mainstream economic logics. The platform was conceived not only to 'improve the competitiveness and attractiveness of the economic and social system in Trentino' but also explicitly to 'compete with general suppliers (e.g., Amazon)' and to 'be profitable' (INDACO project proposal, pp. 1–2). Interviewees did not perceive these positions as contradictory: INDACO was expected to 'do business', albeit with 'ethical considerations'

(Int_6). This dual orientation already introduced potential frictions (Laamanen and Mikołajewska-Zając, 2024) between transformative practices and the dominant economic regime (Bousalham and Vidaillet, 2018; Foramitti et al., 2020), setting the stage for 'intrinsic instability' (Cossey et al., 2023). This, as shall be evident later, also introduced a 'temporal friction' between the ideals of slow business and the fast pace of ecommerce, a reality in which being slow often equals economic unsustainability.

After the call for proposals, the project was formalised and the consortium expanded, to include communication companies and other actors from the cooperative sector. The group won the tender, which had only one competitor. Public institutions played a decisive role: without the provincial investment of €1 million, it would have been unlikely for the consortium to commit with the total of €1.8 million required (Int_4). Institutional support thus acted as a crucial accelerator in mobilising businesses and civil society, echoing the role of public actors in transition processes (Roberts and Geels, 2019). The initial plan was to develop a regional e-commerce platform within 2 years, followed by expansion into a marketplace. Importantly, INDACO began as a research project intended eventually to become self-sustaining; environmental and economic sustainability were understood as complementary (Int_8). Work proceeded along two parallel tracks: technical partners focused on algorithms, user interfaces and marketing strategies, while another group concentrated on building a 'community' of potential customers to support participatory design and strengthen the project's social mission.

Temporal frictions in the project's development

The second identifiable phase spans the period from the project's early operationalisation to the establishment of the INDACO company. This is also the period during which participant observation was most intense. The specificity of this phase lies in the coexistence of research for innovation with the pursuit of economic profitability. Between these two aims, temporal frictions become more evident, and this yields some of the most interesting analytical insights. During this period, the transformative ideals that inform the project take a back seat, while concerns about economic sustainability take centre stage. We analyse this dynamic by referring to the way in which the relationships between the different levels determined this path.

Niche–context relations. Following the award of the provincial call, the consortium – the ESI niche – initiated communication activities and advanced the first operational steps: preliminary research, community building, marketing and monitoring. Meanwhile, Italian society was experiencing a post-COVID 'return to normal'. Although some anticipated that engagement with digital channels would remain high, in a peripheral region such as Trentino there was a pronounced return to familiar, in-person modes of consumption. This shows one first temporal friction as the project found itself out of sync with broader socio-historical developments. This niche-landscape temporal friction interacts with socio-geographical characteristics of the region: its locally bounded customer base, already limited by sparse population and geographic dispersion, proved incompatible with the economic viability of an e-commerce initiative requiring a minimum threshold of scale (Int_1). The original model, 'a platform from the territory for the territory', began to appear 'economically unsustainable' (Int_3).

What was publicly presented as a late realisation can also be seen as the result of insufficient preliminary assessment. A misalignment between niche and context was evident from the outset: the initiative appeared partially detached from local socio-economic conditions (Moulaert, 2009), implicitly assuming rapid evolution in digital culture, while obliging partners to 'start from zero' (Int_5). A gap soon became evident between promoters' expectations and the response of intended users: businesses which were expected to be easily engaged proved hesitant, and customer attraction remained limited. This was reflected in the modest number of subscribing companies and the very low engagement with Facebook posts (averaging three interactions per post, often from insiders) and with limited interaction with newsletter communications. Subscription data from January 2022 to February 2023 show an irregular trajectory, with peaks driven by targeted marketing efforts and lengthy periods of stagnation, signalling difficulties in sustaining momentum and revealing the influence of external pressures on internal dynamics.

The project also struggled to establish crucial partnerships. A planned logistics collaboration with a major local retailer failed (Int_1), demonstrating that stakeholder mobilisation required more time than anticipated or permissible within the project's constraints. Here another temporal friction becomes evident: with insufficient time to cultivate a transformative commercial culture, partners were effectively forced to operate within the existing one, which was not always recepting to its innovations. Interviews with potential customers in January 2023 revealed complete unawareness of INDACO's sustainability mission: 'I missed that aspect […] which is certainly very positive for us, but it was not the first thing we thought of' (wine company, INDACO customer). Instead, the platform's alignment with provincial territorial policies was perceived as the primary attractive feature.

Niche–regime relations. From the beginning, the province exerted significant pressure to ensure short-term economic sustainability. Strict targets, mainly numerical indicators such as subscriber counts and revenue by specific dates, were set to publicly justify the significant investment. These were to be met within the timespan of months. However, according to actors committed to research-led innovation, developing a transformative e-commerce

platform requires 'at least two years', whereas 'the province expected a different [shorter] timeframe' (Int_4). As one interviewee explained:

> The province's request was very clear: to arrive at the product and not at the concept. This means having a market and creating a sales network […] it is clear that, when you enter that dimension, ideological, creative, and social ethics necessarily take a back seat. Whoever is responsible for the commercial side must act effectively: if they are asked to sell red bags, they must sell red bags; if they are asked to sell yellow ribbons, they must sell yellow ribbons. (Int_6)

To meet these demands, partners had to negotiate the early establishment of the INDACO company, despite Italian legislation imposing obstacles. This accelerated shift – another temporal friction – increased the influence of commercial imperatives and narrowed the space available for pursuing sustainability-oriented innovation. In the rush to demonstrate viability, entrepreneurial discourses and practices increasingly converged toward hegemonic logics of profitability, contributing to a drift in project objectives and a growing disconnect between the initiative and its territorial context.

Institutional timing further constrained the project. Although the province played an essential role in launching the initiative, its involvement did not extend beyond the funding phase. As stated by Int_8: 'In view of the provincial call for proposals and the related funding, the development of the project is entirely in the hands of the beneficiaries'. The province simultaneously signed an agreement with Amazon to build a logistics centre in Trentino, reinforcing ambiguous policy signals. Interviewees reported that institutional actors did not fully grasp INDACO's characteristics, particularly its demands for digital innovation and long-term investment (Int_4). Implementers frequently expressed frustration at the widespread perception that digital innovation is 'easy and intangible', when in fact it requires sustained high-level expertise. Rather than providing a 'protective space' for experimentation (Smith and Raven, 2012), institutions appeared to offer only partial and time-limited support. The temporal friction between institutional expectations and the project's unfolding constituted one of the key dynamics at the heart of INDACO's mission drift.

Public discourse and media coverage added a further layer of regime pressure. The size of the investment immediately attracted scrutiny. Local media quickly labelled INDACO 'the Amazon of Trentino', a characterisation at odds with its own narrative and one that invoked expectations of speed and low prices incompatible with the project's principles. As summarised by Int_1: 'There was prejudice in both positive and negative terms – "I hate Amazon, so I don't want to hear about you" – or expectations of Amazon-style efficiency, or presumed better efficiency'. Such framing turned the initiative into a political issue (Vandepitte et al., 2019) while simultaneously undermining its legitimacy (Ecker-Ehrhardt, 2018).

Relations within the niche. Finally, within the innovation niche, we repeatedly observed clashes between the objectives and goals of the partners as the consortium expanded. This was explained to us during the interviews as the result of the very different backgrounds and fields and the fact that some of them were more kin to develop their own interests than those of the project (Int_2). There was a temporal friction there, as the group seemed divided between those who believed in the transformative potential of the platform and those who were just working to make it functional in the short term: this was a clash between a forward-looking time aspiration and long-term ambition for socio-economic change *vs* a commitment in the present and for the present. Furthermore, a critical aspect in the development of a coherent and disruptive project was the lack of specific technical and programming skills, which seemed to slow down the process (Int_5).

Realigning INDACO and future challenges

The issues highlighted in the previous temporal bracket resulted in a profound re-signification and strategic reorientation of the INDACO project. Initially, the development of a 'smart algorithm' was imagined as an almost magical device capable of reconciling economic, ecological and social sustainability, making the platform both competitive and ethical within the hostile terrain of the platform economy. As the project unfolded, however, it became clear that these spheres do not naturally align. The persistent temporal frictions (characterised by power asymmetries) between the niche and incumbent landscape/regime forces meant that economic viability and profitability inevitably took precedence over long-term transformation of the Trentino digital market. In digital ESI, sustainability became reframed and narrowed:

> The issue of environmental sustainability is a question of priorities […] like water reaching your throat. You have to swim: when you must survive, the rest is less important. If you manage to swim freely enough in open waters, then you can also afford to put into practice a whole range of principles. (Int_2)

In other words, economic sustainability precedes all other dimensions.

Despite the difficulties encountered, the innovation niche succeeded in rethinking the platform in a way that made viability conceivable. As discussed above, one of the greatest challenges – particularly in e-commerce – is building a sufficiently large user base. Achieving the required scale was virtually impossible within the demographic constraints of Trentino. A strategic shift from proximity sales to the tourism sector emerged as the most viable

solution. Tourists outnumber residents almost ten to one annually; they are already attuned to the region's products and can be reached through their physical presence, reducing the high marketing costs associated with standard e-commerce outreach. Thus, 'the business model imagined by the province [was] repositioned on a new target' (Int_3).

INDACO was thus reoriented toward offering local food and wine 'excellences' to visitors, complemented by tourist services and experiences such as car rentals, festival tickets and curated trips. In this new configuration, sustainability remained a valued narrative but was materially reconfigured. The original ambition of ensuring efficient, ethical delivery through a smart algorithm becomes irrelevant once the target shifts outside the region; INDACO must rely on external logistics providers who may not share its transformative aims. Economic sustainability became largely equated with supporting small and medium producers and 'valorising the territory', a form of local development that may indirectly promote other dimensions of sustainability (MacCallum et al., 2009). However, INDACO's most innovative contribution now lies primarily at a model level (Int_3): identifying, aggregating and supporting digitalisation processes among local actors (Int_2). This is also done through the provisioning of consulting services for businesses, which can become a long-term form of investment in the territory's digital culture.

Strong social relations proved crucial to this realignment. Despite internal tensions, many interviewees (Int_1, Int_3, Int_4) expressed appreciation for the skills and dedication of those involved, who often contributed enthusiastically despite suboptimal conditions. No one at INDACO worked full-time; instead, staff from different partner organisations devoted part of their working hours to keeping the project afloat. These human relations, the niche's social and relational infrastructure, remain vital. Relations with external actors also mattered: the constructive partnership with Trentino Marketing, in particular, enabled the imagining of new development pathways and forms of alignment. Temporal and ideological attunement within the niche and between niche and supportive regime actors were key in supporting the project's continuation.

However, this reorganisation also marked a turning point: from embeddedness in the local socio-territorial fabric (Moulaert, 2009) toward a partial disembedding aimed at helping local producers accessing a market of predominantly privileged visitors. This was also reflected in a shifting temporality: from a long-term aspiration to change the socioeconomic fabric of the region, to a short-term pursuit of economic value in present arrangements. As the need to quickly generate economic value overtook the ambition to slowly reshape socio-material relations, the future-oriented, reformist aspirations of the initial project receded. The commodification of 'Trentino', as a bundle of products and experiences for visitors, began to dominate. The project's 'narrative of change' (Avelino et al., 2019) shifted from sociotechnical transformation to immediate territorial valorisation: 'INDACO today means giving Trentino a chance to stitch together and create a network of relations and economic development thanks to technology and e-commerce' (Int_7). Sustainability was thereby turned into an asset for market differentiation, echoing Bousalham and Vidaillet's (2018) notion of instrumentalised 'uniqueness'.

These tensions, between sustainability aims and economic imperatives, were reflected in the difficulty of constructing a consistent sustainability framing and practice. Internally, as Int_5 notes, the project began with a generic idea of sustainability but without clear goals, risking an open-ended exploration that 'goes nowhere'. Externally, efforts to articulate a strong sustainability alternative were overshadowed by more conventional, market-friendly narratives. As one participant reflects:

> We were probably not particularly convincing in arguing on this theme because it was considered secondary… We fell into the trap of the number of participating companies, which became a big issue, even though it has nothing to do with research. (Int_1)

This quotation conveys a sense of resignation: things did not unfold as hoped, and the new trajectory is more tightly aligned with mainstream capitalist dynamics. This is reinforced by the discourse of the INDACO company CEO, who joined later in the process, who prioritised revenue generation and framed sustainability as something that should 'not become an obstacle to economic development' (Int_7). From this perspective, earlier sufficiency-oriented aspirations appear as unrealistic, even a form of 'surrender'. In this sense, the *tempo* of innovation seems to be reaching towards that of the mainstream platform economy. Yet, the idea of providing a slow and careful business, with costly and delayed deliveries, remained at the heart of the platform – presenting again a tension between different temporalities of ecommerce and an instability for the business model, well attested by many interviewees.

At the time of writing, the research project is concluding, and INDACO Ltd is taking over. Across interviews, assessments are ambivalent. From a commercial standpoint, judged by platform subscribers or revenue, INDACO cannot be considered a success (Int_1, Int_2, Int_4). There are, however, important achievements: capacity-building among team members, new relational networks and the development of digital competencies among local actors (Int_3, Int_4). However, its ethical and sustainability goals have been significantly diluted. Moreover, despite commercial reorientation, without additional private investment, INDACO remains fragile and at risk (Int_6). Niche actors feel that institutions have left the project under-resourced and politically unsupported, generating anxiety about

competing in the market on unequal terms and the possibility that the initiative may ultimately be deemed a 'failure'.

The project's defining feature, even after realignment, remains its narrative of change (Avelino et al., 2019), centred on a platform that values territorial relations. However, this emphasis on 'territorial valorisation' represents a reduced adaptation of original SEEDS ambitions (Bousalham and Vidaillet, 2018; Lawhon and Murphy, 2012). At present, it is impossible to definitively assess the project's 'success' in conventional terms. However, two observations are possible: First, participants increasingly define success in non-economic terms, such as skill development and network building (Sekulova et al., 2023). Second, the transformative dimension of INDACO's mission, especially its sufficiency-oriented, relational sustainability goals, has been progressively diluted and repurposed as a marketing device. This represents, in itself, a form of unsuccess for an ESI initiative.

Discussion: temporal frictions in an ESI trajectory

Contrary to mainstream narratives portraying the platform economy as a 'frictionless' environment where barriers to competition and experimentation continuously diminish, our analysis shows that, for small, niche and experimental initiatives, frictions between transformative sustainability logics and capitalist hegemony are pervasive and often overwhelming. These frictions shape reorientations in core values and practices (Laamanen and Mikołajewska-Zając, 2024). In light of our research question – what roles do temporality, scaling challenges and structural constraints play in determining whether alternative digital platforms can achieve their social, economic and environmental objectives? – INDACO's 'mission drift' (Ebrahim et al., 2014) appears less as a simple (if unwilling) 'betrayal' of initial goals and more as the outcome of multiple, mutually reinforcing temporal frictions across levels of the sociotechnical system. By 'temporal frictions', we refer to how different times and temporalities of ESI development, across niche, regime and landscape, fail to align, producing contradictions, slowing progress and requiring multi-level redefinitions.

The Multi-Level Perspective (MLP) explains sociotechnical transitions through the role of niches as 'protective spaces' (Smith and Raven, 2012; Törnberg, 2018), whose potential to transform dominant regimes depends on evolving landscape conditions and on building supportive institutional and cultural relations (Geels, 2014; Roberts and Geels, 2019). Our analysis emphasises the temporal dimension of this dynamic: alternative digital platforms must develop at the right time, at a sustainable pace, and within supportive temporal horizons set by institutions and wider environments.

Two dynamics emerge as central. First, there is a chronological dimension: the timing of experimentation relative to changing landscape and regime conditions profoundly shapes the potential for alternative platforms to reach their objectives. INDACO emerged during the COVID-19 crisis, a perturbation that simultaneously strengthened corporate platform dominance and opened a temporary 'window of opportunity' for experimenting with socio-ecological alternatives (Dunlap et al., 2024). INDACO's ideation was attuned to this opening. However, its implementation coincided with a post-pandemic 'return to normality', marked by renewed consumer reliance on corporate platforms (Culpepper and Thelen, 2020), economic strain and a territorially rooted digital culture slow to embrace new modes of online exchange. As a result, INDACO's scaling efforts were out of sync with broader socio-economic events.

Niche–regime relations were also temporally misaligned. INDACO received a one-shot investment from the provincial government but lacked ongoing institutional embedding. This prevented the slow, cumulative sedimentation of networks, learning architectures and shared competencies needed to support ESI initiatives (Avelino et al., 2022; Unceta et al., 2016). The result was a strong disembeddedness from both local landscape and regime, leaving the project structurally vulnerable (Moulaert, 2009; Robra et al., 2023). The slow temporalities of transformative change within niches (Banerjee et al., 2021) collided with the fast temporalities of platform capitalism and institutional expectations of immediate outcomes (Langley and Leyshon, 2017). Instead of being sheltered, the project was effectively thrust into direct competition with corporate platforms – an uneven contest from the outset.

A second, equally important dimension concerns the symbolic and material temporalities embedded in different imaginaries of digitalisation. Designing a sustainable platform requires not only chronological time but also the reshaping of e-commerce's dominant temporalities. Interviewees repeatedly envisioned INDACO as a 'slow platform', aligned with post-growth and sufficiency approaches that prioritise wellbeing and care over profit (Beyeler, 2024; Niessen and Bocken, 2021). 'Slowness' here is an ontological and ethical stance. The need for realignment emerged precisely when two conflicting regimes of temporality collided, namely the SEEDS-oriented innovation that privileges socio-ecological values, slowness and durability, and the market-oriented temporalities that privilege acceleration, scaling and rapid value extraction. Possibly, a 'shielding' – at least by provincial institutions – of INDACO's *tempo* from the temporal pressures of the regime would have given the opportunity to experiment more widely with this model, and, possibly, yield more success and transformative power.

The dynamics of capitalist acceleration (Rosa, 2003) enable only short-term, non-transformative forms of change – an effect heightened in platform capitalism, where speed, innovation turnover and price competition dominate (Srnicek and De Sutter, 2017). This is shown by power dynamics and structural pressures, which play a central

role in shaping how temporal frictions are resolved. The dominance of economic objectives over concerns for fairness, justice and ecological protection (Walsh, 2023) indicates that actors controlling key resources – material, institutional, symbolic – determine which temporalities prevail (Avelino et al., 2019). Corporate platforms, with their massive infrastructural power, overshadow experimental projects; but equally important is the withdrawal of public institutions. In line with neoliberal patterns of institutional rollback, the province refrained from long-term support, leaving businesses and civil society actors to confront the structural pressures of platform capitalism alone (Swyngedouw, 2009). In this way, they narrowed INDACO's scope and reoriented its ambitions away from systemic change and toward immediate survival.

While our case study suggests that niche experimentation with alternatives may face too many frictions to make a practical impact, it also suggests that aligning with mainstream market requirements is not necessarily a solution – especially in highly competitive environments such as e-commerce and platform capitalism. Hence, alternative scaling strategies might and should be considered (Druijff and Kaika, 2021; Kostakis et al., 2024; Laamanen et al., 2023). What we can nevertheless argue, in line with some of our interviewees, is that the platform's 'mission drift' did not represent a total failure of the project, but rather its resignification as a kind of 'laboratory' of change and digital innovation – one that might support, in the long term, a resource for the province's digital transition. Success is thus to be assessed in an expanded timescape.

Conclusions

This article set out to answer an underexplored but straightforward question: How do temporal dynamics shape the trajectory and transformative potential of an emerging social innovation operating within the platform economy? Through the case of INDACO, a digital platform created in Trentino in response to the vulnerabilities exposed by the COVID-19 pandemic, we examined how multiple, layered temporalities interacted to push the project away from its initial economic, social, ecological and digital sustainability-oriented mission and toward more conventional commercial objectives – what we called 'mission drift'.

Initially conceived as a socially, economically and ecologically sustainable intervention to support local producers and strengthen community ties, INDACO never claimed to be a radical alternative to digital market logics. However, in its early phases, the project sought to embed a model of post-pandemic, place-based innovation aligned with principles of sustainability, sufficiency and territorial wellbeing. Over time, however, the need to rapidly establish a viable business in an increasingly competitive and saturated digital marketplace produced a mission drift (Ebrahim et al., 2014) towards more immediate, tourist-led, markets *and* longer-term commitment to generate digital services for local businesses.

Rather than attributing this shift solely to path dependency (Roberts and Geels, 2019), we showed how 'temporal frictions' between niche processes and the evolving landscape/regime produced the conditions for this drift. Three dimensions emerged as particularly salient. First, a chronological friction between the wider timescapes and niche innovation: the initial alignment with the pandemic 'window of opportunity' dissolved as Trentino returned to pre-crisis consumption habits. Second, a material friction: regime pressures for fast results (both from the province and the market itself) clashed with the slow, iterative work required for meaningful embedding in local socio-ecological systems. Third, a symbolic friction: accelerated narratives of platform-economy valorisation collided with INDACO's core SEEDS values, which presuppose a slower and more territorially grounded form of business.

These frictions intersect with asymmetries of power. Small actors attempting to drive disruptive innovation in the highly unequal, capital-intensive platform economy face structural disadvantages (Avelino and Rotmans, 2009; Walsh, 2023). Expectations that digital markets are fluid and easily accessible (Srnicek and De Sutter, 2017) conceal the dense dependencies, financial demands and scale requirements that make survival particularly difficult for actors located in peripheral regions (Culpepper and Thelen, 2020; Laamanen and Mikołajewska-Zając, 2024). Our analysis, therefore, underscores the need to better align the multiple temporalities – niche, regime, landscape – underpinning emergent social innovation and socio-technical transitions. Temporal alignment is only one element among many (including narratives, resources, networks, skills and territorial embeddedness) (see Dal Gobbo and Forno, 2025). However, it points to a structural, under-researched dimension of both the potential and the fragility of ESI within platform capitalism. Ultimately, transitions depend on the timescapes they inhabit: whether innovations are compelled to adopt the accelerated rhythms of capitalist valorisation, or are instead able to cultivate slow, convivial and frugal modes of organising (Kallis et al., 2020; Robra et al., 2023).

The INDACO project remains a work in progress, which limits the conclusiveness of our insights but also offers a rare opportunity to analyse a transition process as it unfolds rather than retrospectively. The long-term outcomes, both in terms of sustainability and functionality, will only become visible in the coming years. What our case already reveals, however, is the unresolved question of whether ESI can meaningfully drive transformative change in highly competitive, monopolistic digital markets. Evidence suggests that, for small actors, prioritising community wellbeing, needs-satisfaction and mutualistic relations may be more viable than attempting to scale within the dominant

extractive model (Cossey et al., 2023; Foramitti et al., 2020). This aligns with broader reflections on the potential of social and solidarity-economy districts to anchor post-growth and territorially grounded forms of innovation (Gibson-Graham et al., 2013; Laamanen et al., 2023).

Yet the challenges and opportunities of our case study shift the focus to the question of *platforms'* potential to become part of efforts for alternative economies and strategies. The digital domain is characterised by specific features that, as INDACO's case attests, seem to be difficult to circumvent, such as an inherent tendency to de-territorialise networks and to expand the reach of producers and consumers involved in a platform's functioning. This means that the ways in which grassroots experimentation in alternative economies work – that is, high control of user base, embeddedness in territories, close and personal trust relations – might be difficult to realise. While this does not preclude the transformative capacity of the platform economy (see Fortuny-Sicart et al., 2024; Foramitti et al., 2020), it does open up questions as to *how* to build strategies and trajectories of change. Surely, in line with literature on grassroots platform innovations, we argue that alternatives require more than individual initiatives.

Our specific contribution suggests that while temporal and other 'substantive' frictions between innovative and mainstream platform economy's missions do ensue, there are opportunities that territorial, coordinated, post-development strategies can indeed make frictions generative instead of reasons of failure. This we saw in the crucial role the province played in spurring innovation efforts – albeit it then failed to sustain this commitment in time. Institutions able to shield and promote the slow temporalities of sustainable innovation from the accelerated pace of capitalist platform markets might thus be crucial. In this respect, INDACO's trajectory highlights the broader relevance of post-growth innovation strategies, not only for organisations and innovators, but equally for public institutions tasked with enabling protected spaces for experimentation (Banerjee et al., 2021; Pansera and Fressoli, 2021). This raises a broader question about the governance arrangements needed to sustain eco-social digital initiatives over time. Further research is needed to identify which public-community partnerships, funding mechanisms and regulatory supports are most effective in preventing deviation from the ESI mission, ideally through comparative studies that compare successful and failed initiatives and pay particular attention to the temporal dynamics underlying their evolution.

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Ethical statement

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