

Article

Organizational Resilience During Public Funding Transitions: A Typology of Strategic Adaptation in Innovation Clusters

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Abstract

Innovation clusters contribute to regional development but face substantial organizational challenges when time-limited public support is reduced or withdrawn. This study examines how membership-based cluster organizations build resilience during such funding transitions. Drawing on organizational resilience theory and conceptualizing clusters as meta-organizations governed through negotiated authority, we conducted a qualitative comparative multiple-case study of nine innovation clusters in Norway and Europe. The empirical material comprises five live semi-structured interviews, four written responses to the same interview guide, and secondary documentary sources. An abductive within-case and cross-case analysis identified four strategic adaptation types: Revenue Diversifiers, Government-Exit Strategists, Survivalists, and Platform Shifters. Cross-case analysis showed that Revenue Diversifiers and Platform Shifters combined multiple revenue mechanisms and service infrastructures, whereas Survivalists remained primarily dependent on public grants and basic membership contributions. The findings show that resilience during predictable funding transitions is strengthened by anticipatory development of member-value propositions, service portfolios, partnerships, and digital infrastructure. The study contributes a typology of post-grant adaptation and explains how negotiated member legitimacy and coordinated service reconfiguration shape resilience in membership-based innovation intermediaries.

Keywords: innovation clusters; financial sustainability; organizational resilience; typology; Norway; funding transition; revenue diversification

1. Introduction

Innovation clusters remain important instruments of regional development because they facilitate knowledge exchange, joint innovation, and shared infrastructure among firms, universities, research institutions, and public bodies (Porter, 1998; Ketels, 2013; Rypestøl et al., 2021). Contemporary European cluster policy also positions cluster organizations as intermediaries supporting green and digital transitions, internationalization, and ecosystem coordination (European Cluster Collaboration Platform, 2024). Yet clusters are not only regional systems of interconnected actors. They are also formal organizations with managers, governance arrangements, service portfolios, and funding models whose continuity cannot be inferred from the resilience of the wider regional system.

In Norway and many other European settings, cluster organizations are membership-based intermediaries initially supported through time-limited public programmes. They build networks, facilitate knowledge transfer, represent shared interests, and coordinate



Academic Editor: Daniel Badulescu

Received: 29 April 2026

Revised: 15 July 2026

Accepted: 24 July 2026

Published: 28 July 2026

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collaborative projects. The transition toward financial independence is difficult because services, staffing, member expectations, and organizational identities are frequently developed around subsidized facilitation. Introducing fees or commercial services can therefore threaten the neutral intermediary role on which member trust depends. This challenge is intensified by the meta-organizational structure of clusters: managers coordinate autonomous organizational members and must negotiate strategic change without relying on conventional hierarchical authority (Berkowitz & Bor, 2024).

Recent organizational resilience research increasingly emphasizes anticipation, adaptive capability, interorganizational relationships, management controls, and digital renewal rather than simple recovery after disruption (Hillmann & Guenther, 2021; Kim et al., 2021; Awad & Martín-Rojas, 2024; Eichholz et al., 2024; Weber et al., 2024; Su et al., 2025). This processual and relational perspective is particularly relevant to predictable public-funding transitions because cluster organizations can begin developing alternative capabilities before financial pressure becomes acute. However, existing resilience research says less about how such preparation operates in membership-based innovation intermediaries whose strategic choices depend on negotiated member legitimacy.

Recent cluster research has advanced understanding of regional path development, asset modification, and the intermediary role of cluster organizations (Hassink et al., 2019; Rypestøl et al., 2021; European Cluster Collaboration Platform, 2024). Nevertheless, limited attention has been given to how the formal organizations coordinating clusters restructure their revenue models when public funding declines, why different adaptation pathways emerge, and how organizational resilience is conditioned by distributed authority and member legitimacy. This distinction matters because the resilience of a regional innovation system is not identical to the resilience of the membership organization that coordinates it. The resulting gap is relevant to cluster managers preparing for funding transitions and to policymakers designing time-limited support programmes.

RQ: How do innovation cluster organizations respond to public funding transitions, and what typologies of strategic adaptation emerge during this process?

SQ1: What distinct typologies of strategic adaptation can be identified among innovation cluster organizations during public funding transitions?

SQ2: How do the strategic choices associated with each typology contribute to revenue diversification and longer-term organizational resilience?

The article first conceptualizes cluster organizations as membership-based meta-organizations and develops organizational resilience as the primary analytical lens. It then presents the Norwegian and European policy context, the qualitative multiple-case design, and the analytical approach. Section 5 moves from descriptive textual analysis to the development and comparison of four strategic adaptation types. Section 6 interprets these findings in relation to organizational resilience and meta-organization research and develops two propositions. Section 7 synthesizes the contribution, policy and practice implications, limitations, and future-research agenda.

The study makes two connected contributions. First, it develops an empirically grounded typology—Revenue Diversifiers, Platform Shifters, Government-Exit Strategists, and Survivalists—that explains heterogeneous configurations of revenue mechanisms, services, partnerships, infrastructure, and transition planning. Second, it extends the processual view of organizational resilience to membership-based innovation intermediaries by showing how anticipatory capability development is conditioned by negotiated authority, member legitimacy, and coordinated service reconfiguration.

2. Literature Review

2.1. Innovation Clusters as Membership-Based Organizations

Innovation clusters are commonly defined as geographically or sectorally concentrated networks of firms, research institutions, public bodies, and support organizations that facilitate interaction and knowledge exchange (Porter, 1998; Ketels, 2013). Recent work further emphasizes the agency of cluster actors in regional industrial restructuring and the continuing role of cluster organizations as ecosystem intermediaries (Rypestøl et al., 2021; European Cluster Collaboration Platform, 2024). For the present study, it is important to distinguish the wider regional cluster from the formal cluster organization that coordinates collaborative activity. Cluster organizations have management teams, governance arrangements, service portfolios, and revenue structures; their organizational resilience may therefore differ from the resilience of the wider regional system.

European cluster policy positions cluster organizations as intermediaries among firms, research institutions, policymakers, and support actors. They facilitate collaboration, training, internationalization, digitalization, consulting, thematic events, and knowledge sharing (European Cluster Collaboration Platform, 2024). This intermediary role creates value for regional development but also exposes cluster organizations to competing expectations from public funders and autonomous members.

Publicly supported clusters are hybrid membership organizations. During the funded phase they frequently develop services, routines, and member expectations around subsidized facilitation. When public support declines, they must reconfigure services and revenue while preserving the collaborative role for which members joined. Research on cluster financial sustainability and contemporary cluster practice indicates that new pricing and service models depend on visible member value and organizational legitimacy (Kiss & Lukács, 2021; European Cluster Collaboration Platform, 2024). The transition is therefore not only a financing problem but also an organizational resilience challenge.

2.2. Organizational Resilience as a Processual Capability

Organizational resilience theory provides the primary theoretical lens for this study. Resilience is more than survival or a return to a pre-disruption state; it is a processual capability through which organizations anticipate threats, cope with pressure, adapt structures and activities, and renew their role under changed conditions. Duchek's (2020) capability-based conceptualization is especially relevant because it identifies anticipation, coping, and adaptation as interrelated stages through which resilience develops over time.

This processual perspective is well suited to public funding transitions because the disruption is broadly predictable rather than sudden. Cluster organizations know that core support is time limited. The central question is therefore whether they develop the capabilities required for transition before financial pressure becomes acute. Resilience can consequently be examined as anticipatory capability development rather than merely a reactive response after grants expire.

Recent studies reinforce this temporal and relational understanding. Conz and Magnani (2020) distinguish absorptive and adaptive resilience paths, while Hillmann and Guenther (2021) call for clearer conceptualization of resilience as a multidimensional organizational capacity. Kim et al. (2021) show that interorganizational networks can support resilience in public and non-governmental organizations. Together, these studies position resilience as a capacity built through preparedness, coordination, learning, and networked relationships rather than as an outcome observed only after disruption.

Planning and control practices also contribute to anticipatory resilience. Risk orientation, budgeting, and resilience-oriented management controls can help organizations prepare for disturbance and coordinate adaptive action (Eichholz et al., 2024;

Weber et al., 2024). For innovation clusters, such preparation includes communicating the implications of declining subsidies, developing alternative services and revenue mechanisms, and building partnerships before existing support ends.

In this study, external resource dependence is treated as the practical condition confronting publicly supported clusters, not as a separate theoretical lens. Organizational resilience theory explains how cluster organizations respond to that condition by anticipating funding change, maintaining coordination under pressure, and reconfiguring their activities and relationships.

2.3. Cluster Organizations as Meta-Organizations

The resilience challenge is intensified by the meta-organizational character of cluster organizations. Meta-organizations have organizations rather than individuals as members and coordinate collective action among participants with distinct goals, resources, and strategies (Berkowitz & Bor, 2024). Unlike conventional firms, they cannot rely primarily on hierarchical authority; strategic adaptation consequently depends on negotiated participation and continued voluntary commitment.

Meta-organizations can enable collective problem solving, but their membership diversity and limited centralized authority make coordinated change difficult (Berkowitz & Bor, 2024). Cluster managers cannot unilaterally impose higher fees or rapidly commercialize activities. They must negotiate changes with members whose continued engagement depends on perceived value, trust, and the legitimacy of the cluster's coordinating role.

These governance conditions directly constrain revenue capture. Members may expect services developed under public funding to remain subsidized or free, while commercial offerings can make a neutral facilitator appear to be an ordinary service provider. Research on cluster financial sustainability likewise shows that higher contributions require differentiated and visible member value (Kiss & Lukács, 2021). Service and pricing changes therefore require co-design, negotiated acceptance, and a clear account of the collective value produced for members (Berkowitz & Bor, 2024).

Meta-organizational resilience is consequently both strategic and relational. Revenue diversification can strengthen financial continuity only when the organization maintains member legitimacy and voluntary commitment. The capacity to coordinate service reconfiguration across autonomous members is therefore a central boundary condition for resilience during funding transitions, connecting networked resilience with meta-organizational governance (Kim et al., 2021; Berkowitz & Bor, 2024).

2.4. From Resilience Capability to Observable Adaptation Mechanisms

Organizational resilience provides the theoretical process—anticipation, coping, and adaptation—while the empirical analysis examines how that process becomes visible in cluster organizations (Duchek, 2020; Hillmann & Guenther, 2021). Five observable mechanisms are especially relevant: revenue diversification, service reconfiguration, partnership development, digital infrastructure, and legitimacy management.

Anticipation involves recognizing the approaching funding transition and developing alternative capabilities before pressure becomes acute (Duchek, 2020). In cluster organizations, this may include discussing future member contributions, experimenting with pricing, designing value-based services, building partnerships, and investing in digital delivery infrastructure.

Coping concerns the continuity of core coordination and member engagement while financial pressure increases. Because clusters lack hierarchical authority over members, coping also requires careful communication and the preservation of trust when previously subsidized activities are modified or priced (Berkowitz & Bor, 2024).

Adaptation becomes visible when clusters reconfigure service portfolios, partnership arrangements, delivery models, and revenue combinations. Paid workshops, consulting, matchmaking, co-funded projects, thematic networks, and digital platforms are empirical manifestations of adaptive capability in this organizational setting rather than separate theories (Awad & Martín-Rojas, 2024; Su et al., 2025).

Renewal concerns whether these adaptations support a credible and legitimate post-grant role. A resilient cluster does not simply replace one grant with another. It develops a sustainable configuration of services and relationships that preserves its intermediary function while reducing vulnerability to any single funding source.

2.5. Digital and Service-Based Pathways

Digital infrastructure is one possible manifestation of adaptive capability. Research links digital transformation to organizational learning, coordination, innovation, and business-model renewal (Heinz et al., 2021; Awad & Martín-Rojas, 2024; Su et al., 2025; Martín-Rojas et al., 2026). For cluster organizations, digital platforms can support scalable matchmaking, knowledge sharing, modular networks, and wider access to member services.

Digitalization is not, however, the only pathway to resilience. Service-based adaptation may be equally important because training, consultancy, facilitation, thematic events, and collaborative projects align closely with the established intermediary role of clusters (European Cluster Collaboration Platform, 2024). Such activities may therefore be easier to legitimize among members than more radical commercialization strategies.

Digital and service-based pathways both require the reconfiguration of member value. Digital infrastructure can extend reach and coordination, while service development makes the benefits of membership more tangible (Heinz et al., 2021; Awad & Martín-Rojas, 2024). Partnerships can complement both pathways by combining resources, distributing risk, and strengthening networked adaptive capacity (Kim et al., 2021).

The central resilience problem is thus not whether clusters digitalize or commercialize—it is whether they can reorganize services, relationships, and delivery models while maintaining legitimacy and developing a more sustainable revenue configuration. Table 1 summarizes the literature streams and their role in the analytical framework.

Table 1. Literature streams informing the theoretical framework.

Literature Stream	Recent Sources	Core Insight	Role in This Study
Organizational resilience	Duchek (2020); Conz and Magnani (2020); Hillmann and Guenther (2021)	Resilience develops through anticipation, coping, adaptation, and renewal across time.	Primary lens for explaining preparation and adaptation during predictable funding transitions.
Planning, control, and networked resilience	Kim et al. (2021); Eichholz et al. (2024); Weber et al. (2024)	Planning, management controls, and interorganizational relationships support preparedness and adaptive capacity.	Explains anticipatory preparation, coordination, and partnership development.
Meta-organizations and negotiated authority	Berkowitz and Bor (2024)	Autonomous organizational members create authority, coordination, and legitimacy constraints.	Explains why fees, pricing, and service changes require negotiated member acceptance.

Table 1. Cont.

Literature Stream	Recent Sources	Core Insight	Role in This Study
Cluster intermediary roles	Rypestøl et al. (2021) ; European Cluster Collaboration Platform (2024)	Clusters create value through collaboration, knowledge exchange, training, facilitation, and shared infrastructure.	Identifies service pathways that can remain legitimate during post-grant adaptation.
Digital and service-based adaptation	Heinz et al. (2021) ; Awad and Martín-Rojas (2024) ; Su et al. (2025) ; Martín-Rojas et al. (2026)	Digital infrastructure, learning, and service innovation enable coordination, scalability, and value renewal.	Supports interpretation of platforms, modular networks, and reconfigured services as resilience mechanisms.

Source: Authors’ synthesis based on the studies cited in the table.

3. Context

3.1. Public Support and Cluster Development in Norway

Norway provides a structured setting for examining cluster organizations during public funding transitions. Since 2002, the national cluster programme has offered time-limited support to organizations at different stages of development, combining capability building with increasing expectations of organizational and financial sustainability. Although programme names and modules changed during the study period, the underlying policy logic remained broadly consistent: public support was intended to catalyze collaboration, service development, and member value rather than provide permanent operating finance.¹

The Norwegian Innovation Clusters programme is jointly operated by Innovation Norway, Siva, and the Research Council of Norway. Its staged structure provides an institutional setting in which clusters vary in maturity, service development, and proximity to the end of public support. This variation makes it possible to compare how organizations prepare for, and respond to, changing funding conditions.

The programme’s catalytic logic creates a recurrent organizational challenge. Cluster organizations build coordination routines and member services during the funded phase but are expected to become more financially independent over time. Evaluations have identified post-funding sustainability as a vulnerability, particularly where limited staffing, small member organizations, and modest reserves constrain the development of alternative income ([Technopolis Group, 2018](#)).

The empirical cases include Norwegian clusters at different stages of this transition, supplemented by two European comparator cases. The analysis does not assume that a single national policy model can be transferred directly. Instead, it examines organizational mechanisms—anticipation, service reconfiguration, revenue diversification, partnership development, digital infrastructure, and member legitimacy—that may be relevant across time-limited cluster programmes.

The Norwegian setting also reflects a broader European policy logic. Under European state-aid rules, operating support for innovation clusters is time limited and user fees should correspond to market prices or costs, including a reasonable margin ([European Commission, 2023](#)). The challenge of developing viable post-support models is therefore not unique to Norway.

The NIC programme can consequently be understood as both a benchmark and a warning case. It is a benchmark because it institutionalizes progressive cluster development; it is a warning because organizational sustainability remains difficult when diversified income, strong member-value propositions, and adaptive capabilities are not developed before support declines.

3.2. Revenue Strategies During Funding Transitions

Membership contributions and public grants remain dominant revenue sources for many European cluster organizations, sometimes supplemented by national or EU project income (OECD, 2019; Ketels & Memedovic, 2008). This structure reflects the facilitation-oriented mandate of clusters during their publicly funded phases, when direct revenue generation is often secondary to collaboration and knowledge exchange.

Membership contributions vary from flat fees to tiered models based on organization size or service access. Tiered pricing can balance accessibility and revenue, but it succeeds only when higher tiers provide visible and differentiated value. Members are unlikely to increase their contributions when they cannot identify concrete additional benefits (Kiss & Lukács, 2021).

Service revenue from training, consulting, facilitation, events, matchmaking, and knowledge products offers one pathway beyond core grants. Yet pricing previously subsidized activities can generate resistance and threaten the cluster's identity as a neutral facilitator (Jungwirth & Müller, 2014). This makes commercialization a problem of legitimacy as well as revenue.

Other emerging mechanisms include digital platforms, topic-specific networks, sponsorships, and strategic partnerships with research institutions and international networks. Empirical understanding remains limited regarding why particular cluster organizations combine these mechanisms differently and how those combinations shape resilience during funding transitions.

4. Materials and Methods

4.1. Research Design

This study adopts a qualitative comparative multiple-case design to examine how cluster organizations interpret and respond to public funding transitions. The design combines within-case analysis with cross-case comparison and uses descriptive textual visualization only as a supplementary analytical aid. Its purpose is analytical explanation and typology development rather than statistical generalization.

An interpretive approach is appropriate because the research questions concern how organizational actors understand funding uncertainty, negotiate member value, and translate changing conditions into strategic action (Creswell & Poth, 2018). Multiple cases enable contextual depth while supporting systematic comparison of recurring mechanisms and contrasting adaptation pathways (Eisenhardt & Graebner, 2007).

4.2. Case Selection and Data Collection

Cases were selected through purposive criterion sampling. Two criteria guided inclusion: the organization had to be formally recognized as an innovation cluster or comparable membership-based intermediary, and it had to have experienced, or be approaching, a material reduction, withdrawal, or planned expiry of public support. These criteria maintained analytical comparability while allowing variation in sector, maturity, and strategic response.

The unit of analysis is the cluster organization. The empirical material comprises nine cluster cases: five represented through live semi-structured interviews—two conducted in person and three digitally—and four represented through written responses to the same interview guide. Interviewees and written respondents were cluster managers or organizational representatives with knowledge of funding arrangements, member services, and strategic development.

The common interview guide addressed revenue structures, funding mechanisms, membership contributions, responses to funding pressure, partnerships, commercialization, internationalization, and digitalization, and is presented in Appendix A. Written responses

covered the same topics and enabled comparison across cases, although they did not permit follow-up probing and varied in depth relative to live interviews. Secondary sources, including cluster websites, reports, press releases, and newsletters, were used to contextualize the primary material.

Together, the nine cases provide the qualitative empirical basis for the article. The combination of live and written accounts supports comparison of organizational strategies while retaining transparency about differences in interaction and depth.

Table 2 reports the case characteristics needed to assess sample breadth and data-source variation while preserving organizational anonymity. The common interview guide supported comparison, whereas live interviews enabled follow-up probing and written responses provided less interactive but directly comparable accounts. Documentary sources were used to contextualize all nine cases. The cases span seven sectoral or technological niches, three national settings, and organizations established between 2004 and 2019.

Table 2. Overview of anonymized cluster cases and primary data sources.

Case	Niche Focus	Country	Established	Primary Evidence	Mode
Cluster 1	Smart and sustainable city development	Norway	2014	Live interview	In person
Cluster 2	Welfare-technology testing and development	Norway	2009	Live interview	In person
Cluster 3	Sustainable process industry	Norway	2009	Live interview	Digital
Cluster 4	Technology for sustainable aquaculture	Norway	2016	Live interview	Digital
Cluster 5	Business development and innovation support	Norway	2004	Live interview	Digital
Cluster 6	Wood construction, wood fibre, and raw-material value creation	Norway	2019	Written response	Common interview guide
Cluster 7	Digital technologies and innovation	Denmark	2016	Written response	Common interview guide
Cluster 8	Sustainability and clean technologies	Switzerland	2012	Written response	Common interview guide
Cluster 9	Smart farming and cross-industry innovation	Norway	2019	Written response	Common interview guide

Note: All cases had experienced, or were approaching, a material reduction, withdrawal, or planned expiry of public support. Strategic response types and coded mechanisms are reported in Section 5 because they are analytical results rather than sampling characteristics. Source: Authors' compilation from case data and documentary sources.

4.3. Analytical Approach

The analysis followed an abductive logic, moving iteratively between theoretically informed concepts and patterns emerging from the cases (Dubois & Gadde, 2002; Timmermans & Tavory, 2012). First, interview transcripts, written responses, and documentary sources were organized by case. Structured case summaries captured funding conditions, membership arrangements, services, partnerships, digital initiatives, governance constraints, and responses to funding pressure.

Second, the material was coded through qualitative content analysis (Elo et al., 2014). Initial codes addressed public funding dependence, membership contributions, paid services, project income, partnerships, digital platforms, governance, and legitimacy. Within-case analysis preserved each organization's context; cross-case comparison then identified

recurring combinations of revenue and adaptation mechanisms. The four typologies—Revenue Diversifiers, Platform Shifters, Government-Exit Strategists, and Survivalists—were developed from these comparisons rather than being fixed before analysis.

Third, six strategic dimensions were selected for visual comparison: tiered pricing, digital platforms, co-funded projects, thematic networks, exit strategy, and value-based services. Each case was coded for the presence or absence of clear evidence that a strategy had been implemented or was actively operating. Typology-level scores report the proportion of constituent cases demonstrating each strategy. Accordingly, three-case typologies can take values of 0.00, 0.33, 0.67, or 1.00, whereas two-case typologies can take values of 0.00, 0.50, or 1.00. These descriptive proportions facilitate comparison and do not represent statistical measurement or inference.

Python 3.11.4 was used to conduct word-frequency analysis and generate a word cloud, providing an initial descriptive overview of recurring vocabulary; however, these outputs did not determine the codes or typologies. Documentary triangulation was used to clarify case context and compare reported practices with publicly available information (Flick, 2018). The findings are presented in three stages: a descriptive textual overview, within-case and cross-case development of the typology, and a spider-diagram visualization of strategic profiles.

4.4. Research Trustworthiness and Ethical Considerations

Trustworthiness was supported by methodological coherence between the research questions, purposive case-selection criteria, the common interview guide, and the abductive analytical procedure. Structured case summaries and explicit code definitions created a consistent basis for within-case interpretation and cross-case comparison. The typology was developed from recurring configurations in the material rather than being imposed before analysis, and the analytical steps are reported transparently to support interpretive credibility (Creswell & Poth, 2018; Elo et al., 2014).

Data-source triangulation combined live interviews, written responses, and publicly available documentary material. The analysis does not treat these sources as equivalent: live interviews enabled follow-up probing, whereas written responses followed the same guide but varied in depth. Documentary sources were used to clarify context and compare reported practices, and descriptive visualizations were kept analytically subordinate to qualitative coding and cross-case interpretation (Flick, 2018).

The research project was reviewed through Sikt's data-protection process. Participants received information about the study and interview topics, consented to participation and to recording where applicable, and were offered anonymity. Because the cluster field is relatively small and organizational identification could indirectly reveal individual respondents, the article uses case labels and removes identifying details. Research material was handled in accordance with GDPR and applicable institutional data-protection requirements.

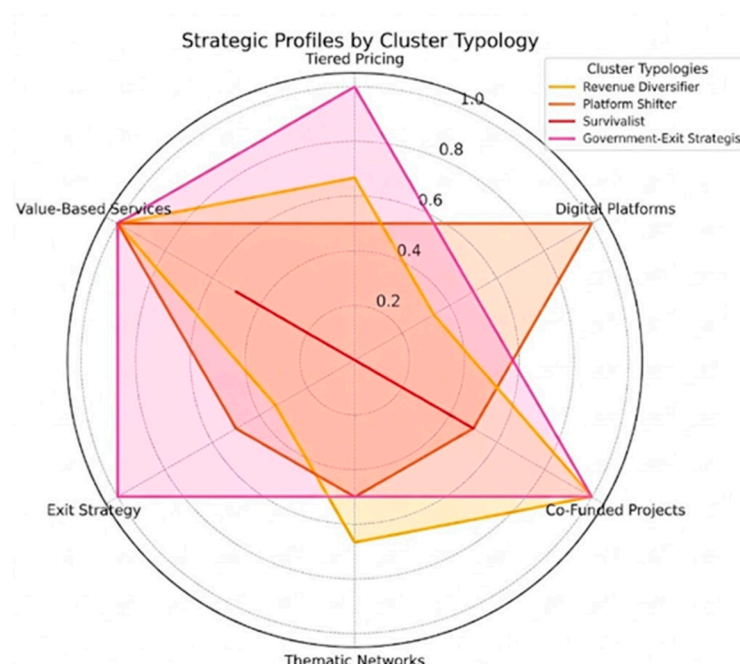
5. Results

The results are presented in five stages. Section 5.1 provides a limited descriptive overview of corpus vocabulary; Section 5.2 explains how the cross-case patterns led to the typology; Section 5.3 presents the four strategic adaptation types; Section 5.4 compares the mechanisms operating across types; and Section 5.5 identifies temporal patterns in capability development. Theoretical interpretation and comparison with prior literature are reserved for the Discussion.

Table 3. Typology of cluster responses to public funding transitions.

Cluster Type	Cases	Defining Characteristics	Primary Adaptation Mechanisms
Revenue Diversifiers	2, 3, 7	Broad revenue portfolios; value-based service development; multiple partnerships	Tiered contributions, projects, paid services, consulting, partnerships
Platform Shifters	4, 9	Digital infrastructure; modular networks; scalable member services	Digital platforms, thematic networks, subscriptions, Platform-as-a-Service
Government-Exit Strategists	1, 5	Explicit transition plans; gradual pricing and service changes	Tiered contributions, co-funded projects, paid facilitation, service reframing
Survivalists	6, 8	High grant dependence; limited staffing and member base; restricted diversification	Public grants, basic membership contributions, limited project co-funding

Figure 2 visualizes the descriptive proportions for the four typologies across six strategic dimensions. Government-Exit Strategists show broad adoption of tiered pricing and explicit exit planning; Platform Shifters are distinguished by digital platforms and thematic networks; Revenue Diversifiers combine several revenue and service mechanisms; and Survivalists display the narrowest strategic portfolio.

**Figure 2.** Strategic profiles by cluster typology (descriptive proportions based on case-level evidence).

The figure summarizes the coded case comparison and should not be interpreted as a statistical test.

Revenue Diversifiers (Clusters 2, 3, and 7)

Revenue Diversifiers have the broadest revenue portfolios in the sample. Their income combines membership contributions, project-based funding, paid workshops or facilitation, consulting, and strategic partnerships. Their relative resilience lies not simply in having more revenue sources but in coordinating several funding relationships while involving members in the design of services and value propositions.

Cluster 7 displayed the widest service development, including consulting and support for intellectual-property commercialization alongside tiered pricing. Cluster 3 reorganized its operations around projects and co-funded services, as reflected in the following account:

“We are a project organization now. No more core grants. Every role must link to a project or a co-funded service.”—Cluster 3

Cluster 2 occupied an intermediate position, combining value-based services with established public-sector relationships. Across the three cases, diversification was associated with earlier attention to member value, service development, and multiple partnerships. This anticipatory orientation distinguishes Revenue Diversifiers from types that began developing alternatives only after financial pressure became acute.

Platform Shifters (Clusters 4 and 9)

Platform Shifters are distinguished by deliberate investment in digital infrastructure as both a member-engagement mechanism and a potential source of revenue. Rather than relying only on broad facilitation, they develop modular digital services, topic-specific networks, matchmaking tools, and knowledge platforms that can be offered through subscriptions or network-specific contributions.

Cluster 4 developed topic-specific sub-networks in which participants could contribute to activities aligned with their interests rather than purchasing access to the full service portfolio:

“We are testing new networks. They pay less than full members, but the goal is to build several topic-based networks that can sustain themselves.”—Cluster 4

Cluster 9 pursued a related pathway through thematic portals and a Platform-as-a-Service model. Both cases combined digital delivery with value-based services, while traditional tiered pricing was less central. Their current models draw on infrastructure developed during the funded period, suggesting that the Platform Shifter pathway depends on capabilities accumulated before immediate financial pressure.

Government-Exit Strategists (Clusters 1 and 5)

Government-Exit Strategists were engaged in deliberate transitions from grant dependence toward greater financial autonomy. Unlike Revenue Diversifiers, they had not yet established equally broad alternative portfolios; their defining feature was an explicit transition plan accompanied by gradual changes to pricing, services, and member relationships.

Cluster 1 introduced co-funded projects and tiered pricing while repositioning smart-city facilitation as a paid service for public-sector clients. The activity generated income while remaining connected to the cluster’s public-interest role:

“We now charge for helping public actors coordinate and procure innovation—not just for our members.”—Cluster 1

Cluster 5 followed a measured approach, reframing services and gradually introducing fees while consulting members to reduce resistance. Both cases showed progress in pricing, co-funded projects, value-based services, and exit planning. Their experience illustrates how meta-organizational change requires negotiated acceptance rather than unilateral commercialization.

Survivalists (Clusters 6 and 8)

Survivalists remained predominantly dependent on public grants and basic membership contributions. Limited staffing, small member bases, and restricted partnership networks constrained their capacity to develop commercial services or digital infrastructure. Their strategic profiles therefore showed less diversification than the other types.

“We negotiate our budget every four years. The remaining 20% has to be found with creativity.”—Cluster 8

The label does not imply passivity. Cluster 6 pursued project-based co-funding and member in-kind contributions, while Cluster 8 developed partial relationships with institu-

tional investors. These efforts nevertheless remained constrained by operational capacity and dependence on a small number of public resource providers.

“It is hard to find funding beyond government grants. There is no big money—we have to work with smaller amounts.”—Cluster 6

The Survivalist cases reveal a meta-organizational dilemma. Narrowing services can reduce relevance to members, while rapid commercialization can undermine the neutrality members value. Their vulnerability therefore reflects not only willingness to change but also the limited adaptive capacity and negotiated member support available when financial pressure intensifies.

5.4. Cross-Case Mechanisms: Revenue Diversification, Member Legitimacy, and Partnerships

Three cross-cutting mechanisms explain how strategic choices contribute to resilience across the typologies: membership restructuring, service reconfiguration, and partnership development. Their effects depend on the organization’s capacity to negotiate member legitimacy and coordinate change.

Tiered pricing was widely discussed, but its effectiveness depended on visible differences in member value. In Cluster 1, most members remained in the lowest tier, illustrating that higher contributions cannot simply be imposed. Cluster 7 linked premium participation to more specialized support, making the additional value more tangible.

Service reconfiguration created a tension between revenue development and institutional identity. One manager summarized the concern:

“If we start selling too much, we are no longer a platform—we are just another service provider.”—Cluster 1

Clusters that managed this tension more effectively co-designed services with members, framed pricing as investment in collective value, and retained visible non-commercial activities. Legitimacy management was therefore part of resilience: service revenue was more acceptable when commercialization remained consistent with the cluster’s intermediary role.

Partnerships with companies, research institutions, and innovation bodies provided complementary resources and revenue. Cluster 9’s development of a sponsor-supported platform illustrates how relationships accumulated during the funded phase can support later adaptation. Across the cases, partnership value depended on prior relational work rather than on a rapid post-grant search for replacement finance.

5.5. Temporal Patterns of Strategic Adaptation

The typology captures positions within a developing process rather than fixed organizational identities. The cases indicate movement from reactive cost reduction toward more deliberate service, partnership, and member-value development, although the cross-sectional design does not establish a universal sequence.

The cases furthest from grant dependence had invested earlier in member engagement and the communication of organizational value. These relational and reputational resources supported later changes in pricing and services. This pattern is consistent with an anticipatory understanding of resilience, but longitudinal research is needed to establish how trajectories unfold over time.

Digital infrastructure provides a particularly visible example. Platform Shifters developed systems before commercial returns were apparent, and their current offerings build on that accumulated infrastructure. This suggests that digital pathways require sustained capability development and are difficult to reproduce rapidly after funding pressure has already intensified.

Survivalists faced the strongest structural and relational constraints. Limited staff, small member communities, and thin partnership networks narrowed the choices available to them. For these organizations, capacity building during the funded phase may be more useful than expecting rapid commercialization at the point of exit.

In summary, the cross-case results show that broader adaptive capacity was associated with earlier development of member-value propositions, diversified service and revenue mechanisms, partnerships, and delivery infrastructure. The cases also show that these mechanisms became operational only when cluster managers could maintain member engagement and negotiate the legitimacy of service and pricing changes. These empirical patterns provide the basis for the theoretical interpretation developed in the following Section 6.

6. Discussion

The results show that organizational resilience during public-funding transitions cannot be reduced to the presence of alternative income sources. The nine cases followed four distinguishable strategic pathways and differed in when capabilities were developed, how revenue and service mechanisms were combined, and whether changes could be legitimized among autonomous members. This section interprets these patterns in relation to processual organizational resilience, networked adaptation, and meta-organizational governance.

6.1. Strategic Adaptation Pathways and the Value of the Typology

The first contribution is an empirically grounded and theoretically informative typology of resilience pathways. Prior research conceptualizes organizational resilience as a process or capability involving anticipation, coping, and adaptation (Duchek, 2020), and distinguishes alternative resilience paths without specifying how membership-based innovation intermediaries configure revenue, services, partnerships, and infrastructure during a predictable institutional transition (Conz & Magnani, 2020; Hillmann & Guenther, 2021). The four types add a configurational account: Revenue Diversifiers combine several income and service mechanisms; Platform Shifters build a modular digital infrastructure; Government-Exit Strategists pursue planned but incomplete transitions; and Survivalists remain constrained by limited capacity and narrow resource relationships. The typology therefore explains heterogeneous pathways rather than treating resilience as a single continuum or a binary survival outcome.

The typology also contributes to research on meta-organizations. Existing work emphasizes the tensions created when autonomous organizational members must coordinate collective transformation without hierarchical authority (Berkowitz & Bor, 2024). The cases show how this governance condition differentiates resilience pathways: the same revenue mechanism has different viability depending on whether managers can negotiate member value, legitimate new pricing, and coordinate service reconfiguration. This links strategic adaptation to the relational conditions under which a meta-organization can convert capabilities into sustainable operating revenue.

6.2. Anticipatory Capability Development During Predictable Transitions

A second, related theoretical contribution concerns the temporal and relational construction of resilience. Building on the processual view that resilience capabilities develop before, during, and after disruption (Duchek, 2020; Conz & Magnani, 2020), the findings show that a predictable funding transition shifts analytical attention toward preparation during the funded period. Member-value propositions, services, partnerships, and delivery infrastructure are not merely post-crisis responses; they are anticipatory capability investments. In meta-organizations, however, their usefulness depends on negotiated authority

and legitimacy because managers must coordinate autonomous members while changing activities that were previously subsidized.

Revenue Diversifiers and Platform Shifters had developed several revenue, service, partnership, or infrastructure mechanisms before funding pressure became acute, whereas Survivalists remained more dependent on grants and basic membership contributions. This contrast supports the following proposition:

Proposition 1. *In publicly supported innovation clusters, the development of alternative revenue mechanisms, member-value propositions, and service infrastructure during the funded period is associated with stronger adaptive capacity during subsequent funding transitions.*

The comparison indicates that anticipatory investments create option value during a later transition: organizations can recombine capabilities already developed rather than attempting rapid commercialization after pressure intensifies. This finding extends processual accounts of anticipation and adaptation (Duchek, 2020; Conz & Magnani, 2020) and complements recent evidence linking organizational learning, digital infrastructure, and resilience (Awad & Martín-Rojas, 2024; Su et al., 2025).

6.3. Negotiated Legitimacy and Meta-Organizational Resilience

External resource dependence constitutes the practical challenge, but organizational resilience explains the adaptive process. This distinction extends resilience research beyond internal preparedness and control systems (Eichholz et al., 2024; Weber et al., 2024) by showing that adaptive capacity in membership-based intermediaries is co-produced through interorganizational relationships and negotiated member commitment (Kim et al., 2021; Berkowitz & Bor, 2024). Reducing vulnerability therefore requires more than replacing one funding source with another; it requires a legitimate reconfiguration of how the cluster creates, communicates, and finances collective value.

Proposition 2. *In membership-based innovation clusters, organizational resilience is strengthened when revenue diversification is accompanied by negotiated member legitimacy and coordinated service reconfiguration.*

The comparison between Revenue Diversifiers and Survivalists shows why diversification cannot be separated from governance and member relationships. Organizations that co-designed services and communicated differentiated value were better positioned to introduce fees and combine funding mechanisms. Those with limited capacity and weaker member-value structures faced greater difficulty converting strategic intent into operating revenue. This finding extends meta-organization research by showing that distributed authority does not merely slow change; it conditions whether adaptive capabilities can be converted into legitimate revenue arrangements (Berkowitz & Bor, 2024). It also connects networked resilience to the practical reconfiguration of services and funding relationships (Kim et al., 2021).

Together, the propositions extend organizational resilience research in three ways. First, they specify anticipatory capability development during the funded period as a mechanism through which organizations prepare for a foreseeable transition, refining processual accounts of anticipation and adaptation (Duchek, 2020; Conz & Magnani, 2020). Second, they identify negotiated legitimacy as a boundary condition that is especially important when authority is distributed among autonomous organizational members (Berkowitz & Bor, 2024). Third, they connect networked resilience (Kim et al., 2021) to revenue and service reconfiguration by showing how partnerships and member relationships affect whether new mechanisms become operational. The contribution is therefore

not that diversification universally produces resilience, but that resilience emerges from the alignment of anticipatory capabilities, strategic configurations, and legitimate meta-organizational coordination.

7. Conclusions

This study asked how innovation cluster organizations respond to public-funding transitions and what strategic adaptation types emerge. The answer is not a single model of financial independence. Revenue Diversifiers, Platform Shifters, Government-Exit Strategists, and Survivalists combine revenue mechanisms, services, partnerships, digital infrastructure, and transition planning in distinct ways. Across these pathways, stronger adaptive capacity was associated with capability development during the funded period and with the ability to negotiate legitimate changes in member value, services, and pricing.

Theoretically, this study links a processual understanding of organizational resilience with the negotiated authority of meta-organizations. It shows that resilience in membership-based innovation intermediaries is not produced by diversification alone, but through the alignment of anticipatory investments, strategic configurations, coordinated service reconfiguration, partnerships, and member legitimacy. Practically, the findings encourage policymakers and cluster managers to treat funding exit as an organizational development process that begins before grants decline. The proposed typology and action guide support diagnosis and staged adaptation while avoiding the assumption that every cluster should follow the same route.

7.1. Implications for Policy and Practice

For policymakers, the findings argue against uniform exit arrangements. Cluster organizations approaching the end of support differ in capabilities and strategic position. Revenue Diversifiers and Government-Exit Strategists may primarily require time and continuity to complete developments already underway. Platform Shifters may benefit from access to shared digital infrastructure and co-investment. Survivalists may need earlier governance support, capability building, and facilitated partnership development rather than financial incentives alone.

For practitioners, the findings emphasize early investment in communicating member value, co-designing services, developing partnerships, and building delivery infrastructure before funding pressure becomes acute. The typology provides a diagnostic language for examining current capabilities, but it should be used as a developmental framework rather than a permanent label. Table 4 translates the findings into an action guide for meta-governed cluster organizations. The sequence begins with diagnosing the funding transition and member-value problem, then builds a portfolio of legitimate mechanisms, tests them through negotiated pilots, and monitors both financial contribution and member acceptance.

Table 4. Action guide for resilience in meta-governed cluster organizations.

Managing Priority	Operational Action	Indicative Monitoring Focus
Anticipate the transition	Map the timing and scale of expected funding reductions; identify which services, roles, and capabilities are currently subsidy-dependent	Funding exposure; transition milestones; capabilities that must be built before support declines.
Negotiate member value	Co-design service bundles and tiered contributions with autonomous members; make collective and differentiated value explicit before changing fees.	Member participation; perceived value; acceptance of pricing; retention and engagement across member groups.

Table 4. *Cont.*

Managing Priority	Operational Action	Indicative Monitoring Focus
Build a revenue portfolio	Combine membership contributions with paid services, co-funded projects, partnerships, sponsorships, or platform-based mechanisms rather than seeking one substitute grant.	Revenue concentration; contribution by mechanism; recurring versus project income; alignment with the cluster's intermediary role.
Develop delivery capability	Invest early in staff, partnerships, modular services, and digital infrastructure required to deliver value at scale.	Service uptake; delivery cost; repeat use; partnership contribution; readiness of digital and organizational infrastructure.
Pilot, learn, and govern	Introduce changes through bounded pilots, assign responsibility, document member feedback, and revise services or pricing before full implementation.	Pilot conversion; concerns resolved; adaptations made; accountable owner; effects on legitimacy and coordination.

Source: Authors' synthesis based on the cross-case findings.

The action guide reflects the study's central theoretical implication: in a meta-organization, financial adaptation is inseparable from governance. Managers should therefore monitor not only income generated but also whether new arrangements preserve member legitimacy, voluntary commitment, and the coordinating role of the cluster.

7.2. Limitations and Future Research

Consistent with its qualitative multiple-case design, this study does not aim for statistical generalization. Instead, it develops analytically transferable explanations of how membership-based cluster organizations respond to public funding transitions. Transferability is bounded by the concentration of cases in Norway, differences in national policy and governance contexts, unequal depth between live interviews and written responses, and the retrospective, cross-sectional character of the evidence. The material also primarily reflects managers and organizational representatives rather than the wider membership or policymakers.

Future research should examine the typology across additional national contexts and include members, policymakers, and programme administrators alongside cluster managers. Longitudinal studies could follow organizations before, during, and after funding transitions to test whether anticipatory service and revenue development leads to stronger adaptive capacity. Standardized follow-up interviews would reduce differences between live and written accounts, while researcher triangulation and transparent comparative coding could strengthen interpretive credibility. Larger comparative samples could subsequently assess the prevalence of the four types and refine the propositions developed here.

Author Contributions: Conceptualization, S.N., M.S.I. and T.I.; methodology, S.N. and M.S.I.; formal analysis, S.N.; investigation, S.N. and M.S.I.; writing—original draft preparation, S.N.; writing—review and editing, T.I.; supervision, T.I. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: The study was reviewed and approved by Sikt—the Norwegian Agency for Shared Services in Education and Research (reference number 251877). All procedures involving human participants were conducted in accordance with applicable ethical and data-protection requirements.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: The interview transcripts are not publicly available due to confidentiality, privacy, and participant anonymity requirements specified in the study's ethical and data-protection approval.

Acknowledgments: This article draws on a research project examining strategic adaptation and long-term financial resilience in innovation clusters. The identity of the supporting cluster organization and the full project title are withheld during peer review to preserve anonymity. We thank the participating cluster managers and representatives. During revision of the manuscript, the authors used OpenAI's ChatGPT 5.4 for language editing, editorial support, and assistance with manuscript organization. All substantive arguments, methodological decisions, interpretations, references, and final text were reviewed and approved by the authors, who take full responsibility for the article.

Conflicts of Interest: The authors declare no conflicts of interest.

Appendix A

Interview Guide

Introduction Questions

- Can you briefly describe your cluster and its major areas of expertise?
 - What are your cluster's main financial and long-term sustainability objectives?
 - How do you define your cluster's success in terms of financial growth?
1. Cluster Business Models & Revenue Structure
 - Can you briefly describe your cluster and its major areas of expertise?
 - Can you identify the key revenue sources the cluster depends on?
 - What methods do you follow to evaluate the performance of your revenue model, (i.e., profitability, revenue diversification) What specific metrics do you follow?
 2. Funding & Investment Mechanisms
 - What funding challenges do you face and how do you acquire it besides government grants
 - Have you experienced any variation in funding patterns in the last decades? What are the key changing drivers?
 - What is the significance of government grants in your funding structure and how do you diversify it to minimize dependency?
 - What methods do you use to ensure profitability and strategic fit for investors?
 3. Revenue Strategies & Membership Models
 - What are the most effective revenue models in your cluster?
 - In what ways do you determine membership fees to ensure new ventures have financial stability?
 - What results have you observed with different pricing strategies?
 - What are your strategies to attract and retain strategic partners?
 - What is the role of industry partnerships in structuring your revenue model and what factors do you consider?
 4. Public-Private Partnerships (PPP) & Policy Impact
 - In what ways government involvement impacts your cluster's revenue-generating potential?
 - What are the key benefits and risks of collaborating with public institutions on funding innovation?
 - How do you balance the influence between government and private institutions in decision-making?
 - How has country policy affected your ability to acquire funds or generate new revenue streams?

5. Investment & Scaling Strategies
 - What factors make your cluster attractive to venture capitalists and private investors?
 - How do you ensure your cluster remains competitive when seeking funding from global investors?
 - Have you explored alternative investment models such as crowdfunding, tokenized investments, or revenue-sharing agreements?
 - What challenges have you faced when scaling your cluster financially, and how have you overcome them?
 - What role do corporate venture capital (CVC) investments play in helping clusters?
6. R&D Commercialization & Knowledge Spillover
 - How does your cluster commercialize its R&D efforts?
 - Have you successfully commercialized patents or research projects? What were the main challenges?
 - Which strategies have been most effective in developing R&D into a sustainable income stream?
 - In what ways do you work with startups and enterprises to develop R&D commercialization opportunities?
 - What role does the cluster play in facilitating licensing, spin-offs, or commercialization agreements and how does it generate income?
7. Global Expansion & International Market Adaptation
 - What are the most significant financial challenges innovative clusters face when growing internationally?
 - How do you structure your revenue model when entering a new market?
 - Which strategies have been most beneficial for expanding outside local markets while maintaining financial sustainability?
 - Have you discovered revenue strategies that work better globally than locally?
 - How can you use your global network to gain access to new financing and income streams?
8. Digitalization, Industry 4.0 & Future Revenue Models
 - How has digital transformation changed your cluster's revenue?
 - How do blockchain, artificial intelligence, and platform-based business models fit into your overall financial strategy?
 - Have you explored data monetization as a revenue source? If so, how effective was it?
 - What digital tools or technology have you used to improve revenue growth or lower costs?
 - How do you anticipate digital revolution will transform innovation clusters in next 5–10 years?

Note

- ¹ During the study period, the earlier Arena/Arena Pro, NCE, and GCE modules were being replaced by NIC Connect, NIC Explore, and NIC Impact. Some clusters retained earlier designations until their existing programme periods ended (Innovation Norway, 2025).

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