Managing Collaborative Arrangements

Challenges associated with managing secondary structures

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Challenges associated with managing secondary structures

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Abstract

There is a widespread consensus that collaborative arrangements do not replace but instead add one or more layers of structural complexity to traditional organizations. In response to the challenges confronting contemporary societies, different network forms such as intermunicipal cooperation, joint ventures, clusters, partnerships, and many similar collective entities become necessary to improve organizational performance and to tackle many challenges in the public sector. For example, networks are essential for the implementation of larger programs, the reduction of unemployment, designing solutions for demographic ageing, responding to ongoing issues like climate change or new issues such as COVID-19. Innovation is widely argued as a key strategy to adequately respond to increased levels of complexity and ongoing crises. Networked arrangements, and especially governance networks that cross sectors and organizations are being turned to a primary means to bring together the necessary resources (people, ideas, and technology) to generate innovation. These governance networks operate alongside traditional government operating structures and, as such, become a secondary place of interaction and work.

Indeed, networks are structures of interdependence involving often multiple interdependent organizations. Such structures display more distinctive features compared to traditional hierarchical structures because they have a self-governing ethos and limited authority. Moreover, member organizations must deliberately leverage their relationships to 'reinvent' themselves and build a new collective whole. Additionally, managers of collaborative arrangements must not only facilitate complex interaction settings, but also establish strategies to tackle different interests across governmental lines. Together, these factors make it more challenging for the social resources held within collaborations to be actively and deliberately managed. It also makes them more unstable and prone to failure.

This thesis addresses the challenges of these dual structures that lead to complexity and the need for different design and management approaches. In doing so, it spotlights two types of collaborative arrangements with attributes that correspond with the features of governance networks. Then, the thesis concentrates on two research topics largely overlooked in inter-organizational relations literature. First, it unpacks several structural and process-based features that might influence the breakdown of networked arrangements - a growing concern, particularly for public

sector networks required to produce public value. An enhanced understanding of the factors that might undermine collaboration will improve efficiency and effectiveness of such networks. Second, the thesis will provide nuanced insights into the active management of networks. Two papers here focus on managerial networking across network arrangements. Of these, one paper addresses the antecedents of managerial networking, while the second concentrates on the outcomes of managerial networking, more specifically innovation. Given that responsibilities and expectations of all public managers constantly grow, this thesis aims to shed new light on what factors contribute to network success.

The work is structured around five chapters and three research papers, of these a book chapter and an article are already published, and the other is under review. The main findings of this thesis indicate that different managerial activities such as the practicing of active networking in networks - not only within the network domain, but especially with diverse external stakeholders, is required for networks to successfully deliver public value. The results also emphasize the importance of key actors in keeping secondary structures functional as they are responsible for building trust between network entities as well as for facilitating increasing effectiveness and establishing legitimacy. As with most research projects, this thesis presents some limitations such as a low sample of empirical entities. However, the high response rate from the survey undertaken and the deep insights afforded through semi-structured interviews, add strength to the study and, in turn, helps mitigate such limitations.

This thesis offers several contributions. The first expands the current state of knowledge on the shortcomings of networks as secondary structures, especially by suggesting the possible causes of their breakdown and, in so doing, identifies areas for future improvement. In addition, this thesis contributes to the theory of external network management by outlining a multidimensional networking framework to replace/extend previous queries. Alongside the theoretical contributions, implications for network practitioners are identified. Ultimately, this thesis calls for the active practicing of managerial networking in networks as secondary structures to improve their outcomes.

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Undertaking a thesis on collaborative arrangements has shown how much *networking* means for our individual lives, and how much we depend on connectivity to achieve our goals.

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Barbara Zyzak

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List of Abbreviations

CCS	Comparative Case Study
GN	Governance Networks
IMC	Inter-municipal Cooperation
IOC	Inter-organizational Cooperation
IOR	Inter-organizational Relations
IT	Implementation Theory
KS	Norwegian Association of Local and Regional Authorities
M	Municipalities
MO	Meta-Organization
NG	Network Governance
NPM	New Public Management
OLS	Ordinary Least Squares
PA	Public Administration
PSI	Public Sector Innovation
RC	Regional Council
RDT	Resource Dependence Theory
RICU	Regional Innovation Coordination Unit
SH	Structural Holes
SNT	Social Network Theory
SWT	Strength of Weak Ties
QCA	Qualitative Comparative Analysis

List of Research Papers

Zyzak, B. (2017). Breakdown of Inter-Organizational Cooperation. The case of regional councils in Norway. In Trondal J. (eds) The Rise of Common Political Order. Institutions, Public Administration and Transnational Space. UK: Edward Elgar Publishing. 12. s 251 - 269. ISBN: 978-1-78643-499-9.[1]

Zyzak, B., Jacobsen D.I. (2019). External Managerial Networking in Meta-Organisations. Evidence from Regional Councils in Norway. *Public Management Review*. ISSN: 1471-9037. doi:10.1080/14719037.2019.1632922.[2]

Zyzak, B. (under review). The Impact of Managerial Networking on Innovation Outcomes in the Public Sector.[3]

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[1] This is a draft chapter/article. The final version is available in The Rise of Common Political Order: Institutions, Public Administration and Transnational Space edited by Jarle Trondal, published in 2017, Edward Elgar Publishing Ltd http://dx.doi.org/10.4337/9781786435002.00022.

[2] This is an original manuscript of an article published by Taylor & Francis in Public Management Review on 02/07/2019, available online: http://www.tandfonline.com/10.1080/14719037.2019.1632922.

[3] This is a pre-print of an article that is currently under review.

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PART I

1. Introduction

Over the past two decades there has been a notable move toward inter-organizational arrangements that address both emergent and ongoing problems. Such issues defy single organizational functioning and require more collective and even collaborative efforts to broker shared resources, information, activities, joint solutions, as well as to deliver innovation (Kapucu & Hu, 2020). While there are many studies on different inter-organizational arrangements across a variety of academic disciplines (i.e. sociological, political, and public management traditions) (Ansell & Torfing, 2014; Berry et al., 2004; Voets, Keast, & Koliba, 2020; Kapucu & Hu, 2020), networked arrangements have dominated. The literature has identified several different types of networks differentiated by purpose and strengths of relationships/service delivery, policy, and governance (i.e. Keast, Brown, & Mandell, 2007; Keast, Mandell, & Agranoff, 2014; Klijn & Koppenjan, 2012, 2016; Parker, 2007).

Although many authors acknowledge the importance of collaborative networks at different levels, from the international level such as the European Union and NATO (Koops, 2017) to the local level such as the Inter-Municipal Cooperation (i.e. Jacobsen, 2014; Montfort & Hulst, 2010; Teles & Swianiewicz, 2018); their diversity makes a concise definition difficult (i.e. Bergenholtz & Waldstrøm, 2011; Bingham & O'Leary, 2015; Brass, Galaskiewicz, Greve, & Wenpin, 2004; Börzel, 2011; Isett, Mergel, Leroux, Mischen, & Rethemeyer, 2011; Keast et al., 2014; Klijn & Koppenjan, 2016; Provan, Fish, & Sydow, 2007; Raab, Mannak, & Cambre, 2015). Notwithstanding the contested definition of collaboration and its frequent conflation with similar terms such as cooperation and coordination[4] (Keast et al., 2007; Keast, Mandell, Brown, & Woolcock, 2004; McNamara, 2012); there is a generalized agreement among public network scholars that collaboration refers to "*any joint activity by two or more agencies that is intended to increase public value by their working together rather than separately*" (Gray, 1989, p. 8). Moreover, Agranoff and McGuire have emphasized the value of collaborative networks as "*the process of facilitating and operating in multiorganizational arrangements to solve problems that cannot be solved, or*

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[4] Cooperative and collaborative arrangements are often mixed with other Cs– e.g. cooperation, coordination, and collaboration (Robyn Keast et al., 2007). Agranoff and McGuire distinguish collaborative from cooperative: although both entail working jointly to solve a problem, cooperation has an additional dimension of helpfulness and the absence of hostility (see more in Bingham et al., 2005).

solved easily, by single organizations" (Agranoff & McGuire, 2004, p. 4). Hence, collaborative networks consist of at least three or more interdependent entities that are autonomous and heterogenous but collaborate to achieve a common goal (Bingham, Nabatchi, & O'Leary, 2005), and consequently requires coordination to minimize conflicts and succeed (Provan & Lemaire, 2012).

There has also been a tendency in the literature to conflate networks with governance networks, however these two concepts differ, inasmuch "*for networks to be regarded as a form of governance they must play a role in steering, setting directions and influencing behaviour*" (Parker, 2007, p. 114). Following this narrowed definition, this thesis is interested in collaborative arrangements that characteristics correspond with the features of governance networks. Moreover, those networked arrangements are voluntarily established between multiple interdependent organizations, and the hierarchical position of network manager is weaker than what is found in more vertically integrated organizations (Jacobsen, 2015).

In addition to the definitions mentioned above, Klijn and Koppenjan (2016) suggest distinguishing three traditions of research according to the network type: 1) policy networks (political science); 2) inter-organizational service delivery and policy implementation (interorganizational perspective); and 3) collaborative governance and intergovernmental networks (public administration). The third tradition is of particular interest in this thesis, because it involves networks (political and administrative collaborative arrangements) voluntarily established between formal organizations (hierarchies) in the fragmented institutional context that aim to deliver services or tackle complex problems (Isett et al., 2011; Klijn & Koppenjan, 2016, p. 22).

1.1 Networks as secondary structures

As noted above, public sector collaborative networks consist of organizational actors, thus their participants' structural affiliations are with both the primary (main organizational structure) and the secondary (ancillary network structure). In the 'primary structure', the public organisation, participants direct the majority of their time, loyalty, and energy to achieving organizational objectives. Since these public organizations are relatively stable entities, with structured processes of command and control, managing relationships are conducted through hierarchical

chain of command and established rules and procedures (Weber & Parsons, 1964). In contrast, in the 'secondary structures' (represented by networks, meta-organizations or other collaborative arrangements), the participants are less involved and often part-timers (employed in the primary structure) (Egeberg & Trondal, 2018, p. 11). Furthermore, since these structures exhibit less formality and fewer procedures, as well as operate with uncertain resources, their structure is likely less stable compared to traditional organizations. Instability occurs because network participants are mainly dependent on resources held in their primary organizational affiliation and the interactions between members are less frequent, creating challenges for public managers in building trust and commitment. Thus, managing relationships in and out of network boundaries are both more complex and more necessary in order to succeed than in traditional organizations (Agranoff, 2007; Keast & Mandell, 2013; Kickert, Klijn, & Koppenjan, 1997; O'Toole & Meier, 2011).

The common basis for engagement in different forms of secondary structures arises from the need to deal with various, complex and/or "wicked" problems (Clarke & Stewart, 1997; Lægreid & Rykkja, 2014) that primary institutions are not able to tackle on their own (Kapucu & Hu, 2020; Klijn & Koppenjan, 2016; O'Toole, 1997). Moreover, the different forms of inter-organizational relations discussed previously such as collaborative networks, alliances, coalitions, et cetera have been long presented as a solution for the sectoral fragmentation that has occurred both within and between levels of government by providing a platform for diverse actors to meet and discuss their concerns to develop mutually beneficial, and often innovative solutions (Ansell & Torfing, 2016; Cropper, Ebers, Huxham, & Smith Ring, 2008). The ubiquity of these forms illustrates their continued relevance as mechanisms for addressing complex problems and facilitating innovation. That being said, they also face challenges. As with more traditional structures, there is a growing expectation for secondary structures to be also effective, efficient, and deliver outcomes (Kickert et al., 1997; Koppenjan & Klijn, 2004), and as such they need to be managed well (Agranoff & McGuire, 2001; Cristofoli, Meneguzzo, & Riccucci, 2017). Given this imperative, **the overarching purpose of this thesis** is to unpack, identify, and examine what contributes to the success of collaborative arrangements as secondary structures for the provision of public value.

1.2 Network breakdown and managerial networking

Building on existing studies of the Public Administration (PA) network literature, this thesis contends that there are two different, but interrelated topics that receive insufficient attention. Hence, these issues demand a closer look to explain the networked ties that are relationally and structurally weak, as well as the managerial networking of collaborative arrangements in the public sector.

First, even though we know that collaborative networks as secondary structures are inherently less stable than traditional organizations, little research has been devoted to illuminating the reasons for the ultimate breakdown or dissolution in collaboration. Moreover, if weak or absent factors that contribute to success in fact lead to failure, findings will corroborate traditional research on success factors. But it opens also another possibility: that failure is caused different factors other than success. Such an approach is original and missing from much of the extant network research. This method is used to explain the causes of network breakdown in the first paper.

There is a large body of work on why organizations engage in collaborative arrangements and collaborative structures with other organizations (i.e. Bryson, Crosby, & Stone, 2006; Keast et al., 2004; Provan & Sydow, 2008). Several scholars suggest these collective forms arise when traditional organizational structures and ways of working have failed to effectively address an issue (i.e. Huxham & Vangen, 2005; Isett et al., 2011; Keast et al., 2004). This perspective shows that the genesis of a collaboration might be embedded in the failure of existing systems, processes, and/or a crisis situation which forces collective action (see also Cigler, 2001). Yet, this research has predominantly focused on the natural life cycle of networks, especially the positive aspects of networks (e.g. Babiak, 2009; Cristofoli, Macciò, & Pedrazzi, 2015; Cristofoli et al., 2017; Jacobsen, 2013), such as *trust* (for instance in Chen, 2008; Gulati, Lavie, & Madhavan, 2011; Klijn, Edelenbos, & Steijn, 2010; Provan et al., 2007; Provan & Kenis, 2008) and *legitimacy* (Human & Provan, 2000; Podolny & Page, 1998) have been regularly described as critical factors to successful collaboration. In addition, other aspects of networks have been emphasized. *Innovation* is recognized as an important function of networks as a means to address complex problems (Ansell & Torfing, 2014; Considine, Lewis, & Alexander, 2009; Crosby, 't Hart, & Torfing, 2017; Lewis, Ricard, Klijn, & Figueras, 2016; Stephen & Louise, 2013; Sørensen & Torfing, 2016; Torfing, 2019). In contrast, unsuccessful networks and their

contributing aspects of collaboration and networked forms have received limited attention (Levi-Faur, 2012, pp. 99-112; Moretti, 2017; Moretti & Zirpoli, 2016; Schrank & Whitford, 2011). Consequently, there is a research gap that requires more knowledge on *why and when networks break down.* In addressing this issue, the first paper unpacks the factors that drive the breakdown of collaborative arrangements (breakdown is seen as an unplanned ending) and outlines a suggested evaluation framework involving structural and process-based factors (details provided in Table 1). Furthermore, this study conceptualizes breakdown across three different degrees to show the variations in its effects.

Second, while quite a lot is known about the management of networks such as managerial tasks and activities that allow networks function (i.e. Agranoff, 2007, 2012; Akkerman & Torenvlied, 2011; Cristofoli et al., 2015; Cristofoli et al., 2017; Cristofoli, Trivellato, & Verzillo, 2019; Klijn, Koppenjan, & Termeer, 1995; Koppenjan & Klijn, 2004); little is known about managerial networking in networks, especially those networks regarded as a form of governance that involve formal leaders or managers. Managerial networking has proved to be an essential task for managers in traditional organizations including for example public schools (Juenke, 2005; Meier & O'Toole, 2001; Torenvlied & Akkerman, 2012), local governments (Andrews, Boyne, Meier, O'Toole, & Walker, 2011; Hansen & Villadsen, 2017), colleges and universities (Akkerman, Torenvlied, & Schalk, 2012), firms (Peng & Luo, 2000), hospitals (Goes & Park, 1997), and police services (Nicholson-Crotty & O'Toole, 2004). Without the benefit of direct control, the ability to connect and mobilize resources toward a joint effort should be just as, or more, important for managers of network-like structures (Agranoff, 2012). A growing interest in diverse managerial activities (such as mobilizing, networking, framing, bridging, facilitating, and so on) to study performance in different collaborative arrangements is emerging (Cristofoli et al., 2019). However, most of these studies are tied to the internal functioning of networks, rather than externally oriented actions of managers such as networking with outside peers. A more nuanced insight into external networking - including its different styles - would benefit public sector managers' practice base and decision-making, making work more efficient.

Accordingly, the focus is also directed toward managerial networking in networks in the other two papers included herein. The second paper scrutinizes antecedents

of networking, or more specifically variables that cause variation in managerial networking of network managers. The third paper turns its gaze to the effect or outcomes associated with managerial networking in networks, especially the role of managerial networking in networks focused on digital innovation. As the digital revolution poses boundary crossing challenges to the public sector, public organizations seek collaboration across boundaries to find innovative solutions to improve public activities.

Considerable research has been undertaken on the factors that contribute to well-functioning organizational networks (Cristofoli et al., 2015; Isett et al., 2011; Provan & Lemaire, 2012; Turrini, Cristofoli, Frosini, & Nasi, 2010), for instance structuring, governing, and managing (Cristofoli, Trivellato, Sancino, Maccio, & Markovic, 2020; Klijn, Edelenbos, et al., 2010; Provan et al., 2007; Provan & Milward, 1995; Raab et al., 2015; Ysa, Sierra, & Esteve, 2014). This research shows that the management of primary structures differs from the management of secondary structures (Agranoff & McGuire, 2001), because the latter involves horizontal management of relationships inside network boundaries and across organizations and institutions. Accordingly, traditional techniques and approaches might not fit the network form and thus requires the development of new design and understanding of management (Agranoff & McGuire, 2004; Klijn, Steijn, & Edelenbos, 2010; McGuire & Agranoff, 2011; Provan & Lemaire, 2012). This existing body of knowledge aside, as Cristofoli et al. (2019) note, studies on the management of different collaborative arrangements remain quite limited in their scope (Cristofoli et al., 2019), or not fully relevant to practitioners. This means that public managers responsible for many tasks in networks (as managing relationships, building trust, providing legitimacy etc.) might also lack the knowledge and understanding of the research outputs indicating the benefits of practicing networking for better results (Kapucu & Hu, 2020; Provan & Lemaire, 2012).

The contribution of the papers (2 & 3) was to crucially examine the managerial behaviors leading to multidimensional managerial networking (externally oriented) in collaborative arrangements. This framework is unique in that the majority of previous research considered external networking as a one-dimensional phenomenon based on frequency of relationships (except for few studies, for instance by Hansen & Villadsen, 2017; Torenvlied, Akkerman, Meier,

& O'Toole, 2013). Paper 2 extends this narrow /unidimensional perspective by identifying four additional different types of external networking categorized according to the structural and physical distances between the public manager/s and other stakeholders in meta-organizations as secondary structures. Expounding this perspective, paper 3 argues that one dimension is often insufficient to explain various public sector innovation outcomes and puts forward a two-dimensional networking model comprising density and diversity of contacts between governance network and other organizational actors. This paper corresponds with the weak tie theory by Granovetter (1973) who argued that the "weak" ties (less dense) are actually strong, because they provide an access to novel resources often needed for survival and innovation. Building on these insights, Burt (1992) claims that structural holes (the lack of direct contact between at least two entities) gives an individual or organization the ability to receive a wider variety of information and resources (greater proportions of novelty) than through strong ties, which access information and resources that are already known. Taken together, this earlier research reveals that diversity and density are the phenomena corresponding with variety of ties (see paper 3 for more detail). However, they differ significantly, inasmuch as the variety of resources is going together with weak density of ties (Gilsing & Nooteboom, 2005). Based on those findings, papers 2 & 3 in this thesis extend the existing knowledge on the factors determining how managers may design their managerial networks, and how such networks contribute to innovation. It is apparent that networks require diversity in ideas and resources to innovate. This arises from loose networking connections (weak ties/structural holes) rather than from existing connections because the information and resources they have are redundant.

Combining the aforementioned less studied topics on network breakdown and managerial networking, this thesis applies a behavioral network approach to examine various mechanisms constraining and amplifying the overall network collaboration and managerial behavior of secondary structures in the public sector. This study draws on a mix of Interorganizational Relations (IOR) and collaborative network literature. They highlight the nature of relationships between organizations, drivers for individual organization involvement, their embeddedness in networks of relationships, and the process from establishment through maintenance to change or dissolution. Networked arrangements combine features, actions, and relations that take place at various levels, that together

produce an effect (Cepiku, Cristofoli, & Trivellato, 2020, p. 206). Accordingly, the independent variables in the three papers included in this thesis are allocated according to four levels: individual-level (demography), organizational-level (relational structure), context-level (organizational locus) and process-level (actions and activities) characteristics (Cropper et al., 2008) (see the Table 1 below).

Table 1. Dependent and independent variables in papers.

	Paper 1	**Paper 2**	**Paper 3**
Dependent variable	Cooperation breakdown	External managerial networking	Different types of innovation outcomes
Independent variables			
INDIVIDUAL-LEVEL		(1) Managerial experience (2) Managerial capacity	
ORGANIZATIONAL-LEVEL	(1) Asymmetry (2) Interdependence (3) Administrative capacity (4) Resources (5) Formalization	(1) Administrative capacity (2) Organizational size (3) Organizational age (4) Asymmetry	(1) Managerial networking a) Density: strength and thickness variety b) Diversity: knowledge and communication variety
CONTEXT-LEVEL	(1) Distance a) Physical	(1) Distance a) Physical b) Structural	
PROCESS-LEVEL	(1) Trust (2) Previous relations/experiences (3) Networking (Communication) (4) Resource and information maintenance (5) Commitment towards own agency (6) Turnover		

Source: Own compilation.

The detailed descriptions of the elements included to this table are described in each paper. However, by connecting the three papers that comprise this thesis, Table 1 offers a better overview over dependent and independent variables. Moreover, it is a useful outline for discussing the methodology and findings in chapters 3 and 4.

1.3 Core concepts

Several core concepts are applied to illustrate the research problem of this thesis: making managerial networks function in the public sector. Thus, it is important to first define and understand the interplay between the main concepts. The central notion of this thesis is *network,* but also *meta-organization* is applied as a form of collaborative arrangement as "*secondary structure*". Then, three main phenomena explain the two research gaps in this thesis (described below): breakdown, managerial networking, and innovation. Despite the fragmentations and inconsistencies in understanding network phenomenon (as for instance a metaphor, governance arrangement, structural and institutional arrangement) (Keast, Mandell, & Agranoff, 2014); this thesis adapts a definition of network developed by O'Toole (1997, p. 45) and rooted in PA tradition, namely:

- **Network** is a "structure of interdependence involving multiple organizations, or part thereof, when one is not merely the subordinate of others in some hierarchical arrangement."

  Accordingly, networks' participants are often traditional organizations such as municipalities, county councils, and other public or private organizations. Whereas individual actors or other informal groups are rather not a part of network structure. The interdependencies between organizations are relatively high, and the resources necessary to solve the problems are mainly located in their primary affiliations (except for staff, access to information, legitimacy and, financial contribution to a network by its members). In addition, networks differ from traditional hierarchical organizations (top-down/steering) as they involve more horizontal and collaborative approaches (governance). The literature on inter-organizational relations suggests several different types of networks (see more in Cropper et al., 2008). This thesis involves Inter-municipal Cooperation (IMC)/Meta-Organization (MO) such as the regional councils in Norway and also governance networks involving collaboration on digital innovation between municipalities, county governors, the Norwegian Association of Local and Regional Authorities (KS), and private suppliers. It is based on the argument initially put forward by Powell (1990) and supported subsequently by other scholars (e.g. Agranoff & McGuire, 2001; Klijn & Koppenjan, 2016; Klijn et al., 2010) that the diversity of actors within networks - combined with their physical distance from one another

leading to less frequent interaction, and lack of direct authority - can make networks more difficult to manage and less coherent.

- **Meta-organization (MO)** is another form representing collaborative network as secondary structure. It is an organization consisting of multiple formal organizations with a voluntarily membership. The center of authority is collectively established (and therefore lacks formal authority over members) by members that retain most of their autonomy, with decisions made collectively by consensus (Gulati et al., 2012). Thus, the existence of MO is strongly reliant on members' voluntary membership, engagement, and self-organization. An MO consists of different sized organizations and resource availability among members can thus differ. As the MO does not need to own resources, they may be provided by members in the form of staff, offices (Ahrne & Brunsson, 2005; Berkowitz & Dumez, 2016).

The three main concepts from papers included to this thesis are defined as follows:

- **Breakdown** of a network is defined here as an unplanned ending of a relationship between two or more municipalities, with varying degrees of breakdown articulated below. The three dimensions (legal, relational, and economic) are used in this study to present three different degrees of breakdown (more details in paper 1: Zyzak, 2017, pp. 253-254).
    1. *Complete breakdown* occurs when the relationship between all participating organizations is mistrust simultaneously.
    2. *Partial breakdown* happens when, for instance, a group of members (two or more from a former relationship) decide to leave, ad hoc, and establish another arrangement.
    3. *Minimal breakdown* ensues when only one of the actors decides to leave the network.

- **Managerial networking** is a behavioral concept rather than a network property (structural arrangement). More specifically, it is an intra- and inter-organizational act undertaken within broad-based networked arrangements. It has the ability to generate different ways of communication aimed at accessing a greater set of resources, as well as the information and knowledge necessary to achieve individual and collective organizational objectives, including those related to innovation. It also

refs to the contact, interactions, or relationships that network managers maintain with others outside their core agency (primary structure) (Torenvlied et al., 2013). Managerial networking is different from *network management* in that it concerns strategies and actions aimed at "mediating and coordinating interorganizational policy making" (Klijn & Koppenjan, 2000, p. 136). Managerial networking is a central element of *network management* as it takes a key role in organizing resources (Agranoff & McGuire, 2001). Moreover, research on network management focuses also on the actual behavior of *network managers* who are the actors aiming to achieve the network goals through different actions (Keast et al., 2014).

- **Innovation** is a well-used yet increasingly ambiguous term that defies a single definition and lacks agreement on its measure. It is usually defined by an element of novelty (De Vries, Bekkers, & Tummers, 2016), but it does not always have to be entirely new, as it may also adopt and adapt innovative solutions created by others in different manners. In this way, innovation may represent different degrees of innovativeness (as for instance radical, transformative, incremental etc.) (Buchheim, Krieger, & Arndt, 2019; Chen, Walker, & Sawhney, 2015). In this study, innovation is understood as an outcome (not a process) that is influenced by managerial networking behavior. To date, many innovation typologies have been developed (Bason, 2018; Chen et al., 2015), some of which have been argued as too broad (as for instance in Hartley, 2005) or focus on a concrete type of innovation (as in Walker, 2014). Despite the diversity of typologies and conceptualizations, fragmentation creates certain challenges, such as the difficulty in achieving a coherent framework to evaluate.

  Paper 3 in this thesis adapts a model developed by Henderson and Clark (1990) demonstrating variations of innovation outcomes along the innovation continuum: from incremental, to modular, architectural to radical. *Incremental* innovation occurs when architectural and component[5] knowledge is improved or slightly changed at the same time. *Modular* innovation develops when component knowledge is changed, but

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[5] According to Henderson and Clark (1990), a 'component' is defined as a physically distinct portion of the product or service that expresses a core design concept/knowledge. Others also argue that successful product or service development requires both types of knowledge present: knowledge of a product's components and knowledge of the linkages between components (architectural knowledge).

architectural knowledge is unchanged or only marginally improved. *Architectural* innovation appears where component knowledge remains the same or is slightly improved but architectural knowledge is changed. *Radical* innovation happens where both types of knowledge have significant changes and require thinking outside the box (see more details in Paper 3) (Henderson & Clark, 1990).

1.4 Summary of papers and findings

The findings from the studies presented in the three research papers (see Table 2 below) and the overall findings will be described and discussed in more detail in chapter 4. However, at this point the key findings in each of the papers are illustrated.

Paper 1 explores how and why some collaborative agreements between municipalities break down while others survive. The comparative analysis of different empirical entities (regional councils in Norway, see chapter 3) revealed particular difficulties associated with networks as secondary structures. This study demonstrates that the key determinants of breakdown centered on the mistrust/lack of trust between members, that also interacted with factors from network structure and process-based elements (consisting of various mechanisms) (see the Table 1). Thus, mistrust in itself does not necessarily produce the breakdown, rather it occurs due to the relevant alternatives that arose for members that proved more preferable and likely to succeed.

Paper 2 examines how individual and organizational factors determine the intensity of managerial networking, with a special focus on outward linkage - namely why and with whom managers interact externally. Additionally, it is focused toward managerial networking within the inter-organizational network context (meta-organizations). The statistical analysis of regional councils in Norway displays the importance of 'capacity' for external managerial networking. Moreover, the general findings show the importance of managerial experience and organizational age in developing and maintaining more intense external networking.

Finally, paper 3 is dedicated to understanding how and why different types of networking (diversity and density) influence different types of innovation

outcomes in governance networks. Moreover, the paper looks at the role of public managers in facilitating public sector innovation. The findings from this qualitative comparative study highlight the importance of a managerial role using networking to achieve various innovation outcomes. The results also show that combinations of networking types and innovation types differ across cases and indicate that different degrees of networking diversity and density matter for the type of innovation outcome.

Table 2 displays the summary of the three research papers and the thesis as a whole. Based on findings presented in each of the papers, this thesis demonstrates the significance of public managers in building trust, effectiveness, and legitimacy, and also in practicing diverse networking in networks. Those main elements are necessary for collaborative arrangements as secondary structures to survive and succeed.

Table 2. Summary of studies: foci and findings.

Study	Paper 1: Breakdown of inter-organizational cooperation: the case of regional councils in Norway	Paper 2: Managerial networking in meta-organisations. Evidence from regional councils in Norway	Paper 3: The impact of managerial networking on innovation outcomes in the public sector	Thesis: Managing collaborative arrangements
Research Question	How and why do some IORs break down while others survive?	To what extent do managers actively engage in networking behaviors with various parties, and how often and in what kind of relationships they choose to partake?	How and why do various types of managerial networking affect different types of innovation outcomes in the public sector?	Three different angles – What contributes to the success of secondary structures?
Theoretical contribution	Network/IOR breakdown	Meta-organization External managerial networking	Managerial networking Public Sector Innovation (PSI)	Network theory Network management Managerial networking
Methodology	Qualitative research approach: Comparative case study (CCS)	Quantitative research approach	Qualitative research approach: Comparative case study (CCS)	Qualitative and quantitative approach
Method of data collection	Qualitative semi-structures interviews (N=17, one focus group)	Online survey	Qualitative semi-structures interviews (N=16, one focus group)	Secondary sources from papers1, 2, 3
Scope	Comparative case study of four regional councils in Norway	61 RC's managers	Comparative case study of four regional governance networks in Norway	Comparative study of factors facilitating success in networks
Unit of analysis	Regional councils	Regional councils	Governance Networks	Meta-organization and governance networks
Method of analysis	Direct qualitative content analysis. Diverse case selection strategy to display maximum variance along dependent variable	Multiple Regression Analysis (OLS)	Direct qualitative content analysis. Diverse case selection strategy to display maximum variance along dependent variable	Content and regression analysis
Main findings	Mistrust interacting with structure- and process-based factors influence network breakdown	Importance of capacity in network for external networking	Different networking types and degrees matters for the types of innovation outcomes. Importance of key network actors in practicing networking	Variations in active practicing of networking in networks (multidimensional networking). Importance of key actors/ managers to networking, building trust and legitimacy Importance of organizational distance

Source: Own compilation.

1.5 Structure of thesis

This thesis is article-based, consisting of three research papers (two of them are single-author, and one co-author). Chapter 2 presents the theoretical and conceptual framework. Next, chapter 3 depicts the overarching methodology and research design. The findings and contribution from each paper and the overall thesis are presented in chapter 4. Finally, chapter 5 is dedicated to the conclusion and delves into recommendations for future studies. In addition, the three papers and appendix are included after the list of references.

2. Theoretical and conceptual framework

Chapter 2 unpacks and evaluates the theoretical concepts utilized to study the collaborative arrangements such as governance networks or meta-organizations in public administration. Special emphasis is given to theories that address network management and managerial networking in networks (governance). Finally, chapter 2 outlines and discusses the interplay between these various theoretical components distilled from the two sets of literature.

2.1 Toward network theory in public administration

Scholarly attempts to understand and refine network theory relating to the public sector have generally built on previous disciplinary orientations such as organizational science, political science, management, and public administration (Berry et al., 2004). Other approaches to study network phenomenon have provided vital insights and various lenses to explain their emergence, function, management, but also challenges. In relation to the latter, unsurprisingly, some argue that networks are a-theoretical (Salancik, 1995). The scholarship is evolving in many directions, and research fragmentation, broad conceptualization, and the tendency to rely on the previous literature on inter-organizational theory makes it difficult to agree on the contemporary network theory (Kapucu & Hu, 2020). However, this has been disproved by much of the new research that shows there are theories (Keast et al., 2014), but are often coupled with others such as resource dependency, Social Network Theory (SNT), et cetera.

This thesis concerns itself with some of the fundamental concepts of Social Network Theory (SNT) to examine behavioral and nonbehavioral network structures within the public organizational arena (that are the active and passive attributes of networks) (Considine et al., 2009, p. 14). SNT is concerned with how actors (e.g., individuals, groups, organizations, etc.) are tied together by some kind of social relationship or connection. Thus, the emphasis is on the relationships between actors rather than individual characteristics of network members (Scott, 2000). In the field of inter-organizational relations, network scholars take the organization as a nexus of relationships on the level of analysis, rather than the individual actors or groups. The strength of the social network approach is that several measures of system connectedness have been developed to examine relational and structural features of networks (Kilduff & Tsai, 2003; Scott, 2020).

The most insightful theoretical approaches that investigate relationships between organizations are offered by seminal social structure theories such as Granovetter's Strength of Weak Ties (SWT) and Burt's Structural Holes (SH).

Then, the contribution by Borgatti and Halgin (2011) offer two additional approaches (outcome- and process-oriented) to distinguish theoretical categories when it comes to networks: "network theory" and "theory of networks". First, they describe network theory as "the mechanisms and processes that interact with network structures to yield certain outcomes for individuals and groups", while theory of networks describes "the processes that determine why networks have the structures they do—the antecedents of network properties… who forms what kind of tie with whom, who becomes central, and what characteristics the network as a whole will have" (Borgatti & Halgin, 2011, p. 1168). This discussion is particularly relevant for studies that look to identify multidimensional framework for managerial networking in network settings, because the focus is both on what factors influence managerial networking and how managerial networking impacts (innovation) outcomes. Moreover, several other theoretical concepts are considered in the section 2.3 below, and the summary of them is outlined in Table 4.

2.2 The foundations of network paradigm in organizational studies

The first attempts toward collaborative arrangements can be linked to inter-organizational studies in early 60s (seminal article by Evan, 1965) and the theory on power and resource dependencies (Aldrich, 1976; Cook, 1977; Emerson, 1962; Pfeffer & Salancik, 1978) emphasizing that organizations are part of a large interdependent environmental system. At the same time, the contingency theory (Galbraith, 1977; Thompson, 1967), transactions costs theory (Williamson, 1975), and interorganizational network (Benson, 1975), made major contributions to the underdeveloped theory of inter-organizational relationships (Cropper et al., 2008; Franke, 2017; Keast et al., 2014). However, the richness and diversity of approaches to study relations between organizations were designed and reviewed later in early 80s and 90s (for instance by Galaskiewicz, 1985; Oliver, 1990). Thereafter, research traditions grew significantly and new, and more complex approaches appeared in public and private sectors to analyze inter-organizational arrangements (Cropper et al., 2008). In addition, several different paradigms have been used to examine networks, as for instance the dispute between positivists and

constructivists. In general, positivists believe that networks outcomes are predictable, because their outcomes might be explained through use of proper scientific methods (structural approach). The most recent pragmatic shift emphasized by constructivists is that there are multiple subjective and fluid realities that might be understood by using 'thick' descriptions that involve a method quite different from structural or quantitative methods (Provan & Sydow, 2008).

Thus, different theoretical approaches are often used to identify and explain the antecedents, content, context, process, and outcomes of inter-organizational collaborations. Moreover, to analyze IORs from different angles, scholars use a wide array of dimensions of organizational actors, their relationships, and context of embeddedness (Cropper et al., 2008). In the next section, several perspectives employed in this study are described.

2.3 Different theoretical approaches to study networks

Networks can be studied from a multitude of perspectives, however, several theoretical and conceptual lenses are considered most relevant here to both analyze and explain the relationships/connections (distance, diversity, density) between organizational actors in networks as a secondary structure.

First, *Social Network Theory* has received widespread attention not only among social scientists, but also across management studies, physics, epidemiology, and biology fields (Borgatti & Halgin, 2011). SNT is grounded in three broad approaches: the structuralist network tradition, embeddedness, and social capital. The structure of the network and position of the actors therein will either enable or constrains outcomes. Following this, an important aspect of SNT is its focus on relationships between actors rather than their individual attributes (Scott, 2020). Thus, previous studies for the most part have taken a relational orientation to understand and specify these relationships. The ties, such as relations, lines, and edges might be established between two or more parties and for a different purpose. In this way, the network concept is not used metaphorically (as it used to be), and today it is possible to distinguish different types of networks and network structures based on their relationships (i.e. Isett et al., 2011; Keast et al., 2007; Klijn & Koppenjan, 2012). Additionally, it allows for a variety of approaches to measure the importance of positional and structural properties of the

network on its outcomes (i.e. Oliver & Ebers, 1998). Most research has focused on tie formation, while its termination was rather absent. The SNT theory is mainly used to explain why the actors form, maintain, and break ties, but also with whom. Moreover, a network must be treated as a variable and not only as an alternative governance form, because it might come in many shapes and forms (Provan & Kenis, 2008).

Second, there are several theories of governance that help to understand and explain many contemporary issues in the public sector (see more in Ansell & Torfing, 2016). In this thesis, governance is associated with horizontal networks. Klijn and Koppenjan (2016) display that there are four predominate definitions of governance: 1) good governance or corporate governance; 2) New Public Management (NPM); 3) multi-level governance or inter-governmental relations; and 4) networks governance. Following this categorization, this thesis uses network governance approach to identify and explain the challenges associated with managing of interactions between organizational actors.

According to Klijn and Koppenjan (2016, p. 16), there is a clear line dividing earlier research into the social network perspective that aims at the institutional dimensions of networks (i.e. Provan & Kenis, 2008) and the governance approach (i.e. Kickert et al., 1997). Generally, research on the network approach is very diversified (Keast et al., 2014). In a recent review of network governance, Keast (2016) evokes three traditions explaining formation of network governance theory. The first examines the sociology-anthropology perspective that adopts a structuralist approach involving the pattern of interactions and position of actors that impact the outcome. The second considers the tradition of inter-organizational networks and emphasizes the importance of external environment in shaping organizational behavior, as well as the exchanges necessary to overcome uncertainty in the flow of resources. Third, the science-public management tradition looks at the effectiveness of involving key actors into the policy process (Ansell & Torfing, 2016).

Moreover, some of the research on *network governance* and *governance networks* are used interchangeably without reflecting upon the implications of differences between them. This study uses the conceptualization developed by pioneering scholars on network governance theory Klijn & Koppenjan. According to them:

"Governance networks are more or less stable patterns of social relations between mutually dependent actors, which cluster around a policy problem, a policy programme, and/or a set of resources and which emerge, are sustained, and are changed through a series of interactions". While "Network governance is the set of conscious steering attempts or strategies of actors within governance networks aimed at influencing interaction process and/or the characteristics of these networks" (Klijn & Koppenjan, 2016, p. 11). Thus, the differences between these two concepts are evident, as the type of network/form of cooperation vs. type of governance.

At this point, the three theoretical traditions of the 'governance network' concept offered by the aforementioned scholars are presented below in Table 3 (Klijn & Koppenjan, 2016; Klijn, 2008).

Table 3. **Theoretical traditions of governance network.**

	Policy Networks	**Service delivery and implementation**	**Collaborative and network governance**
Main origin	Political science	Organizational science/ interorganizational theory	Public administration, collaborative planning, and argumentative policy analysis
Focus	Decision making and effects Closure and power relations on issue and agenda setting	Interorganizational coordination Effective policy/ service delivery Integrated policy/ services	Solving societal problems by managing horizontal collaboration
Main fields & research questions	Which actors are involved in decision making? What are the power relations and their effects on decision making?	How can complex integrated services be coordinated? What mechanisms are effective and efficient (contracting, partnership, etc.)?	How to manage governance networks? How to organize them and connect them to traditional institutions? How to improve variety of content and combine various value judgements?
History	Starts with the pluralist political science research of the 1960s and continues through to research on subsystems, policy communities, and policy networks	Starts with the first inter-organizational theorists that focus on inter-organizational coordination and continues through to research on service delivery (also through contracting, and implementation)	Starts in the mid-1970s with work on inter-governmental relations (Hanf and Scharpf 1978) and continues with analyses of new governance forms and their effects and management requirements

Source: Adapted from: (Klijn & Koppenjan, 2016, p. 23)

The third tradition on collaborative and network governance (Table 3) is adapted to study collaborative networks in this thesis. As mentioned, this study is rooted in the public administration tradition, and the focus is on challenges related to managing collaborative arrangements. Thus, the third tradition on network governance underscores the role of public managers in shaping network outcomes is utilized (classification of network governance by (Keast, 2016)). However, this thesis contends that these traditions do not have a clear line and overlaps may emerge. For instance, some of the issues from service delivery, implementation, and inter-organizational network traditions are relevant to unfolding the research problem in this thesis.

Third, *Meta-organization (MO)* is applied in this thesis as an alternative approach to study network collaboration. This rather emergent theory is founded by Scandinavian scholars Ahrne and Brunsson (2005), and it includes some important elements in explaining the research problem in this thesis (Berkowitz & Dumez, 2016). First, MO is a kind of collaborative organization consisting of multiple formal organizations (Zyzak & Jacobsen, 2019). Additionally, MO is an association with a voluntarily membership. The center of authority is collectively established (lack of formal authority over members) by members that keep most of their autonomy, and decisions are made collectively by consensus (Gulati et al., 2012). Thus, the existence of MO is strongly reliant on participant membership. MO also consists of different size organizations, thus resource availability among members differ. However, membership in MO is rather inexpensive; it does not need to own resources and may be provided by members in the form of staff, offices, and so on. Therefore, due to low costs of membership and maintenance, MOs is less inclined to fail than other collaborative forms (Berkowitz & Bor, 2018). Hence, the nature of MO persuasively explains the problem presented in paper 1, i.e. why cooperation between organizations break down. The characteristics of MO are similar to networks as they represent a certain formalization of interaction between formally autonomous actors (Jacobsen, 2015) and both are rather easy to establish. On top of that, both forms of inter-organizational collaboration do not need many participants (Ahrne & Brunsson, 2008).

Scholars subsequently argue that dependency relations are crucial to the emergence and survival of collaborations (Klijn, Steijn, et al., 2010). Thus, this

thesis involves *Resource Dependence Theory (RTD)* to help elucidate the reasons behind network breakdown and the importance of networking diversity for innovation outcomes. This approach originates from social exchange theory and casts light on the impact of external resources acquisition on interorganizational behavior (Aldrich, 1976; Cook, 1977; Emerson, 1962). The notion of resource dependency consists of two concepts: resources and dependency/interdependency (Hillman, Withers, & Collins, 2009). First, resources are defined as both material (e.g. money) and immaterial (e.g. legitimacy, information) values. Second, dependency is determined by access to and control over resources or lack thereof. Whereas interdependency is determined by mutual dependency among actors (Pfeffer & Salancik, 1978). This RTD has been extensively used by researchers to explain how organizations reduce environmental interdependence and uncertainty through mergers, IORs, political actions, and so on (Hillman et al., 2009). In the seminal book "The External Control of Organizations: A Resource Dependence Perspective" by Pfeffer and Salancik (1978), the authors highlight that dependence is contingent on the extent to which resources are critical to survival in a competitive environment, and how to effectively manage resources. Thus, their approach is particularly salient with regards to the two research gaps in this thesis: collaboration breakdown and external managerial networking.

Finally, this thesis builds on elements of *Implementation Theory (IT)* that involves the interaction between multiple organizations across different levels and sectors, and the complex structures to effectively operate programs in the process of implementation in the public sector (Akkerman & Torenvlied, 2004; Hjern & Porter, 1981). The earlier studies have used different approaches of implementation, for instance in 'top-down' (i.e. policy decisions by key actors/government) vs. 'bottom-up' (local implementation structure through network involved in a policy area) perspectives discussing weaknesses and strengths of the implementation process (Sabatier, 1986). Recently, Peters, Hupe, and Sætren (2014) suggested three new forms of 'network style' implementation structure. First, they gather that implementation structure involves mainly multiple organizations from within the public sector. This structure is complex and may be horizontal (more coordination than implementation) or vertical (multi-level governance) but is less difficult to manage than other forms. Second, they suggest that implementation structure may involve private sector and especially market actors. This relates to ideas of New Public Management (NPM), where

implementation became conceptualized more in terms of instruments such as contractualization, delegation to private actors, and such. The structure is based on principal-agent relationships where private sector actors are mainly responsible for service delivery in the public sector. Third, the authors indicate that implementation structure may also involve larger aggregation of organizations consisting of different social actors such as labor unions, third sector organizations, religious organizations, different types of "faith-based organizations" and so on. This approach is similar to the previous one but is less complex than the other two perspectives. However, compared to the implementation process of traditional organizations, the challenge here lies in the management of relationships in network structures, because there is no clear leadership, and the participants may have different ideas and interests about policy (Peters et al., 2014). Therefore, this study underlines the importance of the implementation process for successful outcomes.

2.4 Network management and managerial networking

This section revolves around different network management perspectives in the public sector. Especially, the focus is on managerial networking in networks that is a fundamental aspect of network management.

2.4.1 Network management

In contemporary public administration, networks are increasingly designed for policy-making, service delivery and policy implementation, but they pose dilemmas for public managers to coordinate diverse resources in multiorganizational settings (Herranz, 2008; Kickert et al., 1997; Milward & Provan, 2003). Hence, there is a general consensus among scholars that network management is needed, as the cooperation and coordination of goals do not occur on their own accord (Klijn et al., 2010). The pioneering article by O'Toole (1997) on "treating networks seriously" in the public sector (O'Toole, 1997), was an early important chapter in network management scholarship. Before that, scholars were inclined to generalize network management approaches by indicating that sectoral differences in organizations might be compared to inter-organizational cooperation in networks (Herranz, 2008). Classic leadership studies such as the 'ten managerial roles' by Mintzberg (1973) signaled that much of the manager's time was devoted to connecting to other actors, both inside and outside the organization. Hence, moving from the Mintzberg studies, recent work by

Bartelings, Goedee, Raab, and Bijl (2017) revealed that the activities of managers still fall within the traditional managerial roles suggested by Mintzberg. During the two decades of the 21st century, the importance of network management on network performance/success was a leading topic among public management scholars (i.e. Cristofoli et al., 2019; Edelenbos, Klijn, & Steijn, 2011; Klijn & Koppenjan, 2016; Klijn et al., 2010; O'Toole & Meier, 2004). Some authors also emphasized the relevance of network structure and context (O'Toole & Meier, 2004; Provan & Milward, 1995), others stressed network management and coordination mechanisms (Kickert et al., 1997), or more recently the "soft factors" for network outcomes such as inter-organizational trust (Klijn, Edelenbos, et al., 2010) or collaborative language (Keast & Mandell, 2009). In addition, scholars have struggled to explain the differences in managing a single organization and network, such as in terms of managerial activity like activating, framing, mobilizing and synthetizing (Agranoff & McGuire, 2001; Herranz, 2008). The seminal article "Managerial Strategies and Behavior in Networks: A Model with Evidence from U.S. Public Education" by Meier and O'Toole (2001) displayed that the utmost importance in managing a network is the ability to mobilize resources from semi-autonomous actors. Finally, managerial activities in networks are recently garnering more attention, but many issues still remain unexplained (Cristofoli et al., 2019; Meier & O'Toole, 2011). The focus here concentrates specifically on one of gaps, namely the challenges associated with managerial networking in network settings to achieve successful/favorable outcomes.

Although network management is becoming more popular as of late, its common understanding differs among scholars (Cristofoli et al., 2019). Management is often mixed or used interchangeably within leadership, but some scholars refer to network management as "the strategies that network members - delineated by some boundary rules - employ to govern their interactions and mutual interdependencies" (Torenvlied et al., 2013, p. 252). The spotlight here on managerial interactions is obvious. Moreover, public management differs from management in the private sector, because it focuses not only on effectiveness and efficiency, but legality and legitimacy also matter (Kickert et al., 1997). Also, strategies used to manage public programs and initiatives across organizational borders are more challenging than managing a single organization. Put differently, network management is more distributed/horizontal and work parallel to organizations (Agranoff, 2006; Herranz, 2008). Thus, implementing the

development of innovation might be more difficult in public sector networks than in organizations because it requires coordination of several components within and/or across organizational levels and layers.

2.4.2 Managerial networking in networks

One avenue of recent theoretical approaches to study networks is to consider internal and external networking of public managers in collaborative arrangements. Networking has been depicted as one of the crucial activities of individual managers to achieve public value (Cristofoli et al., 2019). Thus, one of the possible network management strategies is: "*a specific boundary-spanning activity that focuses on interrelating actors (government, business, society), layers (national, regional, local level) and domains or sectors (infrastructure, housing, water management, nature development, etc.)*" (Edelenbos, Van Buuren, & Klijn, 2013, p. 132). Prior studies mostly focused on the networking of vertically integrated organizations (more details in chapter 1), and the focus was rather unidimensional (save for some research, see the chapter 1 or paper 2). The studies show that networking is an investment that brings both costs (such as time, loss of autonomy, dependency, risk) and benefits (better access to resources, information, incentives and so on) for network actors. Therefore, network managers may consider how and why to invest in relationships with external organizations (Torenvlied et al., 2013). In addition, managers might consider what type of external contacts is beneficial to them in developing and maintaining successful network outcomes. Given these imperatives, it is impossible to explain managerial networking as a whole. Different dimensions therefore can be considered in order to explain managerial behavior in networks. In this thesis, three dimensions are of especially important in illuminating external managerial networking: *distance, diversity* and *density of ties*.

Unpacking three networking dimensions

Firstly, *networking distance* (paper 2) explains how 'close' and 'distant' interactions are between a network manager and other organizations. Paper 2 includes two types of distances: structural and physical. In organizational studies, structural distance is defined as a physical structure in the organization (such as physical distance between leader and follower), organizational structure (e.g. hierarchical level, span of management control and management centralization)

and supervision structure (frequency of leader–follower interaction) (Antonakis & Atwater, 2002). In this thesis, distance means how near or far an organization/actor is situated from the formal structure of the meta-organization. The earlier studies demonstrate that physical proximity is one of the best predictors for communication contacts. In this thesis, physical distance relates to the degree of proximity (geographical) and quality of the functional working relationships between actors. Accordingly, four different distances are suggested (taken from paper 2):

1. Close external networking (CEN) arises inside the MO domain. The ties are set up between an MO's manager and actors that share similar characteristics of the MO's formal structure. It reflects the close relationships between an MO and its partners.

2. Near-distance external networking (NDEN) delineates networking with actors that constitute a different formal structure to the MO, but the physical distance is small (e.g. the same region).

3. Middle-distance (MDEN) outlines networking with actors that share similar characteristics of the formal structure to the MO, but the physical distance is outside the MO's domain.

4. Far-distance (FDEN) reflects the most outwardly established networking that ensues when both the formal and physical distance are far from the MO.

Secondly, *networking diversity* reflects knowledge and communication variety between and among actors. The previous studies on managerial networking have considered various networking dimensions, such as *frequency* (Lewis, Ricard, Klijn, Bekkers, & Tummers, 2018), *density* (Jansen, Van Den Bosch, & Volberda, 2006), *diversity* (e.g. Sørensen & Torfing, 2010), and *strength* of contacts between parties (Mandell & Keast, 2013). Furthermore, it is argued that more complex networks consisting of individuals with diverse knowledge and skill sets will bring more opportunities (Klijn et al., 2010). There are various meanings of the concept of diversity in the literature; some of scholars explain diversity in terms of gender, function, religion, language, and age. In addition, diversity is often operationalized as the number of agents involved in a process of innovation by interaction, but also as the variety of knowledge and skills (Nooteboom & Gilsing, 2005). Regarding network studies, diversity is identified by creativity and multi-actor (public-private) collaboration (Torfing, 2019). The earlier studies show that actors with

diverse backgrounds, ideas, interests, goals, competences are more likely to search for creative solutions, and thus generate innovation (Lungeanu & Contractor, 2015). Therefore, it is especially relevant to explore the ways in which network managers develop and implement innovation projects.

Thirdly, *networking density* means networking strength and thickness variety. The other studies reveal that networks directing working contacts with one another are less frequent than those in organizations, and are often supplemented by digital tools (e-mail, websites, newsletter, share-points, teleconferences, interactive chatrooms) (Agranoff, 2012). The literature often discusses density in terms of Burt's structural holes (configuration of ties that creates opportunities with actors that are disconnected among themselves) (Burt, 1992) and Granovetter's SWT (strong ties convey redundant information, weak ties are sources of new information) (Granovetter, 1983). Following that, the particular network conditions may favor high contact density, while others make low contact density more valuable (Gabbay & Zuckerman, 1998). In addition, the research endeavor demonstrates that networking density might not explain the importance of networking for successful outcomes, it often goes together with other networking dimensions. These include both diversity of networking, because strong networking with one individual may offer access to in-depth knowledge and information, but little diversity (Granovetter, 1973, 1983).

Although the concepts might be presented as various modes and degrees of networking, this thesis has revealed that each contact has a distinct meaning and explains different networking functions, but also combinations between networking types might be useful to achieve better results in networks. For example, weak density and high diversity is relevant for radical innovation or close structural distance and low diversity reflect more homogenous networking. Therefore, this multidimensional networking approach unpacks a theoretical avenue for active practicing of networking (Figure 1).

Figure 1. Multidimensional networking design.
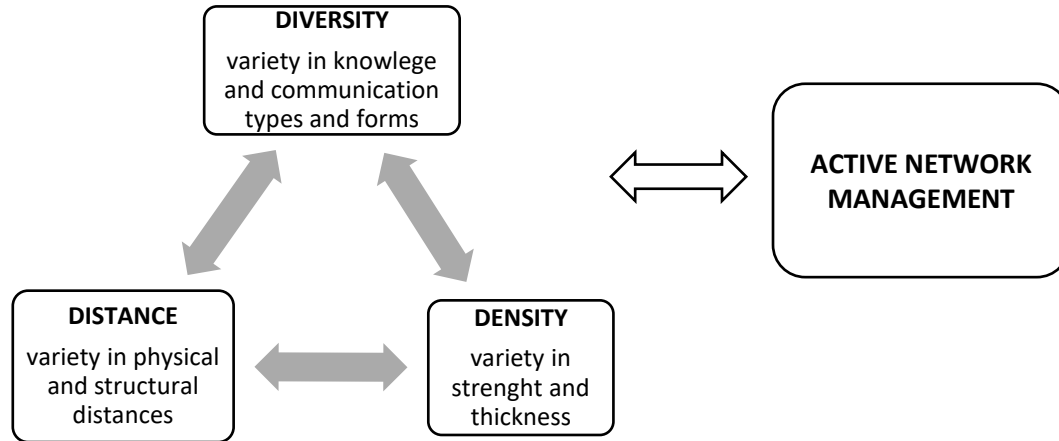
Source: Own compilation.

2.5 Multiple approaches to study networks

This chapter sought to highlight the various ways in which challenges in managing of secondary structures might be understood and explained. Table 4 provides a summary of the main theories and concepts used to examine the factors contributing to network success.

Table 4. Key concepts and theories applied to the thesis.

Theory/Concept (Authors)	Explanatory Approach	Application to the Cooperation Breakdown & Managerial Networking Studies
Social Network Theory (SNT), i.e. (Borgatti, Mehra, Brass, & Labianca, 2009; Scott & Carrington, 2014)	Following from inter-organizational arrangements, SNT looks at the actors embedded in networks of interconnected relationships, but not on attributes of individuals. It may be used to explain why the actors form, maintain, and terminate ties, but also with whom.	SNT has is widely used in network studies. Analysis of the strength and intensity of relationships/ties between organization inside network/MO, and reasons behind actors' interaction is applied. The theory is also utilized to understand the antecedents of tie termination/network breakdown in paper 1.

Network Governance (NG) and **Governance Networks** (GN) i.e. (Klijn & Koppenjan, 2016) in PA (Koliba, Meek, & Zia, 2011), institutional dimension (Provan & Kenis, 2008), interacting dimension (O'Toole, 1988), policy implementation or service delivery (Koppenjan & Klijn, 2004; Meier & O'Toole, 2001; Provan & Milward, 1995) implication of different approaches (Keast et al., 2014), effectiveness (Klijn & Skelcher, 2007; Sørensen & Torfing, 2007, 2009; Van Meerkerk & Edelenbos, 2018)	Following one of the three traditions on GN and NG in PA scholarship involving collaborative and network governance approach; these theories explain the problems related to managing of networks by underlining the key role of intermediates in networks to achieve different outcomes.	These theoretical approaches are used to understand how networks ought to be managed in order to survive or thrive.
Meta-organization (MO) i.e. (Ahrne & Brunsson, 2005; 2008; Berkowitz & Bor, 2018; Berkowitz & Dumez, 2016; Gulati et al., 2012; Spillman, 2018; Zyzak & Jacobsen, 2019)	This new phenomenon explains the voluntary ("bottom-up") approach of inter-organizational collaboration.	This theoretical concept explains what factors impact networking distance between MO and other actors outside MO domain. It also explains why MO are more prone to failure than other collaborative forms.
Resource Dependence Theory (RDT) (Aldrich, 1976; Cook, 1977; Emerson, 1962; Hillman et al., 2009; Lundin, 2007; Pfeffer & Salancik, 1978; Thompson, 1967)	Following the focus on the interplay between the organizational (internal) and network (external) levels, RTD suggests that organizations collaborate with each other in order to gain access to key resources; yet this dependence requires relationships management to avoid disagreement/failure.	RDT is one of the most powerful theories to explain interaction, cooperation, and competition. It is applied to explain resource interdependence among organizations in collaborative arrangements, but also how and why organizations explore relevant resources outside network boundaries.
Implementation Theory (IT) (A. Akkerman & Torenvlied, 2004; Hjern & Porter, 1981; Peters et al., 2014; Sabatier, 1986)	Following the complex interactions of multiple organizations across different levels, sectors, and structures, IT posits three different approaches to network policy, styles, programs, projects, implementation, with a particular focus on the type of external organizations involved.	IT provides a better understanding of how and why implementation succeeds or fails. It is used to explain the complexity of interactions between actors inside and outside networks, and the challenges related to network management.

Source: Own compilation.

To summarize, there are several theoretical approaches used in this thesis to explain network success. Firstly, the SNT is a useful theoretical lens and starting point to examine the research gaps/topics of this thesis. The NG approach is then mainly used to understand the active management of collaborative arrangements as secondary structure. In addition, the major emphasis was placed on the insights generated by MO, RDT, and IT to explain the impact of inter-organizational settings and external environments for active network management. Moreover, they are useful tools to complement theoretical strands in network theory. Finally, the interplay between the theoretical concepts and research problems in the three papers is outlined above, in Table 4.

3. Methodology and data

This chapter illustrates the nature of the relationship between the theoretical and empirical research in this thesis. Deductive theory has been applied in all the three research papers. This approach is different from inductive theory (data driven) because it is based on what is known about the domain. Moreover, its theoretical considerations often deduce hypotheses that must be subjected to empirical scrutiny. Both qualitative (paper 1 & 3) and quantitative (paper 2) approaches involving semi-structured interviews and a questionnaire have been employed. It is important to note the general distinction between these two methods. A qualitative approach zooms in to understand a given phenomenon up close, while the quantitative method quantifies the problem with numerical data, often presented in the form of statistics.

To a large extent, the way the research is conducted can be reflected through the research philosophy it subscribes to, the strategies it employs, and instruments it utilizes. Accordingly, this chapter consists of four sections: 1) methodology and philosophical underpinnings; 2) research design; 3) methods of data collection and analysis; and 4) discussion on research limitations.

3.1 Methodology and philosophical underpinnings

This section outlines the methodological and philosophical considerations underpinning this thesis. Crotty (1998) suggests four basic elements in research process that represent different hierarchical levels of decision making (Figure 2). According to Crotty, they are often confused in the research literature: *methods* (techniques or procedures to collect and analyze data), *methodology* (strategy, plan of action, the design behind a choice of particular methods and linking it to desired outcomes), *theoretical perspective* (philosophical stance), and *epistemology* (theory of knowledge that defines "how we know what we know") (Crotty, 1998, pp. 7-8). The other research scholars often distinguish epistemology from ontology, and respectively their theoretical perspectives (as for instance Bryman, 2008). Whereas Crotty conflates ontology with epistemology and claims that the two are mutually dependent and difficult to differentiate when distinguishing the research issues. Crotty's framework has been later used by other prominent scholars, such as Creswell (2014) for instance.

Figure 2. Four elements in research process that inform each other.

EPISTEMOLOGY	THEORETICAL PERSPECTIVES	METHODOLOGY	METHODS
• Objectivism	• Positivism • Post-positivism	• Experimental research • Survey research	• Sampling • Measurement and scaling • Statistical analysis • Questionnaire • Focus group Interview

• Constructivism	• Interpretivism
	  • Symbolic interactionism
	  • Phenomenology
	  • Hermeneutics
	• Critical Inquiry
	• Feminism
		• Ethnography
		• Grounded theory
		• Phenomenological research
		• Heuristic inquiry
		• Action research
		• Discourse analysis
		• Feminist standpoint research
			• Qualitative interview
			• Observation
			• Participant
			• Non-participant
			• Case study
			• Life history
			• Narrative
			• Theme identification

• Subjectivism	• Postmodernism • Structuralism • Post-stucturalism	• Discourse theory • Archaeology • Genealogy • Deconstruction	• Autoethnography • Semiotics • Literary analysis • Pastiche • Intertextuality

Source: Adapted from: Crotty (1998, p. 9).

Epistemology provides a philosophical grounding necessary to decide "what kinds of knowledge are possible and how to ensure that it is adequate and legitimate" (Crotty, 1998, p. 8). There are several theoretical perspectives for knowing (see Figure 2) or Bryman (2008), however *objectivism* based on assumptions of *post-positivism* fits this thesis best. This epistemological position means "things that exists as meaningful entities independently of consciousness and experience" (Crotty, 1998, p. 5): it is about discovering the objective truth. Post-positivists aim to discover cause and effect relationships and to predict and control findings on the basis of preexisting knowledge, by emphasizing that replicable findings might be regarded as probably true (Denzin & Lincoln, 1994, p. 110). Post-positivists are also distinct from positivists because they accept that not all statements may be fully verified (Crotty, 1998). Moreover, post-positivists acknowledge the importance of human interaction and context in knowledge development. Thus, reality and truth can be understood in different ways, and knowledge is then open for future investigation. Finally, post-positivists emphasize the importance of multiple measures (both qualitative and quantitative research methods) as they may possess different kinds of error. Therefore, they use triangulation across

multiple sources as a means to verify findings and limit the influence of researcher bias (Denzin & Lincoln, 1994, p. 112).

As presented in Figure 2 above, philosophy of science offers several different paradigms that might be used to examine networks in the public sector. For positivists, networks outcomes are predictable because their outcomes might be explained through the use of proper scientific methods (primary quantitative research) (Provan & Sydow, 2008). On the other hand, a post-positivist stance allows for more complex policy problems in networks within a traditional treatment of different methods of data collection. This strategy may improve the validity of findings and reduce researcher bias. The influence of post-positivism is also present in previous studies on governance networks (such as Kickert et al., 1997; Koppenjan & Klijn, 2004) where scholars emphasize uncertainty and normative contestation in complex governance (Greenwood, 2016). This thesis draws from post-positivist insights into multiple understandings of managerial networking in networks.

3.2 Research design

The literature offers four different types of research designs relevant for qualitative and quantitative research: experiment, case study, longitudinal, and cross-sectional design. In these designs various methods of data collection can be applied, such as survey, interview, observation, document analysis, unobtrusive methods (De Vaus, 2001). Interviews are one of the most important sources in case study evidence and in all types of qualitative research, for that matter. There are several kinds of interviews in qualitative studies, such as: (1) structured, semi-structured and unstructured; (2) standardized; and (3) focus group (Bryman, 2008). Questionnaires or interviews might also be utilized in various survey methods (Creswell, 2014). Research design selection is critical, because it has implications for a variety of issues, such as validity (internal and external) and reliability of results.

Previous research done on collaborative arrangements use different types of case study research designs (Cheng & Voets, 2020, p. 48). This thesis engages a Comparative Case Study (CCS) approach (Ragin & Rihoux, 2009) and the strategy in case selection is the variation in the values of dependent variables (paper 1: breakdown/not breakdown; paper 3: different degrees of innovation). In addition,

paper 2 involves a case that is the population of a specific kind of network (regional councils). This statistical approach aims at detecting similarities and differences between units within a given population.

3.2.1 Empirical entities in studies: The cases[6]

There are two types of collaborative arrangements used as a case study in this thesis, and their attributes correspond with the features of governance networks presented in Table 3 (chapter 2). The two empirical entities share several structural network characteristics such as dependency, formalization, participants, and volunteerism. But they also differ across other features such as aim of collaboration, size, age, effectiveness, and type of actors.

Firstly, the Regional Council (RC) in Norway is a meta-organization where political and administrative public entities (municipalities and/or county councils, where the number of members vary from 3 to 19), collaborate to coordinate policies and activities across political, administrative, and territorial borders. It is usually a political arena for discussion and exchange of information between members rather than a decisive body. It is a formal (§27 of the Local Government Act), operational and multifunctional cooperation, voluntarily producing mainly information but not services. The membership's economic contribution to the RC is often determined by the number of inhabitants or a constant contingent. The mapping of RCs in Norway per November 2016 displayed that there are 61 RCs (Jacobsen, 2014; Jacobsen, 2015; Zyzak, 2017; Zyzak & Jacobsen, 2019).

Secondly, the Regional Innovation Coordinating Unit (RICU) is a governance network that focuses on bringing organizations (municipalities) together in a region. Municipalities coordinate with other public entities, aiming to boost innovation and promoting local and regional anchoring. Briefly, these governance networks provide a number of complex and novel digital innovation services to citizens (e.g. e-health, welfare technology and digitalization of public sector) and they cover almost a third of all municipalities in Norway (137 out of 422

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[6] This project has been conducted during the process of municipal reform in Norway that had some implications on the selected empirical unit in paper 3. Currently, regional councils are changing their agenda from political-administrative bodies to clearly political forums that are simply available for politicians, and not for public managers. Hence, the empirical entity has been changed from RC to governance networks (collaboration between municipalities and other public entities). However, both empirical entities represent secondary structures, and share several structural characteristics.
This may have resulted in an incomplete set of approaches needed to explain challenges and opportunities associated with managing secondary structures.

municipalities in 2019 = 32%)[7]. There are several reasons behind the creation of RICU. For instance, the lack of capacity at the municipal level to coordinate efforts, the creation of joint platform to learn and exploit experiences, improving innovative solutions to meet pervasive problems, and so on. RICU involves a group of organizations - usually with a common mission - and are rather multi-project oriented. The RICU's structure can vary in the number of actors involved (often covering all municipalities in a region) or their positions, but the network in many cases consists of a steering group, project coordinator, a project group and a reference group.

3.3 Methods of data collection

Following a post-positivist perspective on methodological pluralism (Wildemuth, 1993), this thesis involves different methods to examine the central research problem. Moreover, three sources of data collection form the basis for this thesis: primary sources such as semi-structured interviews (including focus group interviews in paper 1 & 3), a quantitative survey (paper 2), and secondary sources. An overview presenting selected cases, along with their various methods of data collection, is outlined in Table 5 below. The data gathered for the three papers allows for an exploration of the factors contributing to success in different collaborative arrangements (MO and governance networks).

Firstly, the qualitative semi-structured interviews (papers 1 & 3) rely on a set of open-ended questions to guide a conversation more loosely (Hesse-Biber & Leavy, 2011, p. 102). Thus, this method allows for a broader understanding of missing information in the studied cases that could not be explained though a qualitative survey. The separate interview guides with the topics and questions have been developed. To recruit interviewees for each qualitative study, both purposive selection and snowball procedures were used. Finally, all the interviews in paper 1 & 3 were fully transcribed and then analyzed thematically and coded according to the themes of the research questions in paper 1 and in paper 3.

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[7] The number of municipalities after municipal reform is reduced to 356 in 2020.

Table 5. Empirical entities, cases and method of data collection.

STUDY	EMPIRICAL ENTITY/UNIT OF ANALYSIS	METHOD OF DATA COLLECTION
Paper 1	**Regional councils (RC)** 4 cases (36 of 428 Municipalities (M)): Bergensregionen (11 M) Drammensregionen (8 M) Knutepunkt Sørlandet (7 M) Trondheimsregionen (10 M & county council)	**Primary data:** 17 semi-structured face-to-face interviews (including one focus group interview), conducted from February to December 2015. **Secondary data:** collaboration agreements, including annual reports, policy documents, minutes, mass-media, reports/briefings. Electronic messages were used to complete the data.
Paper 2	**Regional councils (RC)** All 61 RC	**Primary data:** Questionnaire to managers in all 61 RC, final response rate 83.6 per cent (N = 51), November 2016 **Secondary data:** collaboration agreements, research and annual reports, policy documents, meeting minutes, and members' websites, to complete information about organizational characteristics.
Paper 3	**Regional Innovation Co-ordinating Units (RICU)** 4 cases representing four Norwegian counties (137 out of 422 M in 2019 = 32% before municipal reform in 2020): Agder (30 M) Rogaland (26 M + 3 M as observatory) Hordaland (33 M) Trøndelag (48 M)	**Primary data**: 16 semi-structured interviews through Skype (including one focus group interview), 4 in each case, conducted in April-May 2019. **Secondary data**: project webpages, collaboration agreements, strategies, reports, and consulting innovation experts were utilized to assess maximum variance along dependent variable (cases represent different types of innovation from incremental to radical).
Thesis	Meta-organizations Governance networks	**Data from all the papers:** Semi-structured interviews N= 33 Survey to managers N=51 respondents (83.6%)

Source: Own compilation.

In paper 1, the interview guide for the two cases of network breakdown involved an extra item of failure, while the other topics remained the same all four cases (history of cooperation, motive of cooperation, tasks and services, economy and resources, management, and challenges and opportunities) (see the Appendix A). The respondents were selected according to their position, knowledge and relevance for study as well as availability. Both political representatives such as mayors, county mayors and administrative staff such as councilors, general managers, and project managers were considered.

In paper 3, the interview guide was identical for all respondents. The semi-structured questions helped to distill knowledge and competences in networks, the most relevant communication mechanism inside and external to the network (both intensity and forms of networking), any factors that might facilitate or inhibit interactions, the role of a network manager, and interviewees' perception of innovation (see the Appendix B). The four types of interviewees were network coordinators, network leaders/sector leaders, county governors, and KS representatives. They were selected in each network based on both their experience and ability to comprehend and analyze views from various angles.

In paper 2, the quantitative survey method was used, and data collected through an online questionnaire distributed to all the RC's managers in Norway. Advantages of surveys - especially for testing relationships between theoretical concepts - include the ability to access a large respondent target and to gather larger amounts of diverse information than one could through qualitative interviews (Van Meerkerk, Edelenbos, & Klijn, 2020). The questions in the survey included items on a manager's position, experience, frequency of networking activity and the type of contacts inside and outside the RC's domain. It also included demographic data such as age, education, and gender (see the Appendix C or paper 2 for more details). Frequency of interactions (how often a manager had contact with a number of actors and organizations) was measured on a 9-point scale ranging from *never* to *daily* (never, a few times a year, 3–5 times a year, 3–5 times in a half-year, 2–3 times a month, monthly, weekly, 2–3 times a week, daily). More detailed information on data collection and questionnaire is included in paper 2 (pages 10-12).

3.4 Methods of analysis

Several different approaches were used across the three papers to analyze the collected data. In the first study, a direct qualitative content analysis (deductive approach) was applied to investigate the antecedent for breakdown of collaborative arrangements. This analytical approach is relevant to conceptually validate or expand upon a theoretical framework. In undertaking the paper's analysis, the previous studies on network failure or dissolution were useful to identify variables as initial coding categories (theory-driven coding) (Hsieh and Shannon, 2005; Miles et al., 2014). In paper 2, the results from the questionnaire were analyzed through multiple regression analysis (OLS) using the Statistical Package for the

Social Sciences (SPSS). Finally, the comparative case study of four regional governance networks in the third paper applied direct qualitative content analysis - as in paper 1 - but NVivo software was employed for coding the interviews (Hsieh & Shannon, 2005).

3.5 Assessing trustworthiness

In contemporary public administration, the criteria used in evaluating collaborative arrangements remains very open, especially in light of post-positivists. However, studies on networks expose some methodological difficulties. In this thesis, the general limitation is a relatively low sample in the quantitative paper (N=61) and a low number of selected cases and respondents in qualitative papers. However, the high response rate and the deeply insightful perspectives afforded through the interviews proved exceptionally valuable and helped mitigate limitations.

There is considerable divergence in researchers' approaches to defining and assessing the trustworthiness of research findings. This thesis applies the comprehensive Guba and Lincoln (1989) framework that involves different sets of criteria for evaluating trustworthiness in qualitative research which have a parallel relationship to those used in quantitative research. These methodological criteria are: 'credibility and internal validity', 'dependability and reliability', 'transferability and external validity' and 'confirmability and objectivity'.

To begin, *credibility* that is parallel with *internal validity* (causal relationship between variables) is primarily affected by sampling and the 'truth value'. Here, different strategies may be used to enhance credibility during data collection, analysis, and reporting. This thesis applies different sources to triangulate the data and its interpretations (see Table 5 above). Additionally, the selected cases represent an average RC in Norway (between 7-11 municipalities in RCs) in four different regions. The primary and secondary data proved to be sufficient to detect reasons collaborative arrangement breakdown and provided confirmation for other findings. Nonetheless, the literature reveals that the larger the sample size the higher the likelihood for precise results. Therefore, a higher number of cases involved in this thesis would be desirable to better support outcome variations. The same issue appears in paper 3, where the results were derived from 16 interviews in four cases representing 32% of all Norwegian municipalities (between 29 – 48 organizational actors involved in a case) and supported by secondary sources.

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However, in paper 3, a mixed method approach would have improved the validity of "networking density", a variable that is more precisely measured quantitatively. Still, the qualitative results offer important (and previously lacking) information that could not be elucidated through the quantitative approach.

While there is an advantage to survey generalizability, weaknesses do remain - such as a limited ability to show causality. Especially when inherent complexity imposes a limit on the validity. Although papers 1 & 3 depend primarily on narratives, this thesis also comprises of a quantitative study. In terms of the questionnaire in paper 2, the sample is relatively low (N=61), but the response rate was very high (83.6%). Paper 2 is a cross sectional study effective in establishing correlations between variables - but not causality. For instance, the findings indicate that administrative capacity (number of staff) has a negative effect on managerial networking. So, this result should be interpreted carefully, as other interconnected factors might influence administrative capacity. Despite this, the data gathered in paper 2 was sufficient with regards to explaining the causes for external managerial networking.

Secondly, *transferability* and *external validity* indicates the ability to take the findings from one study and apply the same relationships and conclusions to other populations and contexts (Guba & Lincoln, 1989). The purposive sampling was used to select cases (political and administrative networks) restricted to the Norwegian context in this study. According to Patton (2015), this technique allows for the identification and selection of the best cases while the resources are limited. The strategy was to select cases especially well-versed in the phenomenon of interests – namely breakdown, success, digital innovation, and represented in different regions. Regarding the selection of interviewees, purposive sampling was used when applicable; however, a snowball method was also woven in to identify several participants. In terms of transferability of qualitative papers, it is argued in here that some of the results are also relevant in other public network contexts, such as education and health care, as they highlight problems such as failure or innovation that cross sectors and involve diverse actors. Although paper 2 involves a smaller sample size, the high response rate nonetheless allows for broad generalization of the results on external managerial networking.

Thirdly, *confirmability* and *objectivity* relate to the degree of researcher neutrality in the process of data collection and interpretation. As aforementioned, all the interviews were transcribed, and the data analysis reflects knowledge gathered though different sources. For instance, in paper 3, the criteria selected to determine the Incremental-Radical dichotomy in governance networks was conducted by using secondary data (project webpages, networks agreements, strategies, ad reports) and by consulting innovation experts.

Finally, *dependability* and *reliability* refer to the likelihood of other researchers to replicate the study, and the consistency and stability of findings over time. These criteria play a minor role in qualitative studies, but it is relevant in quantitative research, because they involve more empirical entities (Creswell, 2014). Moreover, this thesis applies the comparative case study approach to strengthen research rigor and relevance. There is significant potential in terms of the range and reach of the multiple case study as compared to the single case (Stewart, 2012). The multiple case study, being comparative in nature, effectively explains variations when it comes to breakdown, managerial networking, and innovation.

3.6 Summary

This chapter accounted for the research design and methodology adapted to this thesis. Both qualitative and quantitative approaches were included, where the primary research tools involved semi-structured interviews (including focus group interviews), and a questionnaire. Drawing on the data gathered though applying the methodology, the next chapters report on findings and contribution, and then conclusions and recommendations for future studies.

4. Findings and contribution

This chapter presents and discusses the main findings from the three papers that provide the foundations for this thesis (see also Table 2 in section 1.4). In addition, it offers valuable theoretical and practical contributions to the current knowledge and practice deficit on networks as 'secondary structures' by unpacking the factors leading to network success.

4.1 Paper 1

This paper introduced and explored the conceptualization of network breakdown, and how to measure this concept empirically. The Social Network Theory (SNT) and Resource Dependence Theory (RTD) were both useful theoretical lens to identify the antecedents of network breakdown. Accordingly, paper 1 offers a model that defines and categories explanatory factors of network/IOR breakdown systemized in two larger groups: structural and process-based (details in Table 1). In addition, the paper includes a comparative empirical evaluation of four IMC arrangements in Norway (called 'regional councils'), two of which experienced breakdown, and two that remained fully functional. This study revealed that *no single factor explains collaboration breakdown*. Rather, it was found to result from the presence (or absence) of a simultaneous complex combination of factors.

Firstly, the data analysis of the *structural factors* (structure of relationships between organizations, see Table 1 in section 1.1) showed several structural shortcomings such as limited administrative capacity - the resources that organizations could use to coordinate activities. A lack of formal strategy for collaboration and high personnel turnover also created challenges for network management, and thus triggered a breakdown.

Secondly, regarding the *process-based* causes of breakdown, the analysis revealed that *trust* was a central element for the maintenance of collaboration. This finding is well supported by previous studies displaying that in order to achieve collaborative integration, networks need to generate and leverage trusting relationships along with shared understanding and commitment to the process (i.e. Agranoff & McGuire, 2001; Mandell & Keast, 2007; O'Toole, 1997).

The central finding from paper 1 showed that several different interconnecting factors might explain the varying degrees of trust among members in breakdown

cases (Figure 1 below). Firstly, mistrust tended to relate to prior poor relations such, as unsolved conflicts between members. Another explanation for lower levels of trust was the lack of stability of network membership sparked by rather high incidents of personnel turnover. All of this led to lower levels of commitment by and engagement among some members. Finally, the low level of trust and self-interest demonstrated by certain members had an influence on internal communication processes and understandings. This issue was also connected to weak political and administrative management of networks, because the key actors in the breakdown cases such as mayors or councilors avoided physical meetings with other members. According to previous research, networks leaders play a key role in facilitating, mediating, and creating an institutional environment that favors and sustains interaction between network members to achieve success (Agranoff, 2006, 2007; Cristofoli et al., 2015; O'Toole, Meier, & Nicholson-Crotty, 2005). The findings in paper 1 display that the RCs that broke down were dominated by large municipalities ("big-brothers"). Whereas the strategy to lead the RC in successful cases was entirely different, as both big and small municipalities were leading collaboration.

In sum, these findings demonstrated a set of challenges associated with the management of secondary structures, such as RCs, where the key determinant for network/IOR breakdown was mistrust (process-based factor) interacting with other causes from its structure (e.g. weak administrative capacity, lack of stability in terms of personnel turnover, lack of cooperation strategy), context (spatial proximity) and process-based factors (such as negative previous relations, and sparse communication) (Figure 3).

Figure 3: Interacting effects for IOR breakdown.
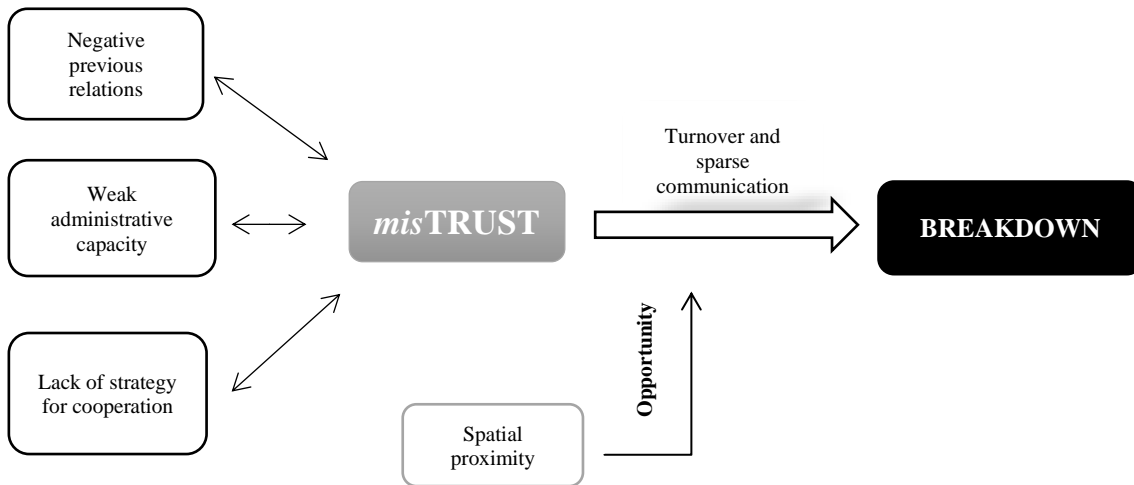
Source: Adapted from paper 1, p. 265.

The findings in paper 1 open a discussion for how secondary structures in the public sector such as Norwegian regional councils ought to be organized, as well as what managerial actions are required for such collaboration to continue. This paper demonstrates that while there is no one pattern/strategy for successful collaboration, *trust* between actors is an element for optional functionality. Several alternative elements have been identified that violate or reinforce trust. Collectively, these findings inform public managers about trust-related consequences and need for additional efforts in managing trust issues effective.

4.2 Paper 2

The first paper revealed that secondary structures have a comparatively weak structure and require different design and management approaches than primary structures/traditional organizations. Paper 2 was partly inspired by the results highlighted in paper 1, specifically the discovery that infrequent communication and inactive management might impact collaboration breakdown. The aim of paper 2 was to investigate what triggers managerial behavior in collaborative arrangements, with a special emphasis on networking activity.

To understand this problem, SNT was used to find the causes of managerial networking in networked arrangement, such as MO. Firstly, the paper mapped managers' networking capabilities, specifically examining the intensity of their external networking abilities. In addition, the aim was to explore the effects of both

manager and organizational characteristics on external networking. Hence, the concept 'distance' was introduced and its variations across two dimensions: structural and functional. Then, four different types of external networking categorized according to distance were suggested: 1) close-distance, 2) near-distance, 3) middle-distance, 4) far-distance. This approach to differentiate external networking illuminates that organizational locus matters in network settings. Similar to paper 1, the empirical study focused on political-administrative RCs in Norway (in addition, the paper 2 engaged with a "meta-organizations" concept). However, this paper differs from the other two included here, because a quantitative approach was used to measure external managerial networking (Table 5).

Using a data set from a survey sent to managers in all the 61 RCs in Norway, six specific hypotheses were verified, as well as a more general hypothesis: external networking would decrease with increasing distance between the focal organization (MO in this study) and external actors. The general hypothesis was quite strongly supported. Moreover, the bivariate analysis indicated robust and positive relationships between all four types of networking.

Following the descriptive statistics (see paper 2, s.13), the results showed a dichotomy. In particular, the average of close-distance networking was more than twice higher than the far-distance networking (6.00 on a 9-point scale). Moreover, in terms of managerial experience, the maximum value showed that a manager had leadership experience from seven of eight different sectors (88 per cent), and the minimum value revealed that there were managers who had no previous leadership experience.

Next, the results from the Ordinary Least Squares (OLS) Linear Regression analysis using standardized coefficients (ß) displayed the importance of leadership for external networking. The results, however, were not statistically significant, namely that experienced managers engaged in more intense networking than those less experienced. In addition, organizational age had a particular relevance for external networking, especially for far-distance networking. The other finding indicated that full-time employed managers were more internally focused than externally. Contrary to the hypothesis, organizational size had a negative impact on all the networking types (effects were not statistically significant). A similar result was demonstrated for symmetry, but it had a small and non-significant effect

on managerial networking. The last dimension, administrative capacity, revealed a negative effect on external managerial networking.

Summing up the hypotheses, five of them were either strongly or partially corroborated by the data. The strongest support was given to the hypothesis that the intensity of all types of external networking increases with increasing leader experience. These findings expand upon the current research on managerial networking (such as for instance Hansen & Villadsen, 2017; Johansen & LeRoux, 2013), by demonstrating variations in external networking of collaborative arrangements as secondary structures (MO). Following these findings, paper 2 contributed to the behavioral network management literature by suggesting that unidimensional networking might not explain managerial behaviour in networked arrangements, because their intensity differs across physical and structural distances. In the same way, a similar finding was presented in paper 1: organizational locus matters for the communication/networking strength in networks. Moreover, several individual and organizational characteristics may account for managerial activity outside the network/MO domain. Hence, this paper suggests that experienced managers seem to be valuable if networked organizations want to focus more on far-distance external networking. But, managers of rather young secondary structures tend to encounter challenges to develop and maintain networking outside their domain. Finally, this study points to the importance of 'capacity' and 'organizational locus' for external managerial networking and establishes an avenue for the multidimensionality of networking in networks that is continued in paper 3 below.

4.3 Paper 3

The aim of the paper 3 was to build upon work reported in paper 2. By elaborating on the findings that indicate the value of 'capacity' for external managerial networking, this paper took a step further to examine the significance of managerial networking to facilitate innovation. In particular, the goal was to describe how and why various types of managerial networking may affect different types of innovation outcomes in the public sector. To explain the complexity of interactions between actors and managerial behavior, several theoretical lenses were used, namely: network governance, resource dependency, implementation as well as Strength of Weak Ties (SWT) and Structural Holes (SH).

Paper 3 offered a networking design model that was verified empirically by comparing four different cases of regional governance networks consisting of autonomous municipalities, the Norwegian Association of Local and Regional Authorities (KS), and county governors in Norway. These networks coordinate the development and implementation of digital innovation in the public sector. Then, paper 3 indicated two different types and degrees of managerial networking: diversity (low-high) and density (weak-strong). Although the scholarship suggests several different innovation taxonomies (Chen et al., 2015; 2019), innovation outcomes presented in paper 3 were differentiated along the innovation continuum - from incremental through modular, and from architectural to radical (Henderson & Clark, 1990) (see the paper 3 for more). This innovation typology was previously used to measure innovation in the private sector, but not in the public sector.

The results presented in paper 3 supported three out of the four hypotheses. The first hypothesis - suggesting that high networking diversity and low networking density might be relevant for radical innovation - was only partially supported, as none of the governance networks supported it entirely (network B is placed between radical and architectural innovation). It appears that the strategy of young governance networks was in maintaining contacts around existing projects rather than in investing time to cultivate new connections. However, the second hypothesis was supported, because one of the entities (network A) developed highly diversified and dense networking by combining exploitation and exploration of contacts (ambidexterity). This case confirmed that the regular internal networking was crucial in securing the main design concepts that would build innovation capacity around the knowledge actors already held. Similarly, the previous studies on networking in traditional organizations demonstrates that internally oriented networking improves trust among members and supports the adoption and legitimacy of innovation (Gieske, van Buuren, & Bekkers, 2016). However, the case in paper 3 shows that the strength of internal networking may reduce the cognitive distance between actors who search for new knowledge outside the network. Next, the third hypothesis was supported by two of the empirical entities (networks C and D) that developed less diversified and weak networking, mainly characteristic for modular innovation. Furthermore, the two network cases demonstrated that it is possible for modular innovation to be developed and implemented without strong managerial activity in networks.

Finally, the fourth hypothesis was not supported, since none of the findings displayed the combination of strong intensity and low diversity. This finding signal that the selected governance networks were created to work on more complex innovation that require external networking rather than internal networking mainly relevant for incremental innovation.

This paper reveals that practicing different types of networking may mitigate numerous challenges and improve opportunities to innovate in secondary structures. Moreover, this study strongly emphasizes that network success depends on the capabilities of key network actors, such as managers or coordinators, in practicing their networking to achieve complex innovation outcomes. In addition to the findings in paper 2, this paper also shows the importance of variations in external managerial networking to improve effectiveness in different secondary structures.

4.4 Tying things together: contributions to the literature and practice on networks as secondary structure

This thesis comprises of three research papers that explore two different, yet interrelated topics that previously received insufficient attention in the literature on public administration and public management. The first issue is concerned with the limitations of collaborative arrangements as secondary structures. In particular, the focus is on their inherent instability and greater tendency to breakdown than in traditional organizations, making the management of such collaborations more challenging. The second issue emphasizes the importance of managerial capacity in practicing external networking in collaborative arrangements. The rationale of this thesis is to show that networking that is going on in the system is an underpinning capability for successful network collaboration. However, the connections on their own are not productive, so they must be identified and strategically leveraged to achieve benefits in networks.

Combining these issues, this thesis has used several theoretical concepts (Table 4) and different methods (Table 5) to examine how to overcome or limit challenges associated with managing secondary structures. Accordingly, by reviewing the findings from the three papers included herein (summary of findings in Table 2, chapter 1), this thesis contributes significantly to the literature on secondary

structures and suggests alternative paths toward success in networked arrangements.

4.4.1 Contribution to the knowledge on networks failure

Although paper 1 does not precisely focus on the causes or consequences of managerial behaviour (as in the other two papers), the main results suggest the *importance of trust* coupled with other structural and process-based factors for network to be ongoing. The significance of trust in network settings has previously been highlighted in the network literature, specifically that trust is manageable and matters for perceived outcomes (e.g. Klijn et al., 2010). Unfortunately, most scholarly focus dedicated itself to promises of trust, overlooking the possible determinants for network disbandment. There are only few recent studies on network failure that described the implications when trust is lacking and network failure (Moretti, 2017; Moretti & Zirpoli, 2016; Schrank & Whitford, 2011). In addition, Schrank and Whitford (2011) argue that measurements of organizational failure should not be used to explain network failure, because they are two potentially distinct processes, and should not be conflated. This thesis adds another piece to the puzzle by differentiating the dissolution of relationships between termination (planned ending) and breakdown (unplanned and ad hoc ending) (Cropper et al., 2008). Following that, paper 1 indicates variations between different types of breakdown across three dimensions (legal, relational, and economic), and moves beyond the previous dichotomy. This provides a more nuanced insight of breakdown typology into the varied forms of inter-organizational relations, including their relational strength, structures and purposes.

Following some of the cues from previous studies, paper 1 proposes a unique explanation of the factors for why some of the collaborative arrangements as secondary structures vanish while other survive. It shows that mistrust between actors might not explain network breakdown, but it is instead a combination of set - subset relationships (interconnecting factors) (Cepiku et al., 2020, p. 192). Thus, it assumes that an individual factor may have a different causal path (asymmetric causation), and in a combination with other factors may lead to different results (Cepiku et al., 2020; Ragin, 1987).

The main results from paper 1 shows that inter-organizational structure and formalizing trust are important for secondary structures to survive and succeed. In

particular, the findings emphasize that creating an appropriate trust mechanism with sufficient bandwidth is needed to reach into and effect secondary structure operation for collaboration. Although designing trust is difficult, the thesis found that clear roles and responsibilities in network settings improve mutual understanding and communication and create an environment where trust is more feasible.

Building on these findings, the next section sets out a broader discussion on the growing importance of public managers and external networking in achieving successful outcomes in collaborative networks.

4.4.2 Contribution to the knowledge on managerial networking in networks

Despite the significant body of available research, there remain several overlooked topics on network management, such as the role of external managerial networking in networks (Cristofoli et al., 2019). Two papers in this thesis (paper 2 & 3) have contributed to the relatively nascent theory of managerial networking in collaborative arrangements, especially networks with features that correspond with characteristics of governance networks (see Table 3 in chapter 2). The results of paper 2 strongly emphasize the importance of "capacity" to increase networking intensity with diverse actors located distant from the MO domain. In other words, as found in other studies, it is not only important to facilitate the networking between actors in secondary structures, but they need to be mobilized, strategically leveraged, and actively managed to create public value (Keast, 2011; Keast & Mandell, 2014). Thus, such complex activities may not fit secondary structures within traditional management approaches (Agranoff, 2007; Agranoff & McGuire, 2001; McGuire, 2002), because the focus is not only on how to work efficiently, but participants must also learn how to work with each other and develop processes to facilitate these relationships. Moreover, paper 2 contributes to the limited theoretical and empirical research in MOs by investigating how managers actually form their managerial networks. As such, the thesis addresses those determinants of managerial networking in secondary structures which Berkowitz and Dumez (2016) note are overlooked. This ignorance is alarming, because networking behavior is a critical means to increase access to resources, information, and gain legitimacy in networks. Furthermore, the findings in paper 2 clarify why some managers use more time to practice networking than others, by unpacking individual and organizational characteristics (see Table 1).

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These findings are also connected with the next study. Paper 3 demonstrates that managerial behavior is crucial for coordinating complex innovation in networks by actively leveraging networking as a vehicle to integrate knowledge and resources. The recent research by Cristofoli et al. (2020) emphasizes the relationships between leadership and connectivity for network success, either in the collective or individual form. While managers operate differently, they all play an influential role in building collaboration among multiple parties via their networking efforts. Other contributions drawn from this paper show that collaboration requires a strong management style to deliver innovation. Collaboration brings together diverse actors and interests and facilitates interactions required to achieve various innovation outcomes (Ansell & Torfing, 2014). With these cautions in mind, the framework suggested in paper 3 represents a novel approach to measure the importance of different types of networking (diversity and density of ties) for innovation outcomes in the public sector. Considering prior research, this paper expands the extant literature on managerial networking in network settings by emphasizing the *importance of actively practicing multidimensional networking in secondary structures* to deliver public value.

4.4.3 "So what?" – Practical consequences for managers

In terms of the practical implications, this thesis offers a valuable message for public network managers. Chiefly, it is that networking is essential for survival, while active/strategic leveraging of networking is critical for success in different secondary structures. This combination of nurturing relationships via networking and strategic leveraging is called the Process Catalysis/Strategic Leverager suggested by Keast and Mandell (2009). In addition, managers should seek to formalize relationships in collaborative arrangements as it helps overcome many challenges like difficulties associated with building mutual trust critical for survival.

In addition, this study recommends that networks should seek to improve their managerial skills and competencies when practicing networking. It is a necessary extension of skills, because public managers are often responsible for the coordination and support of public programs and in their interdependent environment. Therefore, they need skills to initiate and facilitate interaction

processes and obtain different information. It is necessary to enhance implementation results, create and change network arrangements for a better coordination, and guide interactions with aim to achieve organizational objectives. Thus, managers interact with different types of actors relevant for daily organizational operation (e.g. access to resources, incentives) and legitimacy that improves stability and comprehensibility of organizational activities. A better understanding of variations in networking may improve results of projects implementation in the public sector. This thesis therefore reveals that combining multiple networking dimensions offers a better picture of the networking types relevant for designing effective innovation strategies. Hence, networking types should not be used as a separate, but as a complementary method.

4.5 Summary

To sum up the key findings, this thesis offers nuanced insights into the growing literature on active management of networks, by providing a more complex picture between two different, but interconnected issues. Several major paths have been identified in order to improve effectiveness, avoid failure or achieve success in collaborative arrangements as secondary structures. Firstly, *trust* in networks cannot be taken for granted, but must be managed to keep secondary structures functional. Second, *network managers* are critical within secondary structures such as governance networks or MOs to broker and manage new and various connections through exploration and exploitation of relevant resources/knowledge that are necessary to create efficient collaboration. Third, the *capacity* to *actively leverage multidimensional networking* in collaborative arrangements is fundamental in order to achieve success in networks. Finally, this thesis stresses the importance of *organizational locus* (physical distance between organizations in network) for managing of relationships in networked arrangements.

5. Conclusion and avenues for further research

This thesis illuminated several theoretical areas beneficial for understanding challenges associated with managing secondary structures, such as networks in the public sector. Specifically, the thesis illustrates how and why such broadly collaborative arrangements are more prone to breakdown and failure, and what efforts increase the likelihood of survival and success.

The thesis makes three major contributions. Firstly, it sheds new light on *failure* in networked arrangements. It does so by showing that there is no singular path leading to network breakdown, but rather there are different configurations of casual conditions interacting with *trust* that lead to divergent outcomes. The thesis shows that configurations of factors leading to network breakdown were different to those leading to network success (asymmetric causation). Hence, this study contributes to the emerging research that uses a configurational approach to study public networks (i.e. Cristofoli, 2019, 2020; Raab, et al., 2015).

Second, this thesis contributes to the PA research agenda by enhancing the theory of network management. It does so by differentiating various types of external networking in networks as secondary structures across three dimensions (distance, diversity, and density) as opposed to the practice of referring networking in primary organizations as a largely unidimensional phenomenon, which has been the predominant perspective. This differentiation could also have some practical implications. Public managers may have diverse interests in networking, thus unidimensional networking might not sufficiently explain their intentions/objectives. By outlining various approaches, the thesis provides public managers with a stronger guidance for networking activity.

Third, this thesis highlights the added value of managerial activity inside and outside networks, especially governance networks that cross sectors and organizations as a means to combine necessary resources (knowledge, technology) to successfully deliver public value. In particular, this thesis demonstrates that a network is a system consisting of different organizational actors, while still dependent on external networking with diverse stakeholders to implement complex innovations in the public sector. This issue is particularly relevant for academics and practitioners because the structural complexity of secondary

structures requires different design and management approaches than traditional/primary organizations. In addition, scholars and public managers of secondary structures are encouraged to consider *organizational locus*. Namely, the physical distance between member organizations that may impede upon managing relationships and building trust between actors in networked arrangements.

Since O'Toole's (1997) famous call for networks to be treated "more seriously", a substantial body of research has been directed toward this topic. Many of these contributions have stressed the need to address management of networks and related managerial behavior (O'Toole, 2015). Such an emphasis is amplified in the current public sector context which demands effectiveness and efficiency in managing networks (Kapucu & Hu, 2020; Klijn & Koppenjan, 2016; Voets, Keast, & Koliba, 2020). Also, more recently, Cristofoli et al. (2019) argued for the importance of managerial activities in network settings. Still, many issues have been overlooked in public administration, such as the impact of managerial networking in networks as secondary structures. This thesis unpacks this topic and suggests theoretical avenues for active practicing of external networking in public networks to improve network success.

The findings and recommendations that emerge from this thesis build upon existing knowledge and offer some nuanced insights into the daily practice of managerial networking, particularly external secondary structures. However, it is important to consider the limitations involved in such research, and thus the suggested solutions may not fit all network types or contexts.

5.1 Avenues for future research

Although this thesis has contributed to an enhanced understanding of both networked arrangements and their networking management in both internal and external domains, there is still a need to undertake further research to elaborate upon the dynamic nature of collaborative arrangements as secondary structure. The research recommendations are organized in this section according to the findings of this thesis. While the research papers (1, 2 & 3) included herein provide additional possible questions stemming from these studies.

Following the findings in this thesis, a potential area of future research may relate to the process studies of the trust formation in public networks. This research may

consider process tracing method to identify social mechanisms (both entities and activities) that under certain conditions facilitate trust/mistrust in networks as secondary structures.

As networks in different contexts often require different factors to function and succeed, future research may apply the configurational approach more often to study other/various effects/outcomes in networked arrangements. This approach would serve to highlight and systematize the diverse pathways available to public managers in order to achieve successful outcomes in delivering public values through networks.

In addition, greater attention needs to be paid to the tensions inherent in enabling leadership in complex secondary structures involving multiple organizations. Specifically, the future research may explain what factors facilitate inside- and outside-oriented leadership in traditional organizations and network settings.
Moving from the findings in this thesis, future research may help to formulate and test ideas and hypotheses on other dimensions of secondary structures - in particular, how to manage different identities, logics, power, and culture in collaborative arrangements. This approach may, for instance, improve our knowledge on how networks acquire their own identity (e.g. meta-organization identity) and if and how network identities differs from an organization's identity. Besides, a subject necessitating future research is to compare how the power of leaders of primary/traditional organizations and leaders of secondary/networked structures influence their management practices.

Another area of future research may consider applying more extensive (e.g. cross-national) quantitative studies of several different types of networks/MOs to map different types of networking and relating networking and organization of networks to different outcomes (both at the network and organizational level). As the contemporary challenges grow increasingly complex, this research may guide public organizations and networks, in particular their managers and leaders about types of networking and conditions in various secondary structures that may lead to sustainable solutions.

In conclusion, by highlighting management and networking, this thesis builds on various scholarship that seeks to uncover the factors that contribute to success in

public networks. Moreover, it demonstrates that the management of secondary structures should be treated with more weight and urgency if public managers desire successful outcomes.

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Research Papers

PAPER 3

The impact of managerial networking on innovation outcomes in the public sector.

Barbara Zyzak

Abstract

There is a continuing demand for public sector innovation to address new societal challenges. Although several relevant approaches related to the measurement of innovations in the public sector have been examined, there appears to be a need for more focused research on the impact of networking on innovation outcomes. To address this gap, this paper examines the importance of managerial networking for innovation, and especially how and why different types of managerial networking may affect different types of innovation outcomes in the public sector. The paper offers a two-dimensional networking design model that is verified empirically by comparing four different case regional governance networks consisting of municipalities, county governors and Norwegian Association of Local and Regional Authorities (KS) that coordinate the development and implementation of innovative welfare technology and digitalization of public sector. The results demonstrated the importance of managerial role in facilitating innovation outcomes through different types of networking.

1. INTRODUCTION

The ongoing turbulent and changing nature of our society, increasingly demands innovative policies, services and new forms of organizations to deal with a number of complex and 'wicked' problems in the public sector (Ansell & Torfing, 2014; Bason, 2018; Cristofoli, Meneguzzo, & Riccucci, 2017; Head & Alford, 2015; Klijn & Koppenjan, 2016; Torfing, 2016). This shapes the imperative to better understand the role of public managers in exploiting and exploring of diverse interactions being seen as effective way of gaining valuable insight and external knowledge to improve innovation in the Public Sector Organizations (PSO) (Gieske, van Buuren, & Bekkers, 2016; Gilsing & Duysters, 2008; McNabb, 2006; Õzman, 2017).

Although previous research demonstrate that innovation success is increasingly seen to occur through networks (e.g. Ansell & Torfing, 2014; Bekkers, Edelenbos, & Steijn, 2011; Considine, Lewis, & Alexander, 2009; Özman, 2017), and that relationships are perceived as 'connective tissue' for networks (Keast & Mandell, 2009); the actual doing of networking (O' Toole, 2015) in public networks has received insufficient attention in the literature on public administration (Gieske et al., 2016; Lewis, Ricard, Klijn, Bekkers, & Tummers, 2018). *Networking* is a behavioral concept and it is different from network (structural arrangements). It means an intra- and inter-organizational act toward a broad-based network that provide different ways of communication aimed to get access to greater resources, information and knowledge that are necessary to achieve organizational objectives (Zyzak & Jacobsen, 2019). So far, networking in interorganizational arrangements in the context of Public Sector Innovations (PSI) is presented as uniform phenomenon and the variations in outcomes are not explained (for instance Lewis et al., 2018), while in studies on private sector innovation is more diversified (de Jong & Hulsink, 2012; Nooteboom, 2000; Nooteboom & Gilsing, 2005). So, studying its different dimensions might show that networking can mean different things, and innovation

outcomes can also be different. Therefore, this paper emphasizes importance of different types of networking in enabling different innovation outcomes in the public sector. This attempt may help public managers to design their strategies more intentionally, bearing in mind the fact that public managers are often expected to shape the means to increase innovation outcomes in the public sector.

Although the research on PSI is top on agenda of public managers and politicians, there is a call for more careful examination of how the forms, types, strength, length and quality of ties and exchange shape the way of public value creation (Ansell & Torfing, 2014; Considine et al., 2009; Keast & Mandell, 2009; Mandell & Keast, 2013). Drawing on four different regional governance networks in Norway that coordinate development and implementation of innovative services on digital innovation in the public sector, this paper attempts to fill this gap.

2. PUBLIC SECTOR INNOVATION

Innovation in the public sector has attracted growing attention among scholars and governing bodies (i.e. Bason, 2018; Hartley, 2005; Moore & Hartley, 2008). Despite the widespread interest, the breadth and complexity of the innovation phenomenon makes it difficult to agree on a common understanding (Damanpour, 1991; De Vries, Bekkers, & Tummers, 2016).

In general, innovation is identified by novelty (De Vries et al., 2016). But it is not a new concept (Bason, 2018) as its origin dates to the innovation theory founded by Schumpeter (1942) (De Vries et al., 2016). Since then, the scholarly perspectives on innovation have changed significantly. Only recently, the increased focus on 'co-creation', 'participatory design', 'co-design', 'design attitude' and 'design thinking' have been central to innovation in designing scenarios for the future (Bason, 2018). In addition, a stream of literature describes multiple approaches and traditions to discuss criteria for innovation performance evaluation (see for instance Borgonovi, Anessi-Pessina, & Bianchi, 2018, p. 204; Prajogo & Ahmed, 2006), but so

far they suffer from several limitations such as lack of common framework for measuring innovation (Borgonovi et al., 2018; Chen, Walker, & Sawhney, 2019; Cristofoli & Macciò, 2018; Damanpour, Walker, & Avellaneda, 2009; De Vries et al., 2016). Accordingly, this study suggest measuring the importance of networking types for different innovation outcomes by adapting the Henderson-Clark innovation typology (1990). This model complements to a great extent the Incremental-Radical dichotomy by adding in-between the Modular and Architectural innovations. Scholars argue that there are two dimensions: knowledge of the components and knowledge of the linkage between them that are important to distinguish into the ways in which innovations differ from each other (Henderson & Clark, 1990).

2.1 Innovation taxonomy

Although the recent literature review reveals that there is a general tendency among scholars and practitioners to treat innovation as a uniform phenomenon (De Vries et al., 2016); there are some individual studies (see for instance Bloch & Bugge, 2013; Chen et al., 2019; Damanpour, 1991; Hartley, 2005; Henderson & Clark, 1990; Moore, 1995; Tidd & Bessant, 2018) that consider many small but significant variances between innovation typologies. Nevertheless, some of these taxonomies are too broad (as for instance the typology by Hartley, 2005), or focus on one concrete type of innovation (Walker, 2014), thus the variety of analyzed factors makes it difficult to generalize findings that might contribute to theory building (Buchheim, Krieger, & Arndt, 2019). Therfore a clear understanding of what innovation constitute is critical for managers to design innovation and to assess innovativeness of their organization or network. Accordingly, the key element should entail whether innovation is an outcome or a process to reach an outcome (Quintane, Casselman, Reiche, & Nylund, 2011). Following the recent literture reviews (Buchheim et al., 2019; De Vries et al., 2016), this paper defines innovation as an outcome affected by managerial networking behaviour. Then, this study follow the categorization by Henderson and Clark suggests to differentiate innovation outcomes along

innovation continuum (from incremental to radical) (Henderson & Clark, 1990) (Figure 1). Such an approach is also used in earlier studies on interorganizational relationships where scholars define different types of network relationships along integration/relational continuum (Keast, Mandell, & Brown, 2007), and they also display how different types of innovations relate to different types of networks and to the differences in their leadership (Mandell & Keast, 2013).

Figure 1. Innovation continuum
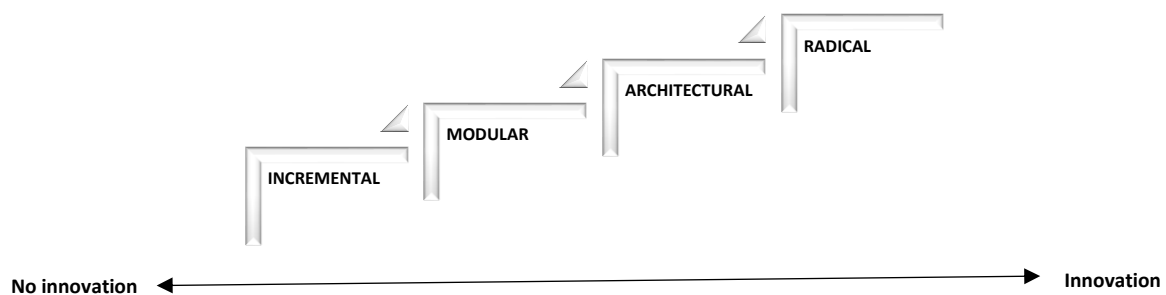
According to Henderson and Clark, a 'component' is defined as a physically distinct portion of the product or service that expresses a core design concept/knowledge (Henderson & Clark, 1990). Others also argue that a successful product or service development requires both types of knowledge to be present: knowledge of a product's components and knowledge of the linkages between components (architectural knowledge). Finally, the combination of component and architectural knowledge forms the four kinds of innovation (Popadiuk & Choo, 2006):

1) *Incremental*, where both architectural and component knowledge are improved or slightly changed at the same time, and it might be similar to the bricolage approach ('making do with what you have') introduced by Lévi-Strauss (1966). This method consists simply of improving certain characteristics, without any change to the structure of the system (improvements or enhancements within a given frame of solutions)

5

(Fuglsang, 2010). Following March (1991) distinction between exploration and exploitation, incremental innovation mainly consist of exploitation of existing services that enables organizations to remain strong in their current activities (March, 1991). This type of innovation is the most common and it is often used by municipalities or other public entities to improve functioning of their ongoing services.

2) *Modular*, where a component knowledge is changed, but architectural knowledge is unchanged or only marginally improved. This type will enhance exploitation (internal resources), with some elements of exploration (external resources) necessary to increase knowledge of an individual component. The analog-to-digital (old to new) telephone transition may represent a modular innovation.

3) *Architectural*, where component knowledge remains the same, or is slightly improved but architectural knowledge is changed. That is a stronger requirement to understand the linkages/ties between components that need to innovate together. Architectural innovations are designed to use existing core knowledge in a new architecture. Therefore, ambidexterity (novel combination of exploitation and exploration) is important for effective design creation (Gieske et al., 2018). The desktop photocopiers (multifunctional) are an architectural shift of the stand-alone photocopiers.

4) *Radical*, where both types of knowledge have significant changes and require thinking outside the box. This breakthrough approach (O'Connor, 2008) is more complex (opposite of the bricolage approach), as exploration is necessary/manadated to get access to experts, incentives and research to to achieve objectives and implement innovation (Gilsing & Nooteboom, 2005). Previous research has also demonstrated the importance of strong managerial role in radical innovation process being crucial to coordinate its complexity, achieve network objectives and benefits (Lewis et al., 2018; Meijer, 2014, 2018).

The above has demonstrated that different types of innovation can be produced through various innovation approaches. The innovation taxonomy (Figure1 above) presents a useful tool to guide the network management and it helps to unpack and order the different innovation approaches available (Chen et al., 2019). Therefore, the paper rises more specific enquiries in the next section, as what type of networking is associated with what type of innovation?

3. MANAGERIAL NETWORKING AND INNOVATIONS

There is a growing awareness among scholars and practitioners that practicing networking may be an essential means of knowledge exchange and learning in innovation process (Lewis et al., 2018; Gieske et al., 2018), and actors can address rapidly changing environments and share risks in order to generate innovations (Koschatzky, 2002; Õzman, 2017). Thus, public organizations are engaged more often in different network settings. That makes challenges for public managers as networks management is different from traditional, although it can include some traditional elements. However, its success often depends on managerial skills and competencies (Agranoff, 2012).

This paper will build upon the studies that considered relevance of managerial networking in enabling innovation in terms of *frequency* (Lewis et al., 2018), *density* (Jansen, Van den Bosch, & Volberda, 2006), *diversity* (e.g. Sørensen & Torfing, 2010), and *strength* of contacts (Mandell & Keast, 2013). The research reveals that diversity and density are the phenomena that correspond with variety of ties, but they differ significantly, as the variety of knowledge necessary for learning and innovation is going together with weak density of ties (Gilsing & Nooteboom, 2005). Besides, the extant network literature often conflates together the three dimensions of ties variety: density, strength and frequency (Burt, 1992; Granovetter, 1983; Jacobsen, 2015). The argument supporting this connection shows that thick and frequent relationships in a system often distribute redundant information that creates costs and lower efficiency (Gilsing & Nooteboom, 2005).

Accordingly, this paper comprises strength, frequency and density into one networking type, and the diversity (including distance) into another networking type. What matters is not only the dimensions of the variety of ties, but also the managerial behaviour that ought to be the subject of considerable attention (i.e. Edelenbos, Klijn, & Steijn, 2011; Gieske et al., 2016; Johansen & LeRoux, 2013; Lewis et al., 2018; Meijer, 2018; Prajogo & Ahmed, 2006; Zyzak & Jacobsen, 2019).

The rational for this study is to display that the "connecting" that is going on in the systems is an underpinning capability for innovation to occur, especially in producing new value, however, the connections on their own are not productive, rather they must be identified and deliberatively/strategically leveraged to create something including new products, processes and so on. Therefore, this paper emphasizes importance of key network actors (intermediates, managers) in their efforts while using a hub position within the network to broker new connections necessary to enable innovations (Edelenbos, Van Buuren, & Klijn, 2012; Gieske et al., 2018; Keast & Mandell, 2014; Mandell & Keast, 2013).

3.1 Relationships between Networking and Innovation Outcomes.

This study suggests a two-dimensional networking framework that allow measuring the impact of networking variety on four innovation outcomes. This model accounts for the fact that public networks involve their networking partners for various purposes, and therefore one networking dimension might not be enough in explaining various innovation outcomes. So, in this paper the networking *diversity* reflects knowledge and communication variety between and among actors, while networking *density* means networking strength and thickness variety. Moreover, focus is on strategic managerial behavior to connecting actors. Also, different combinations between networking dimensions are offered.

3.2 Interplay between dimensions

The paper suggests four different combinations between types of networking and types of innovation outcomes (Figure 2).

Figure 2. Combinations between and among networking dimensions and innovation outcomes.
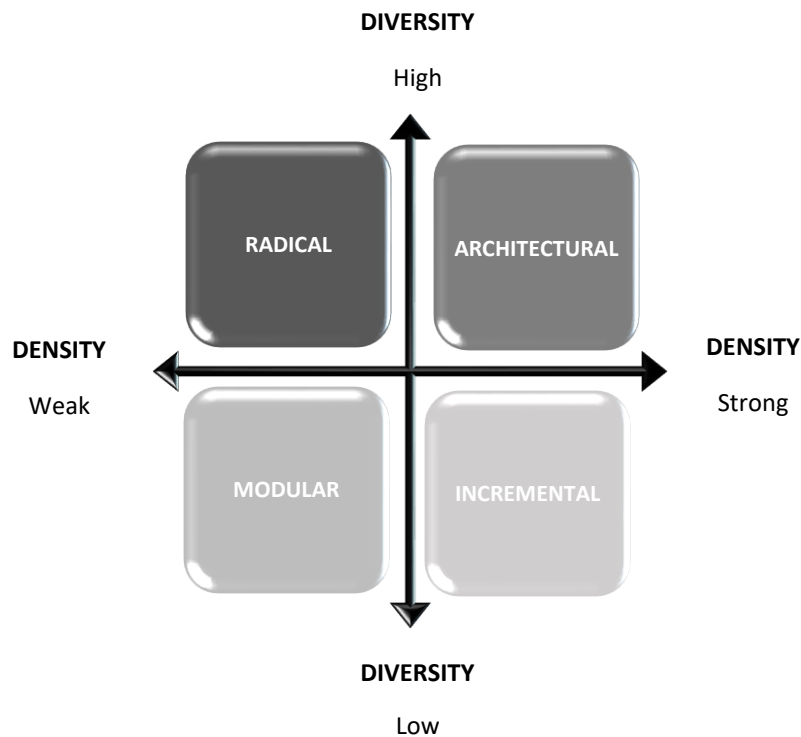
1) High diversity and weak density → Radical Innovation

Scholars emphasize that innovation, in particular radical innovation, involves exploration that is necessary to integrate complementary knowledge and capabilities (Gilsing & Duysters, 2008; March, 1991). Thus, the cognitive distance in a network (degree to which knowledge and skills are different between actors), and a trade-off between novelty and proximity for understanding may facilitate innovation (Nooteboom, 2000). While, the density of networking might impede diversity of networking, because usually a strong networking with one individual offers an access to in-depth knowledge and information, but little diversity of such (Granovetter, 1983). Furthermore, Burt (1992) suggests preventing redundant contacts and search for ties that provide opportunities for information access (Gilsing & Duysters, 2008). Hence, having several

strong ties is important for knowledge creation, while weak ties are important for knowledge acquisition (Lechner & Dowling, 2003). Thus, this study indicates that weak ties and networking diversity (interacting with different set of actors and using various traditions of communication channels) provide the best conditions for the absorption of new knowledge and information, as well as increase learning potential for radical innovations. Thus:

H1: High networking diversity and weak networking density are positively related to radical innovation.

2) High diversity and strong density → Architectural Innovation

This type of innovation is mostly dominated by heterogenous knowledge (diverse resources) and information outside the organizational boundaries (Davis, 2016). In network studies, the diversity is often identified with creativity and multi-actor collaboration (public-private) (Torfing, 2019). The earlier studies show that actors with diverse backgrounds, ideas, interests, goals, competences are more likely to search for innovation solution, and generate innovation (Lungeanu & Contractor, 2015). So, the multiple interaction forms and platforms, both inside and outside network boundaries, might hold the key to understanding the innovation dynamics. Following that, a mix of exploitation with a significant dominance of exploration (Gieske et al., 2016) will fit the conditions of architectural innovation. Thus, specific investments in mutual understanding of components that already exists but need changes increase through strong and diversified networking. Having many weak ties might move architectural innovations to misunderstanding and chaos (Gilsing & Nooteboom, 2005; Gilsing & Duysters, 2008). Thus:

H2: High networking diversity and strong networking density are positively related to architectural innovation.

3) Low diversity and weak density → Modular Innovation

The research displays that the linkages with actors who share similar knowledge and experiences on a component may reduce possibility of learning by interaction, namely by absorbing other people's forms of thought; however it is very useful when one can try out mappings that have already been proven useful by others (Gilsing & Duysters, 2008). So, the modular innovation will involve some elements of exploration (but limited), and favor exploitation to change a knowledge component. Therefore, this type of innovation requires weak ties to identify similar (homogenous) source of knowledge. Using and maintaining weak ties can bring far-reaching benefits and opportunities for network that would never be achieved through strong networking. Having a combination of rather homogenous and weak ties will favor modular innovations. Therefore:

H3: Low networking diversity and weak networking density are positively related to modular innovation.

4) Low diversity and strong density → Incremental Innovation

In contrast to the dimensions described above, low diversity and strong density of networking may only opt for incremental innovations. Based on the previous research, this combination involves mainly exploitation of existing stocks of knowledge supported by regular linkages between actors inside the network (Gieske et al., 2016). Thus, a preference for exploitation may not be risky for the short run, especially when network managers are more experience and can strategically use the current contacts (Greve, 2007). Accordingly:

H4: Low networking diversity and strong networking density are positively related to incremental innovation.

4. DATA AND METHODOLOGY

4.1 Case study

This study focuses on recently established regional governance networks in Norway, a vast country with a relatively small population of 5.3 million. *Regional Innovation Co-ordinating Units (RICUs)* are public networks focusing on coordination of municipalities in a region, in cooperation with other public entities, aiming to boost innovation and promoting local and regional anchoring. Norway is currently divided into 11 counties (nor. "fylker") and 356 municipalities (nor. "kommuner"). The smallest island-municipality Utsira has approx. 200 inhabitants, while the biggest Oslo has a little more than 673K, and the average municipality of approx. 15K citizens.

There are several reasons behind RICUs creation such us lacking capacity at the organizational level to coordinate efforts, improvement of innovative solutions to meet wicked problems, and so on. The RICUs structure can vary in the number of actors (often cover all municipalities in a region) or their positions, but networks often consist of a steering group, project coordinator, a project group and a reference group.

4.2 Sample and data collection

The RICUs are rather young, thus the snowball sampling was used to identify the most relevant case networks representing different types of innovation outcomes (Table 1). These governance networks provide a number of complex and novel innovation services (e-health, welfare technology and digitalization of public sector) and cover almost 1/3 of all municipalities in Norway (137 out of 422 M in 2019 = 32% before municipal reform in 2020). Furthermore, a diverse case selection strategy (Seawright & Gerring, 2008) has been utilized to display maximum variance along dependent variable (cases represent different types of innovation from incremental to radical). Then, two criteria were selected to determine the Incremental-Radical

dichotomy by using secondary data (project webpages, networks agreements, strategies, reports) and consulting innovation experts (Table 1): 1) the purpose of the project and 2) the complexity of knowledge components in this project. Next, the four types of innovation outcomes have been operationalized. First, radical innovation involves most complex (multiple) links between different knowledge components on different organizational levels and layers, and it entails highly specialized components necessary to create entirely novel solution (often Artificial Intelligence component is present). Second, architectural innovation preserves the knowledge of existing components to establish a new design or to change the way the components interact (often a joint digital/knowledge platform for diverse actors). Third, modular innovation improves knowledge on a component that makes small changes/improvements to the existing design (often from analogue to digital version). Then, incremental innovation involves knowledge components that may only implement or improve a non-complicated solution/design to the existing ones (for instance by introducing an App or improve the existing communication platform). Finally, a non-innovation project might be an option or a kind of investment contributing towards renewal and improvement of knowledge components for the future innovation projects. Finally, it is suggested to measure the level of innovativeness on a scale from 1 (incremental) to 4 (radical), while a non-innovative project gets 0 (see more details in Table 1). The sum of all the projects to a network is divided by the number of its ongoing projects, then we get an average.

Table 1. Innovation outcomes in selected governance networks.

PROJECT (P) NAME	SELECTED FEATURES FROM PROJECT CONTENT: Purpose of the project & Knowledge components	Governance network				
		Name of network	**A**	**B**	**C**	**D**
		Year of establishment	2016	2017/2018	2018/2019	2014 ‡
		Municipalities (number of members)	30	33	26 (+3 observers)	48
P1 Municipal response center	Transition from analogue to digital security alarms (a component is changed)		M			
P2 One citizen - one journal	Development of the Health Platform based on several components (data available for quality improvement, health monitoring, management and research)		A			
P3 Introducing welfare technology	Combination of several specialized components that require comprehensive solution including integrations (connect all the disks alarm in one)		R			
P4 Joint Telemedicine solution	Combination of several specialized components that require development of common future model for telemedicine interaction in a region (Artificial Intelligence)		R			
P5 DigiHealth	Development of the communication platform for patients and healthcare require combination of serval components		A	A	A	
P6 DigiSOS	Digitalization of the social services in Norwegian Labour and Welfare Administration combines several components into one platform			A	A	
P7 Counting in kindergarten	Implementation of a solution/App				I	
P8 KS Mypage	Development of the existing MyPage into a better platform for citizens and municipalities			I	I	
P9 DigiChildcare	Development of the platform that allows children and parent to interact and communicate easily and effectively with child welfare includes several components and phases			A		
P10 Joint procurement of case /archive system for all municipalities in a region	Development of the archive system for all municipalities					M
P11 Digital transformation - skills enhancement for municipal leaders	Improvement of knowledge on digital transformation					N
SUMMARY †	**Average** (the sum of projects divided by the number of projects)		3,2	2,5	2	1

† **I** (Incremental=1)**; M** (Modular=2)**; A** (Architectural=3)**: R** (Radical=4)**; N** (Not innovation project=0); **P** (Project)

‡ Informal cooperation, formalization in some of municipalities in 2019. Only one project was implemented in all the municipalities. The other project is implemented in some of municipalities.

This comparative case study adapts direct qualitative content analysis (Hsieh & Shannon, 2005). The semi-structured interviews (primary data) were conducted through Skype-for-business (N=16, April-May 2019), then transcribed and analyzed by using NVivo software (15 of interviews were individual and one was a group interview, because the manager position in a network is shared among two people). The four types of informants: network coordinators, network leaders/sector leaders, county governors, and KS representatives were selected in each network to display views from various angles. The open-ended questions helped to explore knowledge and competences in networks, most relevant contacts/networking inside and outside the network (both intensity and forms of communication), factors that facilitate and inhibits interactions, role of network manager, and perception of innovation.

5. FINDINGS

In this section the findings for each network are presented below, and then summarized in the Table 2.

Network A

Network A practices nine different types of contacts (inside and outside its domain) and the total intensity is 17 (Table 2). It has developed a unique internal communication structure, both digital and traditional meetings among municipalities, KS, and county governor who supports them financially. One of participants mentioned "*if I compare it with my colleagues, there are no other regional actors that have such good meeting structure*". Despite this, network A favors connections with external actors, especially those with academia "*the network is connected to the ICT milieu, and they are central to making the technical work to function*", but also it interacts with regional actors (the EU office) and inside professional networks. Nevertheless, the network actors rather sporadically attend regional and national conferences, workshops and

seminars. Also, the results displayed the key role of network managers in facilitating innovative ideas "*we took even better focus on management, because we believe that to understand innovation we need to have the leadership anchored to get it to the highest level*". Finally, the results show that this network has the most diversified and dense networking among all the selected cases.

Network B

Network B interacts with eight different types of actors, and the sum of networking density is 13 (Table 2). This network prioritizes more external networking (contacts with a similar network, national agencies and conferences) to promote interests by using central position of network leader. According to informants, network leader is "*an important person in the field of digitalization throughout the country (…) He is very central. He is also good to connect people who are excellent*". Although leader is acknowledged externally, the internal networking is very sparse (except the county governor who supports the network financially). Moreover, network B has a privileged access to innovation lab that gives its members an opportunity to develop relevant contacts with different regional actors. Nevertheless, there is not developed a meeting agenda for the members (only individual meetings between network manager and individual municipalities), or municipalities arrange regular meetings among themselves in groups or during big events in the region (conferences, seminars).

Network C

Network C acts together with six different types of actors and the sum of networking density 10 (Table 2). So far, network C has not developed very intensive contacts with any of actors, but almost 70% (4 out of 6) of its interactions are based on regular networking, mainly within sub-regional groups, similar network and internal actors (expect municipalities). The informants stressed that the low activity is mainly caused by the lack of managerial

competencies in the network "*we need a person with managerial skills who can lead without formal managerial rights, and (...) can also be important to communicate outside*". Besides, informants mentioned that there is lack of a joint platform/forum for all the members to meet regularly, exchange experiences and learn from each other. Furthermore, the sporadic networking has been practiced with external stakeholders such as national agencies, smart-city networks and Innovation Norway.

Network D

Network D interacts with 6 actors as network C, but the sum of networking intensity is the lowest among all the case networks. Besides, network C is embedded in rather dense sub-regional networking. The main barrier for physical contacts is the large geographical distances between member municipalities and rather big size of the network (48 municipalities dispersed geographically) that require good coordination. But the big size makes an advantage to use the available resources and knowledge inside the network domain in the first instance. So far, this unformal network lacks a leader who could bring all the formal and informal members closer each other and make networking more relevant. One of the informants mentioned: *"we need to have someone who facilitates, enables, makes sure people talk well, makes sure you listen and get ideas and connect people. (...) so, it is necessary to have people who make sure that things are done in the best possible way".* Moreover, informants stressed the absence of common knowledge/learning platform and meeting agenda for all the members.

The results from analysis of the four case networks are presented below in the Table 2. The sum of contacts (different types of actors) and the sum of contacts' intensity (the frequency of contacts, 3= very regular, 2= regular, 1=sparse) were calculated by adding all the values in each of the networks.

Table 2. Governance networks across networking dimensions.

Types of actors	*Network A*	*Network B*	*Network C*	*Network D*
Municipalities (network formal members)	3	1	1	1
KS (network formal member)	2	1	2	2
County Governor (network formal member)	3	2	2	2
Academia	2			
Professional networks	2	1	2	2
Similar governance network(s)	1	2	2	1
Regional actors (EU office, smart city, NAV, hospital)	2		1	
National agency (KommIT, KommUT, Ministry, KS)	1	3		1
Similar actors on conference, seminar, workshop	1	2		
Innovation Lab		1		
Total sum of contacts	**9**	**8**	**6**	**6**
The sum of contacts' intensity*: Max=3, Min=1)*	**17**	**13**	**10**	**9**

Very Strong (**VS=3**): Very regular and often (at least once a month or often), Strong (**S=2**): Rather regular and often (3-6 times a year), Weak (**W=1**): Rather sporadic and weak (2 times a year or less)

Figure 3 presents the results of the combinations between networking diversity (MIN=6, MAX=9) and density (MIN=9 and MAX=17) in the four selected networks. Then the sum of each networking dimension is placed accordingly. The model shows that networks C and D represent modular innovation, while network A – architectural, network B is placed between architectural and radical innovation. Moreover, all of networks are placed quite far from the incremental innovation, and none of networks represent radical innovation.

Figure 3. The interplay between sum of interactions and the sum of networking intensity in selected networks.
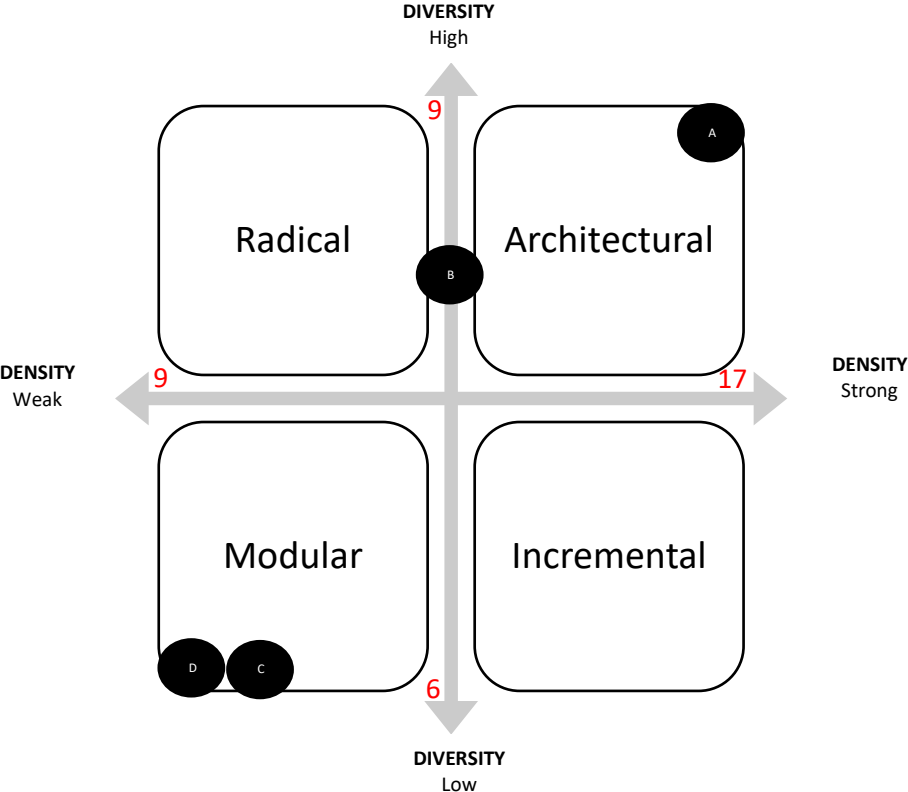
Overall, the results from all the four networks displayed variances in terms of networking types and its intensity. The network A has developed the thickest and highest number of different types of networking, while network D the lowest values of networking density and diversity. Besides, networks share networking with similar types of actors (internally with KS and county governor and externally with similar networks). Moreover, the results in all the networks strongly emphasized the key role of network manager in practicing networking.

6. CONCLUDING DISCUSSION

The results in Figure 3 supported three out of the four hypotheses suggested in this study. The first hypothesis was partially supported, the network B that is placed between radical and architectural innovation is diversified, but interacts less frequently than network A. The radical innovation requires thinking outside the box (network) by emphasizing strongly diversified

external networking that is still underdeveloped in all the selected cases. Then, the second hypothesis is supported, the network A has developed highly diversified and dense networking by combining exploitation and exploration (ambidexterity) (Gieske et al., 2018). This case confirms that the regular internal networking is important to secure the main design concepts to build innovation capacity around the knowledge that actors already hold. In addition, the research demonstrates that managers active involvement inside their network increases access to better resources (Davis, 2016) that is also evident in this case. The third hypothesis is supported, because the networks C and D have developed less diversified and weak networking that is characteristic for modular innovation. Moreover, both networks focus more on exploitation of existing resources by creating internal sub-groups, but they are also engaged in some external contacts. Besides, the two cases demonstrate that modular innovation is possible to be developed and implemented without strong managerial capacity in networks. Finally, the fourth hypothesis is not supported since none of the results display combination of strong intensity and low diversity. This finding may indicate that the selected governance networks are created to work on more complex innovation than the incremental one.

The aim of this paper was to examine how and why different types of managerial networking impact different types of innovation outcomes in public networks. Although focus on innovation is increasingly growing, still practicing of networking by managers in interorganizational arrangements received less attention. Besides, research demonstrating one-dimension of networking (i.e. Lewis et al., 2018) to boost innovation in the public sector is not enough to explain complexity of interactions in network settings.

Hence, the contribution of this article was threefold. First, this study offered a two-dimensional networking framework involving combinations between networking diversity (high and low levels of knowledge and communication variety) and networking density (strong and weak levels of strength and thickness variety) and their implications for the four different innovation

outcomes (incremental, modular, architectural and radical) in the public sector. This model helped to unpack and order the different innovation approaches available and their associated networking/connecting elements that might be used in the public sector to implement digital innovation services. Second, it helped to develop our knowledge on the importance of managerial networking in improving innovation capacity of governance networks. This is a research area that also need to be addressed more carefully in the future research (Cristofoli, Trivellato, & Verzillo, 2019).

In terms of the practical implications, the research evidence provided an important message for PSO that managerial skills and competencies in using/practicing their networking are crucial in implementing different innovations. Moreover, this study revealed that combination of the diversity and density dimensions gives academics and practitioner a better picture of the networking types that might be relevant to design effective innovation strategies, what is often ignored in the public sector.

Nevertheless, there are some limitations in this study, which point to the need for further investigation. First, it might be significant to conduct research involving international comparison of several cases (young and old networks) to demonstrate the variations more evident. Moreover, a mixed methods approach might be desirable in explaining diversity and density variables to increase our understanding of the networking. Finally, the innovation typology used in this study has not been proved in the context of public sector before (that is also an added value of this paper), but the future research might consider testing this typology once more.

Summing up, the framework developed in this study offers a nuanced approach to measuring innovation outcomes in the public sector. As demonstrated in this paper, the critical role plays public managers in improving innovation capacity in networks, through more deliberative using of their hub position to broker the more diversified and regular ties, both inside and outside the

network boundaries. Thus, networks and managerial networking are depicted as essential contributors to public sector innovation endeavors.

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Appendices

Appendix A

Interview guide (Paper 1)

(Breakdown case)

SAMARBEIDS HISTORIE og MOTIVER
1. Hvordan og hvorfor ble samarbeidet etablert? Hvem som tok initiativer? (hovedmotiver)[1]
2. Hva slags kritiske hendelser var? (positive og negative)
3. Hvordan var kontakten utviklet?

OPPLØST
1. Hvorfor ble regionråd oppløst?
2. Hva var de første symptomer som viste at dette samarbeid fungerer ikke godt?
3. Samarbeider dere fortsatt med kommuner fra dette regionråd? På hvilken måtte?
4. Kunne du tenke til å opprette et nytt regionråd med nabokommuner? Hvilke er mest aktuelle? Hvorfor?
5. Hva er de konsekvenser av dette samarbeid for lokalpolitisk styring og kontroll?
6. Har dere tenkt om oppsigelse av relasjoner i starten av samarbeidet? Hvordan var det avtalt?

OPPGAVER & TJENESTER
7. Hvilke oppgaver og tjenester (eller samarbeidsområder) var mest aktuelle i samarbeidet? Hvilke prosjekter var mest og minst relevante for kommunen du representerer?
8. Hva slags relasjoner hadde dere med alle aktører? Var der noen som dere prioriterte, og hadde noe uformelle møter?
9. Har din kommune tidligere erfaring fra andre interkommunale samarbeid? På hvilke områder? Hvilken posisjon hadde den kommunen du representerer der? Hva slags samarbeid? Hvilken erfaring har dere?
10. Har deres regionråd samarbeidet med andre regionråd?

ØKONOMI & RESURSER
11. Hvordan var finansiering av regionråd fordelt? (like fordelt, eksterne insentiver, osv.)
12. Hva var den omsetningen per år (ca.)?

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[1] (Eksempler på hovedmotiver: øke kvaliteten på tjenester; styrke regionen; økonomisk effektivisering; utviklingssamarbeid over kommunegrenser; fremme viktige saker over kommunegrense, partipolitisk samarbeid over grenser; bedre utnytelse av kompetanse, bedre tilgang til resurser-både human og økonomisk, andre)

13. Hvor mye var kommunen avhengig av andre kommuner? Hvor stor betydning hadde andre ressurser (ikke økonomiske) til å oppnå mål og kjøre samarbeid (fagkompetanse).

REPRESENTASJON & LEDELSE

14. Hva var den modell for administrativ organisering? Var det sekretariatfunksjonen og hadde dere den fra starten? Var dette kostbart? Hvem som måtte dekke kostnadene? Fikk regionråd noen støtte e.g. fra fylkeskommune?
15. Hva var det posisjon av andre kommuner i regionråd? Hvilke kommuner var mest aktive og hvilke passive? (periferi/sentrum)
16. Har dere opplevd noen koordineringsproblem? Når og hvorfor?
17. Hvilken rolle/posisjon hadde din kommune i regionråd? (e.g. fadder/leder/storebror). Hvilke kommuner var vanskeligst å samarbeide? Hvorfor?

POSITIVE/NEGATIVE SIDER AV SAMARBEID

18. Hva var de viktigste svakhetene ved samarbeid gjennom regionråd? (e.g. uenighet mellom politikere fra ulike partier, og andre organer; fordelingskonflikter; strid om lokalisering; manglende beslutningseffekter; manglende finansiering for prosjekter; lite interessante roller for regionråd; høye prosesskostnader; andre).
19. Hva var de positive sider?

Interview guide (Paper 1)

(Suksessfulle/fungerende case)

SAMARBEIDS HISTORIE og Motiver

1. Hvordan og hvorfor ble samarbeidet etablert? Hvem som tok initiativer? (hovedmotiver)[2] Var alle kommuner medlemmer fra starten?
2. Hva slags kritiske hendelser var? (positive og negative)
4. Hvordan var kontakten utviklet? Var det noen hendelser som kunne føre til oppløsning?
5. Har dere samarbeidet tidligere?
6. Er noen av kommuner medlem av andre regionrådet også?
7. Hvordan fungerer tillit mellom hverandre?
8. Hvordan var det når det var personskift? Var det vanskelig å bygge tillit på nytt?

OPPGAVER & TJENESTER

9. Hvilke oppgaver og tjenester (eller samarbeidsområder) var mest aktuelle i samarbeidet? Hvilke prosjekter var mest og minst relevante for kommunen du representerer?
   Har dere hatt noen store prosjekter som mislykkes? Hva var konsekvenser for kommuner som ble engasjerte?
10. Hva slags relasjoner hadde dere med alle aktører? Var der noen som dere prioriterte, og hadde noe uformelle møter?
11. Har din kommune tidligere erfaring fra andre interkommunale samarbeid? På hvilke områder? Hvilken posisjon hadde den kommunen du representerer der? Hva slags samarbeid? Hvilken erfaring har dere?
12. Har deres regionråd samarbeidet med andre regionråd?

ØKONOMI & RESURSER

13. Hvordan var finansiering av regionråd fordelt? (like fordelt, eksterne insentiver)
14. Hvor mye var kommunen avhengig av andre kommuner? Hvor stor betydning hadde andre ressurser (ikke økonomiske) til å oppnå mål og kjøre samarbeid (fagkompetanse).

REPRESENTASJON & LEDELSE

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[2] (Eksempler på hovedmotiver: øke kvaliteten på tjenester; styrke regionen; økonomisk effektivisering; utviklingssamarbeid over kommunegrenser; fremme viktige saker over kommunegrense, partipolitisk samarbeid over grenser; bedre utnytelse av kompetanse, bedre tilgang til resurser-både human og økonomisk, andre)

15. Hva er den modell for administrativ organisering? Var det sekretariatfunksjonen og hadde dere den fra starten? Var dette kostbart? Hvem som måtte dekke kostnadene? Fikk regionråd noen støtte e.g. fra fylkeskommune?
16. Hva er det posisjon av andre kommuner i regionråd? Hvilke kommuner er mest aktive og hvilke passive? (periferi/sentrum)
17. Hvor mange fast møter har dere per år? Hvordan var det tidligere? Hvem som ofte delta på møter? Er det noen vara som representanter fra kommuner sender ut?
18. Har dere opplevd noen koordineringsproblem? Når og hvorfor? Hvordan ble disse håndtert?
19. Har dere strategi for konfliktløsning?
20. Hvilken rolle/posisjon hadde din kommune i regionråd? (e.g. fadder/leder/storebror). Hvilke kommuner var vanskeligst til å samarbeide? Hvorfor?

<div align="center">POSITIVE/NEGATIVE SIDER AV SAMARBEID</div>

21. Hva var de viktigste svakhetene ved samarbeid gjennom regionråd? (e.g. uenighet mellom politikere fra ulike partier, og andre organer; fordelingskonflikter; strid om lokalisering; manglende beslutningseffekter; manglende finansiering for prosjekter; lite interessante roller for regionråd; høye prosesskostnader; andre).
22. Hva var de positive sider? Hva som er mest viktig at samarbeid fungerer?

Appendix B

Interview guide (Paper 3)

  0. Kan du fortelle om din rolle ved nettverket, utdannelse og jobberfaring.

BAKGRUNN/HISTORIE (KORT)
  1. Hva er bakgrunnen for samarbeid? Når og hvordan ble samarbeidet etablert?
     a. Hvem som tok initiativet? (Historisk perspektivet, ide for samarbeid (kort intro)).
     b. Hvilken betydning/påvirkning har kommunereform?

ERFARING, KUNNSKAP, OG KOMPETANSE I NETTVERKET
  2. Har dere tidligere erfaring som et regionalt nettverk? På hvilke områder? Hva slags samarbeid?
     a. Har den (erfaring) noen betydning? Hvordan bruker dere tidligere erfaring eller kunnskap i nåværende samarbeid?
         i. Har dere erfaring fra prosjekter hvor dere prioriterte innovative løsninger?
         ii. Hvor viktig er erfaring og kunnskap fra disse prosjekter til nåværende samarbeid?
  3. Mangfold av kunnskap: Hva slags ressurser har dere i nettverket?
         i. Hvordan bruker dere interne og eksterne kompetanse?
         ii. Hvilke kompetanser må dere søke ekstern og hvorfor?
  4. Hva er kompetansenivå ved det samarbeidet? (hvis får ikke svar i sp.3) Hvem og hvor opplever og anerkjenner prosjektet som en innovasjon?

KOORDINERING OG MANAGEMENT AV NETTVERKET OG NETWORKING
  5. Hvilken rolle spiller koordinatorene av nettverket og individuelle prosjekter? Hvor viktig er disse for samarbeidet og innovasjon i nettverket?
  6. Hvilke nettverker eller kontaktflater inngår dere i (hvem har dere kontakt med)
     a. Hvilket nettverk er spesielt viktig? (mest sentrale kontakter) – nominere opptil 5 ulike nettverker eller personer.
     b. Hvordan har dere kontakt dem? (hvor ofte)
     c. Hva som fremmer og hva som hemmer det?
     d. Hvordan dere utnytter deres interne og eksterne kontakter til å stimulere innovasjon.

7. I hvor stor grad bruker dere FoU aktiviteter (som teknologisk/innovativ gate-keeper) i nettverket?

8. Hvem og hvordan støtter dere engasjement/organisatorisk kultur for innovasjon i nettverket?

   a. Hvem (for eks. prosjektleder) og hvor ofte deltar på konferanser/workshops etc.

   b. Er medlemmer eller koordinatorene medlemmer av noen profesjonelle nettverker/foreninger? (generelt, ikke konkrete personer)

INNOVASJON I NETTVERKET

9. Hvordan dere identifiserer/definerer innovasjon ved nettverket? (Hvordan dere måler innovasjon ved samarbeidet?)

   a. Hva som bidrar til å skape innovative ideer og deres implementering?

   b. Hvor intensiv bruker dere informasjon og kommunikasjons teknologi (IKT)?

      i. Hvilken rolle spiller IKT ved nettverket? /Hvilken betydning har det til samarbeidet?

   c. Hva og hvem (stillinger eller enheter) støtter innovative aktiviteter ved nettverket?

   d. Hva og hvem (stillinger eller enheter) hindrer innovative aktiviteter ved nettverket?

SAMARBEIDET I NETTVERKET

10. Hvordan og hvor ofte har dere felles møter i nettverket?

11. Hvilke eksterne aktører/organisasjoner samarbeider på det prosjektet? Hvem som bidrar til å øke innovative løsninger og på hvilken måte?

Appendix C

Survey (Paper 2)

Velkommen til spørreundersøkelse til daglige ledere i regionråd i Norge.
Takk for at du vil delta i spørreundersøkelsen. Hensikten med undersøkelsen er å kartlegge kontaktnettverk til daglig leder i regionrådet.

Undersøkelsen er frivillig og tar omtrent 10 minutter. Du kan avbryte utfyllingen og fortsette senere. Dine svar vil bli lagret. Alle informasjoner vil bli behandlet konfidensielt, og det skal ikke offentliggjøres data som gjør det mulig å identifisere den som svarer.

Resultatene fra undersøkelsen skal brukes til en doktorgradsavhandling om interkommunalt samarbeid i Norge veiledet av professor Dag Ingvar Jacobsen ved Universitetet i Agder.

Undersøkelsen vil være åpen f.o.m. tirsdag 1.november t.o.m. tirsdag 15. november

Om du har spørsmål eller kommentarer, kan du henvende deg til barbara.zyzak@uia.no

Med vennlig hilsen
Barbara Zyzak

Barbara Zyzak
Stipendiat
Mobil: 96 744 330

UNIVERSITETET I AGDER
FAKULTET FOR SAMFUNNSVITENSKAP

Vi starter med noen spørsmål om din stilling som daglig leder i regionrådet.

1. Hvilken stilling har du i regionrådet? (Vennligst velg ett svar)

(1) ❏ Daglig leder

(2) ❏ Regionkoordinator

(3) ❏ Sekretariatsleder

(4) ❏ Annet (Vennligst fyll ut) _____

2.   Hvor mange år har du være Daglig leder/Regionkoordinator/Sekretær i dette regionrådet? (Vennligst skriv antall år, under ett år=0)

_____

3.   Hvilken stillingsbrøk har du i regionrådet? (Vennligst fyll ut)

_____

Vi ønsker at du besvarer de følgende spørsmålene i skjemaet om ditt kontaktnettverk innenfor regionrådet.
(Vennligst sett ett kryss for hver rad).

4.   Hvor ofte har du kontakt med følgende aktører fra regionrådets medlemskommuner?

	Daglig	2-3 ganger i en uke	Ukentlig	2-3 ganger i måned	Månedlig	3-5 ganger i et halvt år	3-5 ganger i året	Et par ganger i året	Aldri
Ordførere eller varaordførere	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑	(8) ❑	(10) ❑
Andre politikere i kommunestyre /formannskapet	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑	(8) ❑	(10) ❑
Rådmenn/annen toppledelse	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑	(8) ❑	(10) ❑
Andre ansatte i medlemskommuner	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑	(8) ❑	(10) ❑
Lokale/regionale media	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑	(8) ❑	(10) ❑

	Daglig	2-3 ganger i en uke	Ukentlig	2-3 ganger i måned	Månedlig	3-5 ganger i et halvt år	3-5 ganger i året	Et par ganger i året	Aldri
Andre offentlige organisasjoner/enheter i regionen	(1) ☐	(2) ☐	(3) ☐	(4) ☐	(5) ☐	(6) ☐	(7) ☐	(8) ☐	(10) ☐
Næringslivet i regionen	(1) ☐	(2) ☐	(3) ☐	(4) ☐	(5) ☐	(6) ☐	(7) ☐	(8) ☐	(10) ☐
Frivillige organisasjoner i medlemskommunene	(1) ☐	(2) ☐	(3) ☐	(4) ☐	(5) ☐	(6) ☐	(7) ☐	(8) ☐	(10) ☐

5. Hvor ofte møter du følgende aktører fra regionrådets medlemskommuner «ansikt til ansikt»?

	Daglig	2-3 ganger i en uke	Ukentlig	2-3 ganger i måned	Månedlig	3-5 ganger i et halvt år	3-5 ganger i året	Et par ganger i året	Aldri
Ordførere eller varaordførere	(1) ☐	(2) ☐	(3) ☐	(4) ☐	(5) ☐	(6) ☐	(7) ☐	(8) ☐	(9) ☐
Andre politikere i kommunestyre /formannskapet	(1) ☐	(2) ☐	(3) ☐	(4) ☐	(5) ☐	(6) ☐	(7) ☐	(8) ☐	(9) ☐
Rådmenn/annen toppledelse	(1) ☐	(2) ☐	(3) ☐	(4) ☐	(5) ☐	(6) ☐	(7) ☐	(8) ☐	(9) ☐
Andre ansatte i medlemskommuner	(1) ☐	(2) ☐	(3) ☐	(4) ☐	(5) ☐	(6) ☐	(7) ☐	(8) ☐	(9) ☐
Lokale/regionale media	(1) ☐	(2) ☐	(3) ☐	(4) ☐	(5) ☐	(6) ☐	(7) ☐	(8) ☐	(9) ☐

	Daglig	2-3 ganger i en uke	Ukentlig	2-3 ganger i måned	Månedlig	3-5 ganger i et halvt år	3-5 ganger i året	Et par ganger i året	Aldri
Andre offentlige organisasjoner/enheter i medlemskommunene	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑	(8) ❑	(9) ❑
Næringslivet i regionen	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑	(8) ❑	(9) ❑
Frivillige organisasjoner i medlemskommunene	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑	(8) ❑	(9) ❑

Vi ønsker at du besvarer de etterfølgende spørsmålene i skjemaet om ditt kontaktnettverk <u>utenfor</u> regionrådet.
(Vennligst sett ett kryss for hver rad).

6.　Hvor ofte har du kontakt med følgende aktører utenfor regionrådets medlemskommuner?

	Daglig	2-3 ganger i en uke	Ukentlig	2-3 ganger i måned	Månedlig	3-5 ganger i et halvt år	3-5 ganger i året	Et par ganger i året	Aldri
Ordførere eller varaordførere i kommuner utenfor regionrådet	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑	(8) ❑	(9) ❑
Andre politikere i styre/formannskapet i kommuner utenfor regionrådet	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑	(8) ❑	(9) ❑

	Daglig	2-3 ganger i en uke	Ukentlig	2-3 ganger i måned	Månedlig	3-5 ganger i et halvt år	3-5 ganger i året	Et par ganger i året	Aldri
Rådmenn/annen toppledelse utenfor regionrådet	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑	(8) ❑	(9) ❑
Andre kommuneansatte utenfor regionrådet	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑	(8) ❑	(9) ❑
Daglige ledere/ Regionkoordinatorer/Sekretær fra andre regionråd	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑	(8) ❑	(9) ❑
Politikere eller ansatte i andre fylkeskommuner enn det regionrådet er lokalisert i	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑	(8) ❑	(9) ❑
Fylkesmann i andre fylker enn det regionrådet er lokalisert i	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑	(8) ❑	(9) ❑
Statlige myndigheter (Departementer, Direktorater, o.l.)	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑	(8) ❑	(9) ❑
Nasjonale media	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑	(8) ❑	(9) ❑

7. Hvor ofte møter du følgende aktører utenfor regionrådets medlemskommuner «ansikt til ansikt»?

	Daglig	2-3 ganger i en uke	Ukentlig	2-3 ganger i måned	Månedlig	3-5 ganger i et halvt år	3-5 ganger i året	Et par ganger i året	Aldri
Ordførere eller varaordførere i kommuner utenfor regionrådet	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑	(8) ❑	(9) ❑
Andre politikere i styre/formannskapet i kommuner utenfor regionrådet	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑	(8) ❑	(9) ❑
Rådmenn/annen toppledelse utenfor regionrådet	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑	(8) ❑	(9) ❑
Andre kommuneansatte utenfor regionrådet	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑	(8) ❑	(9) ❑
Daglige ledere/ Regionkoordinatorer/Sekretær fra andre regionråd	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑	(8) ❑	(9) ❑
Politikere eller ansatte i andre fylkeskommuner enn den regionrådet er lokalisert i	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑	(8) ❑	(9) ❑
Fylkesmann i andre fylker enn det regionrådet er lokalisert i	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑	(8) ❑	(9) ❑

	Daglig	2-3 ganger i en uke	Ukentlig	2-3 ganger i måned	Månedlig	3-5 ganger i et halvt år	3-5 ganger i året	Et par ganger i året	Aldri
Statlige myndigheter (Departementer, Direktorater, o.l.)	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑	(8) ❑	(9) ❑
Nasjonale media	(1) ❑	(2) ❑	(3) ❑	(4) ❑	(5) ❑	(6) ❑	(7) ❑	(8) ❑	(9) ❑

Arbeidserfaring

8. Har du tidligere arbeidserfaring fra: (Vennligst kryss av JA eller NEI for hver rad)

	JA	NEI
Daglig Leder/ Regionkoordinartor/ Sekretær i regionråd	(1) ❑	(2) ❑
Rådmann/eller annen toppleder i kommune(r) og/eller fylkeskommune(r)	(1) ❑	(2) ❑
Mellomleder i kommune(r) og/eller fylkeskommune(r)	(1) ❑	(2) ❑
Politiker i kommune(r) og/eller fylkeskommune(r)	(1) ❑	(2) ❑
Leder i en annen offentlig organisasjon/enhet	(1) ❑	(2) ❑
Leder i en privat organisasjon/næringslivet	(1) ❑	(2) ❑

	JA	NEI
Leder i en frivillig organisasjon	(1) ❑	(2) ❑
Annen ledererfaring	(1) ❑	(2) ❑

Når ble regionrådet der du er daglig leder etablert? (Vennligst skriv inn et år)

_____

Hvor mange personer er ansatt i regionrådet?(Vennligst skriv inn et antall)

_____

Og hvor mange årsverk vil du anslå dette til å være? (Vennligst skriv inn)

_____

Til slutt noen spørsmål om deg selv.

Hva er din alder? (Vennligst skriv inn)

_____

Kjønn (Vennligst sett ett kryss):
(1)   ❑ Mann
(2)   ❑ Kvinne

Hva er din høyest fullførte utdannelse? (Vennligst velg den kategorien som ligger nærmest din utdannelse)
(1)   ❑ Utdanning på grunnskolenivå (barne- og ungdomsskole)

(2) ❑ Utdanning fra videregående opplæring

(3) ❑ Høyere utdanning, til og med 4 år (inkludert fagskole)

(4) ❑ Høyere utdanning, 4,5 år eller mer

(5) ❑ Doktorgrad/ph.d.

Hvilket fagfelt er du utdannet innen?

(1) ❑ Samfunnsfag

(2) ❑ Juridiske fag

(3) ❑ Økonomiske og administrative fag

(4) ❑ Tekniske og naturvitenskaplige fag

(5) ❑ Ingeniørfag

(6) ❑ Annet fagfeltet (vennligst skriv inn) _____

Tusen takk for dine svar! De er nå lagret.

Med vennlig hilsen
Barbara Zyzak (Stipendiat, Universitetet i Agder)

Appendix D

Approval NSD (interviews, Paper 3)

NSD's assessment
Project title
Importance of networking for public sector innovation capacity. The evidence from Norway.

Reference number
944123

Registered
04.03.2019 av Barbara Krystyna Zyzak - barbara.zyzak@uia.no

Data controller (institution responsible for the project)
Universitetet i Agder / Fakultet for samfunnsvitenskap / Institutt for statsvitenskap og ledelsesfag

Project leader (academic employee/supervisor or PhD candidate)
Barbara Zyzak, barbara.zyzak@uia.no, tlf: 96744330

Type of project
Research Project

Project period
11.03.2019 - 29.02.2020

Status
29.02.2020 - Closed

Assessment (1)

04.03.2019 - Assessed
Det er vår vurdering at behandlingen av personopplysninger i prosjektet vil være i samsvar med personvernlovgivningen så fremt den gjennomføres i tråd med det som er dokumentert i meldeskjemaet med vedlegg den 04.03.2019. Behandlingen kan starte.

MELD VESENTLIGE ENDRINGER

Dersom det skjer vesentlige endringer i behandlingen av personopplysninger, kan det være nødvendig å melde dette til NSD ved å oppdatere meldeskjemaet. Før du melder inn en endring, oppfordrer vi deg til å lese om hvilke type endringer det er nødvendig å melde:
https://nsd.no/personvernombud/meld_prosjekt/meld_endringer.html

Du må vente på svar fra NSD før endringen gjennomføres.

TYPE OPPLYSNINGER OG VARIGHET

Prosjektet vil behandle alminnelige kategorier av personopplysninger frem til 29.02.2020.

LOVLIG GRUNNLAG

Prosjektet vil innhente samtykke fra de registrerte til behandlingen av personopplysninger. Vår vurdering er at prosjektet legger opp til et samtykke i samsvar med kravene i art. 4 og 7, ved at det er en frivillig, spesifikk, informert og utvetydig bekreftelse som kan dokumenteres, og som den registrerte kan trekke tilbake. Lovlig grunnlag for behandlingen vil dermed være den registrertes samtykke, jf. personvernforordningen art. 6 nr. 1 bokstav a.

PERSONVERNPRINSIPPER

NSD vurderer at den planlagte behandlingen av personopplysninger vil følge prinsippene i personvernforordningen om: - lovlighet, rettferdighet og åpenhet (art. 5.1 a), ved at de registrerte får tilfredsstillende informasjon om og samtykker til behandlingen - formålsbegrensning (art. 5.1 b), ved at personopplysninger samles inn for spesifikke, uttrykkelig angitte og berettigede formål, og ikke behandles til nye, uforenlige formål - dataminimering (art. 5.1 c), ved at det kun behandles opplysninger som er adekvate, relevante og nødvendige for formålet med prosjektet - lagringsbegrensning (art. 5.1 e), ved at personopplysningene ikke lagres lengre enn nødvendig for å oppfylle formålet

DE REGISTRERTES RETTIGHETER

Så lenge de registrerte kan identifiseres i datamaterialet vil de ha følgende rettigheter: åpenhet (art. 12), informasjon (art. 13), innsyn (art. 15), retting (art. 16), sletting (art. 17), begrensning (art. 18), underretning (art. 19), dataportabilitet (art. 20). NSD vurderer at informasjonen om behandlingen som de registrerte vil motta oppfyller lovens krav til form og innhold, jf. art. 12.1 og art. 13. Vi minner om at hvis en registrert tar kontakt om sine rettigheter, har behandlingsansvarlig institusjon plikt til å svare innen en måned.

FØLG DIN INSTITUSJONS RETNINGSLINJER

NSD legger til grunn at behandlingen oppfyller kravene i personvernforordningen om riktighet (art. 5.1 d), integritet og konfidensialitet (art. 5.1. f) og sikkerhet (art. 32). Dersom du benytter en databehandler i prosjektet må behandlingen oppfylle kravene til bruk av databehandler, jf. art 28 og 29. For å forsikre dere om at kravene oppfylles,

må dere følge interne retningslinjer og/eller rådføre dere med behandlingsansvarlig institusjon.

OPPFØLGING AV PROSJEKTET

NSD vil følge opp ved planlagt avslutning for å avklare om behandlingen av personopplysningene er avsluttet.

Lykke til med prosjektet!

Tlf. Personverntjenester: 55 58 21 17 (tast 1)

Appendix E

Information consent (Interviews, Paper 3)

INFORMERT SAMTYKKE

Vil du delta i forskningsprosjektet

"*Betydningen av networking for offentlig sektor innovasjonskapasitet*"?

Dette er et spørsmål til deg om å delta i et forskningsprosjekt hvor formålet er å identifisere betydning av networking til å øke innovasjonskapasitet ved det offentlig regionale nettverket, og hva betyr det for deres innovasjonsutfall. I dette skrivet gir vi deg informasjon om målene for prosjektet og hva deltakelse vil innebære for deg.

Dette er en doktorgradsstudie som skal forklare variasjoner ved regionale nettverker når det gjelder innovasjonsutfall. Formålet med prosjektet er å sammenligne regionale koordineringsgrupper i Norge som har ansvar for koordinerings av prosjekter på vegne av kommuner. Vi skal undersøke hvilken rolle spiller ulike type kontakter til å påvirke innovasjonskapasiteten og hvordan innovasjonskapasiteten til regionale styrings nettverker påvirker sine innovative resultater.

Universitetet i Agder, Institutt for Statsvitenskap and Ledelsesfag er ansvarlig for prosjektet.

«Snowball sampling» er brukt til å rekruttere potentiele kandidater fra de fire regionale styringsnettverker og andre offentlige organisasjoner/institusjoner i Norge, aktører som spiller viktig rolle til å forklare problemstillingen (ca. 20-25 personer tilsammen)

Kontaktopplysninger til koordinatorer av regionale nettverker er tilgjengelig på nettet, men respondenter kommer bare med et forslag til stillingen eller navn til andre potentiele kandidater som er relevant til dette prosjektet.

Semi-strukturerte intervjuer er brukt til å samle data om bakgrunn eller samarbeidshistorie, erfaring, kunnskap, kompetanse, koordinering, samarbeid og innovasjon ved nettverker. Lydopptaket blir brukt til å registrere opplysninger, og etterpå skal de transkriberes.

Det er frivillig å delta i prosjektet. Hvis du velger å delta, kan du når som helst trekke samtykke tilbake uten å oppgi noen grunn. Alle opplysninger om deg vil da bli anonymisert. Det vil ikke ha noen negative konsekvenser for deg hvis du ikke vil delta eller senere velger å trekke deg.

Ditt personvern – hvordan vi oppbevarer og bruker dine opplysninger

Vi vil bare bruke opplysningene om deg til formålene vi har fortalt om i dette skrivet. Vi behandler opplysningene konfidensielt og i samsvar med personvernregelverket.

- *PhD veiledere vil ha tilgang ved behandlingsansvarlig institusjon*
- *Ingen uvedkommende får tilgang til personopplysningene, kontaktopplysningene dine vil jeg erstatte med en kode som lagres på egen navneliste adskilt fra øvrige data.*
- *Data (MEN ikke dine personopplysninger) skal behandles utenfor EU (cross-country analyse)*
- *Deltakerne vil ikke kunne gjenkjennes i publikasjon, og data som gjelder regionale nettverker og innovasjonsutfall (ikke personale opplysninger) blir brukt til publikasjoner.*

Prosjektet skal etter planen avsluttes in 2020. Datamaterialet skal anonymiseres ved prosjektslutt.

Dine rettigheter
Så lenge du kan identifiseres i datamaterialet, har du rett til:
- innsyn i hvilke personopplysninger som er registrert om deg,
- å få rettet personopplysninger om deg,
- få slettet personopplysninger om deg,
- få utlevert en kopi av dine personopplysninger (dataportabilitet), og
- å sende klage til personvernombudet eller Datatilsynet om behandlingen av dine personopplysninger.

Hva gir oss rett til å behandle personopplysninger om deg?
Vi behandler opplysninger om deg basert på ditt samtykke.

På oppdrag fra *Universitetet i Agder, Institutt for Statsvitenskap og Ledelsesfag* har NSD – Norsk senter for forskningsdata AS vurdert at behandlingen av personopplysninger i dette prosjektet er i samsvar med personvernregelverket.

Hvor kan jeg finne ut mer?
Hvis du har spørsmål til studien, eller ønsker å benytte deg av dine rettigheter, ta kontakt med:
- *Universitetet i Agder, Institutt for Statsvitenskap og Ledelsesfag ved Barbara Zyzak:* barbara.zyzak@uia.no
- Vårt personvernombud: Ina Danielsen, ina.danielsen@uia.no
- NSD – Norsk senter for forskningsdata AS, på epost (personverntjenester@nsd.no) eller telefon: 55 58 21 17.

Med vennlig hilsen

Barbara Zyzak

Prosjektansvarlig
(PhD Stipendiat)

Samtykkeerklæring

Jeg har mottatt og forstått informasjon om prosjektet «Betydningen av Networking for Offentlig Sektor Innovasjonskapasitet», og har fått anledning til å stille spørsmål. Jeg samtykker til:

☐ å delta i *intervju*
☐ *at mine personopplysninger behandles utenfor EU (ikke personale opplysninger)*
☐ *at mine personopplysninger lagres etter prosjektslutt, men anonimiseres*

Jeg samtykker til at mine opplysninger behandles frem til prosjektet er avsluttet, ca. 2020

(Signert av prosjektdeltaker, dato)