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**ENHANCING COLLABORATION BY
HIGHLIGHTING THE BENEFITS OF IN-
TERORGANIZATIONAL NETWORK PAR-
TICIPATION**

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ABSTRACT

Terhi Kontkanen: Enhancing collaboration by highlighting the benefits of interorganizational network participation
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Through collaboration and knowledge sharing, network members seek benefits that they would not get through traditional transactional conduct. Interorganizational collaborations are a means to access resources that other organisations own. These resources can be vital for value creation and for the organisation to sustain its operations. Other than resources, collaborations are a way to create collaborative advantage, something that organisations cannot achieve independently.

This research was done in collaboration with ACTRIS, a pan-European research infrastructure built and developed by the European atmospheric science community research performing organisations from many different countries.

The first research question was what kind of benefits public sector organisations aim to gain from participating in an interorganizational network? Based on focus group discussions, the essential advantage that the network members sought to gain from the network was to get support in achieving their own goal of their organisation. The second research question was what kind of challenges public sector organisations face in gaining benefits from participating in an interorganizational network? The network members had mostly difficulties in exerting power and influencing in the network.

The focus group discussions led to the wonder why exerting power and influence was so tricky. First, the interviewed participants all agreed that exerting power was not essential in networking. However, influencing was a vital activity in getting the most from the network. The significant challenges in influencing the network were related to the individuals who represented the organisation in the network, the size of the network, the legacy that different network members had built throughout the time that the network had existed, the country and the culture were the organisation is based on and finally how developed infrastructure and resources the organisation has. Contrary to the belief that networks are flexible arrangements, it seems that they can become relatively stable coordinated systems throughout time.

Keywords: interorganizational collaboration, network, public sector, ACTRIS, research performing organisation, collaborative advantage

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TIIVISTELMÄ

Terhi Kontkanen: Yhteistyön edesauttaminen yhteistyöetuja tarkastelemalla kansainvälisessä verkostossa

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Yhteistyön avulla organisaatiot voivat saavuttaa etuja, joita ne eivät pystyisi saavuttamaan liiketoiminnallisesti. Yhteistyön avulla voidaan päästä käsiksi resursseihin, joita muut organisaatiot omistavat. Nämä resurssit voivat olla erittäin tärkeitä sekä arvonluonnin että organisaation toimintojen kannalta. Lisäksi yhteistyön avulla voidaan saavuttaa muita yhteistyöetuja.

Tutkimus tehtiin yhteistyössä Euroopan laajuisen tutkimusinfrastruktuurin ACTRISin kanssa. Tutkimusinfrastruktuurin muodostaa ilmakehätieteiden verkosto, jonka jäseniä ovat kymmenet tutkimusorganisaatiot ympäri Eurooppaa.

Tutkimuksen ensimmäinen tutkimuskysymys oli, minkälaisia hyötyjä julkisorganisaatiot hakevat osallistuessaan organisaatioiden väliseen yhteistyöhön. Tärkein yhteistyöetu, jota organisaatiot tavoittelivat, oli tuki saavuttaa organisaation visio. Toinen tutkimuskysymys oli, minkälaisia vaikeuksia tutkimusorganisaatiot kohtaavat tavoitellessaan yhteistyöetuja verkostosta. Suurimmat vaikeudet olivat verkoston toiminnan vaikuttamisessa ja vallan käytössä. Näihin kysymyksiin saatiin vastaus kohderyhmähaastatteluilla.

Tutkimuksessa selvitettiin myös, minkä takia vaikutusvallan ja vallan käyttö oli vaikeaa verkostossa. Haastatteluissa kävi ilmi, että vallan käyttö ei ollut tärkeää verkostossa vaan vaikutusvallalla oli suurempi rooli. Tekijät, jotka vaikuttivat vaikutusvallan käyttöön verkostossa, liittyivät organisaation edustajiin, verkoston laajuuteen, aikaisempaan verkostotoimintaan, valtioon ja kulttuuriin, joissa tutkimusorganisaatio toimii, ja tutkimusorganisaation omistaman tutkimusinfrastruktuurin kehittyneisyyteen. Kaiken kaikkiaan vaikuttaa, että verkostot eivät välttämättä ole niin joustavia ja mukautuvia kuin aluksi on oletettu. Ajan mittaan verkostoissa voi kehittyä hyvinkin jämähköitä rakenteita, joihin on vaikea vaikuttaa.

Avainsanat: yhteistyö, verkosto, yhteistyöetu, kansainvälisyys, julkinen sektori, tutkimusorganisaatio, ACTRIS

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PREFACE

I had the privilege to conduct a fascinating study in a motivated and inspiring community, ACTRIS. It gave me inspiration and motivation to do my best. I would like to thank my friends, family, colleagues who have supported me during this challenging writing process. I would like to give special thanks to Sanna Sorvari Sundet, who provided me with this opportunity. In addition, I would like to thank Nina Helander, who demonstrated patience and support during the lengthy writing process. To conclude, I would like to quote Helen Keller:

"Alone we can do so little; together we can do so much."

In Tampere, 25th May 2021

Terhi Kontkanen

CONTENTS

1. INTRODUCTION	1
1.1 Background and Motivation for Research.....	1
1.2 Research Objective and Scope of Research.....	2
1.3 Case Study Network	3
1.4 Structure of Thesis.....	3
2. THEORETICAL BACKGROUND.....	4
2.1 Interorganizational Networks and Collaborations	4
2.2 Network Composition	5
2.3 Network Governance	8
2.4 Network Management and Leadership.....	11
2.5 Motives and Benefits of Interorganizational Collaboration	11
2.5.1 Collaborative Advantage.....	11
2.5.2 Resources.....	12
2.5.3 Social Capital and Organizational Learning.....	13
2.5.4 Legitimacy.....	14
2.5.5 Power and Influence	15
2.5.6 Achieving Meta-Objectives.....	16
3. RESEARCH METHODOLOGY	17
3.1 Methodological Approach.....	17
3.2 Research Philosophy and Approach	18
3.3 Research Strategy and Research Choice	21
3.4 Time Horizon of the Research.....	25
3.5 Data Collection Methods	25
3.5.1 Focus Group	25
3.5.2 Analysis Method for Focus Group Data.....	28
3.5.3 Interview	30
3.5.4 Analysis Method for Interview data	30
4. FOCUS GROUP RESULTS AND DISCUSSION.....	32
4.1 Focus Group Results	32
4.1.1 Focus Group A.....	32
4.1.2 Focus Group B.....	33
4.1.3 Focus Group C	33
4.1.4 Comparison between Focus Groups	34
4.1.5 Overall	35
4.2 Discussion	35
5. INTERVIEW RESULTS AND DISCUSSION	38
5.1 Interview results	38
5.2 Discussion of the Interview Results.....	41
5.2.1 Representation	41
5.2.2 Size of the Network.....	44

5.2.3 Legacy	44
5.2.4 Country	45
5.2.5 Status and most developed research infrastructure	46
5.2.6 Exerting power and influence outside of the network	47
6.DISCUSSION AND CONCLUSIONS	49
6.1 Limitations.....	49
6.1.1 Limitations of Time Horizon.....	50
6.1.2 Limitations of Case Study	50
6.1.3 Limitations of the Research Choice.....	51
6.1.4 Limitations of Data Collection and Analysis.....	52
6.2 Future Research Ideas.....	52
7.REFERENCES	54

LIST OF FIGURES

<i>Figure 1: A central position and a peripheral position in a network.....</i>	<i>6</i>
<i>Figure 2: Some members in a network can have more central position than others.....</i>	<i>6</i>
<i>Figure 3: A gatekeeper connects network members who are not associated with each other.....</i>	<i>7</i>
<i>Figure 4: A broker relationship between two separate networks</i>	<i>7</i>
<i>Figure 5: The number of connections between network members can vary in a network</i>	<i>8</i>
<i>Figure 6: Example of a network lead by a lead organisation</i>	<i>9</i>
<i>Figure 7: A network lead by a network administrative organization which delivers services to the network members through network level service providers.</i>	<i>10</i>
<i>Figure 8: Research methodology onion</i>	<i>18</i>
<i>Figure 9: An overview of the research approach in this study</i>	<i>20</i>
<i>Figure 10: An overview of the research strategy (edited from Rosenberg et al. 2007)</i>	<i>23</i>
<i>Figure 11: A funnel of the focus group participants</i>	<i>26</i>
<i>Figure 12: The canvas tool used in the focus group sessions</i>	<i>27</i>
<i>Table 1: The analytic framework for the focus group data.....</i>	<i>28</i>
<i>Table 2: An example table used to present the research results</i>	<i>29</i>
<i>Table 3: An example table used to present the research results</i>	<i>29</i>
<i>Figure 13: The answers of focus group A</i>	<i>32</i>
<i>Figure 14: The answers of focus group A</i>	<i>32</i>
<i>Figure 15: The answers of focus group B</i>	<i>33</i>
<i>Figure 16: The answers of focus group B</i>	<i>33</i>
<i>Figure 17: The answers of the focus group C</i>	<i>34</i>
<i>Figure 18: The answers of the focus group C</i>	<i>34</i>
<i>Figure 19: Overall range of the answers of the focus groups</i>	<i>35</i>
<i>Figure 20: Overall range of the answers of the focus groups</i>	<i>35</i>
<i>Figure 21: Many of the answers were about the representative of the RPO.....</i>	<i>38</i>
<i>Figure 22: A few answers were about the participation in the network in the past.</i>	<i>39</i>
<i>Figure 23: Some aspects about the country where the RPO was based affected how much influence they had.....</i>	<i>39</i>
<i>Figure 24: The size of the network had an effect on influencing the network.....</i>	<i>40</i>
<i>Figure 25: Scientific excellence and willingness to develop were seen as factors that help to influence the network.....</i>	<i>40</i>
<i>Figure 26: The network can be a way to influence the discussion and decision that are made outside of the RPO and the network.....</i>	<i>41</i>

1. INTRODUCTION

1.1 Background and Motivation for Research

Interorganizational collaborations have many different terms, such as strategic alliance, joint venture, network, partnership, and consortia. These various names have slightly different meanings depending on how structured the collaboration is and how long-term and stable the partnership is. In this thesis, I will utilise the term network where two or more organizations form a separate but temporary entity to complete a specified project. As a long-term goal, the network can become a consortium. A consortium is defined as a long-term interorganizational relationship between three or more organisations that mutually pursue shared and individual goals (Parkhe, 1991). Consortia usually work on larger projects in which governments can be involved (Eisner et al., 2009).

Networks are collaborative arrangements between individuals, teams, and organizations (Kennis and Provan 2006). Moreover, knowledge networks are a set of relationships between the network members which are formed to invent and share knowledge. The focus of knowledge networks is developing, distributing, and applying knowledge (Pugh & Prusak 2013). Through collaboration and knowledge sharing, network members seek benefits that they would not get through traditional transactional conduct. Collaboration has been linked to enhance learning, promote more efficient use of resources, increase the capacity to plan for and address complex problems, increase competitiveness and help to provide better services for clients and customers (Kenis and Provan 2006). In this thesis, I focus on networks which are groups of three or more legally autonomous organizations.

Collective action is often required to solve complex and broad problems. Goal-directed networks have become a crucial formal mechanism in the public and non-profit sectors for achieving multi-organizational outcomes. Goal-directed networks are set up by those who participate in the network or through mandate and have a common purpose. The goal-directed network evolves primarily through conscious efforts to build coordination among the members. Multiorganizational outcomes are often achieved through collaboration. Collaboration is a process in which autonomous or semi-autonomous actors interact through formal and informal negotiation, jointly creating rules and structures governing their relationships and ways to act or decide on the issues that brought them together. It is a process involving shared norms and mutually beneficial interaction (Thomson et al., 2009). A significant challenge for network members is that they strive to achieve both the goals of their organization and the network's goals. (Parmigiani & Rivera-Santos, 2011)

Vision and mission are critical in collaboration. The member organizations should agree on some common vision to make the collaboration feasible. In addition, the collaboration should be aligned to the member organizations objectives and the employees' work contribution should also be aligned to the collaboration's objectives. In this way, the strategic direction of the member organizations and the network's strategic direction will be aligned, which will increase the chances of success in both results and future collaborations much more likely. (Clegg et al., 2004)

The previous research has focused on studying interorganizational relationships such as joint ventures, alliances, buyer-supplier agreements, franchising, and cross-sector partnerships, but research on consortia is limited: empirical research and theoretical frameworks are limited. (Das & Teng, 2002; Eisner et al., 2009) While prior studies have studied interorganizational collaboration in the private sector, it is also interesting to study collaboration between governmental organizations. In addition, the research done on interorganizational collaborations has been tied to specific theoretical approaches such as economic, social and institutional theory. However, the motivation to engage in collaborative activities is broad, and an interorganizational network cannot be linked to one founding theory. (Combs & Ketchen, 2003; Parmigiani & Rivera-Santos, 2011; Santos & Eisenhardt, 2005) This research offers insight into the need for a multi-theoretical approach to study interorganizational collaborations, though focus on specific theories is also helpful.

The previous research has focused on how networks function as a whole such as how networks are governed and what kind of coordination mechanisms there are to facilitate partner interactions. (Imperial 2005; Ziggers et al. 2010; Agranoff, R., & McGuire, M. 2003). Very little research has been done on the perspective of the network's member organisations and what they can do to better benefit from the network activities.

Because the benefits of network participation and collaboration between organizations are indirect and hard to measure, organizations may not prioritize the network participation in their operations and the lack of recognition of the networking activities in the strategies may lead to incentive problems: the member organization might agree that the network can yield benefits, however, because the participation does not directly affect the performance of the organization, interorganizational collaboration is not included in the performance management system, and thus individual lacks the incentive to participate in the network. Therefore, it is desirable to study the benefits that organizations can achieve through collaboration and the challenges the organizations have in achieving the desired benefits.

1.2 Research Objective and Scope of Research

My intention of this research was firstly to confirm that the proposed benefits of interorganizational network participation that are proposed in previous research can be achieved; secondly to outline if some of the proposed benefits have not been gained in the case network; thirdly to identify challenges that prevent network members from achieving these benefits and finally to suggest how these challenges can be overcome. Thus, the main research questions of this thesis are

RQ: What kind of benefits public sector organizations aim to gain from participating in an interorganizational network?

RQ: What kind of challenges public sector organizations face in trying to gain benefits from participating in an interorganizational network?

1.3 Case Study Network

The study is done in collaboration with ACTRIS. ACTRIS is a science network that unites partners from 22 countries across Europe, and it involves more than 100 research institutes and organizations. The atmospheric science community has collaborated for more than 15 years through different development projects funded by the Member States and European Commission through the Research Infrastructure programme. Now, the network is led by two lead organizations and is a coordinated research network. ACTRIS will become a distributed research infrastructure in the future, and therefore, there will be significant changes in the structure, operations and resource and informational flows. In addition, there will be a network administrative organization (central hub). A distributed research infrastructure consists of a central hub and national nodes. Nodes may be absorbed partially by the distributed research infrastructure while maintaining their national or institutional programmes. The capacity and number of resources engaged in the research infrastructure will be coordinated and managed by the Central Hub according to agreed rules and procedures of the legal research infrastructure consortium.

The network administrative organization shall obtain the European Research Infrastructure Consortium (ERIC) legal status by 2021, whose sustainability will be secured by the contribution of member states. European Research Infrastructure Consortium (ERIC) is an international organization where the member States collectively can finance and manage research infrastructures. ERIC enables cooperation among the member states to build a sustainable research environment over time.

The preparation of the research infrastructure's organizational, operational and strategic frameworks is done by the ACTRIS preparatory phase project (PPP). The outcomes of ACTRIS PPP are to have signature-ready documents for the establishment of a legal entity, including well-defined operations and a sound business plan. ACTRIS PPP is followed by ACTRIS Implementation project, which aims to prepare the research infrastructure to be fully operational. My thesis shall contribute to supporting the research performing organizations to benefit from the network more and the results of the study can be used as supporting material for different deliverable of the ACTRIS implementation project. The research results can help recognize the research infrastructure work at the research organizations, advocate the importance of the RI roles to the research organizations, and support the recognition of RI-related positions at the national level.

1.4 Structure of Thesis

In this chapter, I have introduced the theoretical framework on which this study is based, outlined the development of my interest in the benefits of interorganizational collaboration and networks and provided background information about the case network ACTRIS and indicated what I set out to achieve in this study, and how.

The remaining chapters are organised as follows. In the second chapter, I present the theoretical background. Moreover, I focus on the interorganizational network and collaborations and the different motives for collaboration. In the third chapter, I present the research methodology. The fourth and fifth chapter includes the results of the research and the discussion of the results. The sixth chapter summarises the main findings of the study, and the final chapter presents the limitations of the research.

2. THEORETICAL BACKGROUND

2.1 Interorganizational Networks and Collaborations

An interorganizational network is a long-term cooperative relationship between legally autonomous organizations. These collaborative arrangements have also been studied under the terms of partnerships, strategic alliances, interorganizational relationships, coalitions, cooperative arrangements, or collaborative agreements. In this thesis, I build the theoretical foundation of networks on specific characteristics.

First, the relationship between the network members is horizontal, meaning that the organizations are operating autonomously with a low hierarchy. (Provan, K. G. et al., 2007) This working mode is very different from traditional organizations where the units are part of a line hierarchy, and power differences are typical. This means that the way how work is done in networks is usually socially negotiated, and the use of social contracts and agreements is more common compared to extensive legally binding contracts. (Alter & Hage, 1993; Jones et al., 1997) Even though network members seem to be equal in the network, organizations can take different roles in the network, affecting the amount of influence they have. Additionally, the organisation's reputation can affect the perceived status of the network member among other network members. For example, a big organisation in a network may have bigger negotiating power than a smaller one.

The second characteristic is goal-directedness. In a network setting, the member organizations work together to achieve both a collective goal and their own goal. Especially in the public and non-profit sectors, the network's goal is to deal with major disasters, large, complex, and critical problems that negatively affect the public. (Provan, Keith G. & Kenis, 2007a) Moreover, if there is a consensus regarding the vision among the network members and the process to achieve the goal is agreed among the members, the network members are more likely to be involved and committed to participating in the network activities. (Provan, Keith G. & Kenis, 2007b) On the other hand, the members of the network also aim to achieve the own goals of the organization. In the private sector, the goals could be an increase in revenue, an increase in market share and an improvement of one's competitive advantage. In the public sector, the goal can be, for example, resource efficiency and providing public services in a more efficient manner.

The third characteristic is related to resources. An interorganizational network is a cooperative relationship among organizations in which each entity retains control over its resources but jointly decides on their use (Brass et al., 2004). Thus, the number of resources that the network has and the way they are used need to be negotiated together with the network members. The need for balancing between network-level goals and the own goals of the network members creates the need for negotiation. The network members do not want to use resources for activities that don't benefit them. However, certain operations may be vital for other network members, and therefore using the resources for that specific operation will increase the likelihood of the network member staying on board. Thus, it helps to sustain the membership of the network.

Fourth, networks are described as adaptable and flexible forms of working compared to hierarchies which can be bureaucratic. (Salignac et al., 2018) Kapucu and Van Wart studied the management of catastrophic disasters. Their article proposed that while standard emergency management requires a highly bureaucratized system with protocols and hierarchies, high performance in catastrophic disasters requires creative problem solving, horizontal adaptation capacity,

collaboration, and flexible decision-making, which are enabled by having informal interorganizational relationships. (Kapucu & Van Wart, 2006) In addition, the flexibility of the network to manage itself in any way it may devise allows the network to avoid inertia, react to its own developing needs and externally imposed pressures. (Huxham et al., 2005)

Even though the networks are flexible, there is usually a strive for sustainment and stability. Provan and Kenis bring up several tensions that networks face, and one of them is flexibility-stability tension. A network can be established for the short term, for example, to arrange an event or work on a project. In this study, the focus is on long-term networks. While flexibility ensures rapid responses to needs, external pressure, opportunities and threats, stability ensures consistent operations and network activities, network management and maintaining legitimacy. (Provan & Kenis, 2007)

Finally, networks usually aim for value creation, and it is a vital part of the organisation's survival. Organizations are dependent on resources owned by other organizations; therefore, networking and collaboration are a means of accessing the resources that the organization cannot itself acquire. These resources are used to create value. Value can be defined as perceived benefits and sacrifices on the part of the network actor. When discussing the concept of value, it is useful to make a difference between absolute and differential value. Absolute value is real, while differential value depends on the value receiver's expectations and mental images. (Ojala & Helander, 2014)

The following chapter will discuss more in detail how the networks are composed,

2.2 Network Composition

The network composition can be analysed in two levels: the ego-centric level and the network level. The ego-centric level analysis focuses on one network member and its position and ties in the network. The network-level analysis focuses on the properties and characteristics of the whole network. The properties include density, fragmentation, and centralization. (Provan et al., 2007). The network structure from the ego-centric and network-level point of view affects how the network works in terms of different kinds of flows such as information flow, resource flow, etc. The ego-centric level focuses on how central position an organization has in the network. There are 3 degrees of centrality. These are in-degree versus out-degree centrality, closeness centrality, and betweenness centrality. The ego-centric level analysis can also focus on broker relationships.

In degree and out-degree centrality describes whether the organization in a network has a more central or peripheral position (as in Figure 1). An organization with a more central position has more direct ties with other organizations than an organization that has a peripheral position. Centrality can also be determined by how much assets such as resources and information are coming into an organization from other network members versus assets that are sent out to other organizations. (Provan et al. 2007). A central organization has better access to resources and information in a network; however, resources are also required to build and foster ties with other organizations.

Several network-specific knowledge barriers affect the information flow between the network members. For example, geographical distance can affect how much the network members share information. (Korbi & Chouki, 2017) Geographically close members may meet more often and thus strengthen ties with other members compared to those who have more distance to others.

Therefore, geographical location and distance to network members can affect whether members have a more central or peripheral position in the network.

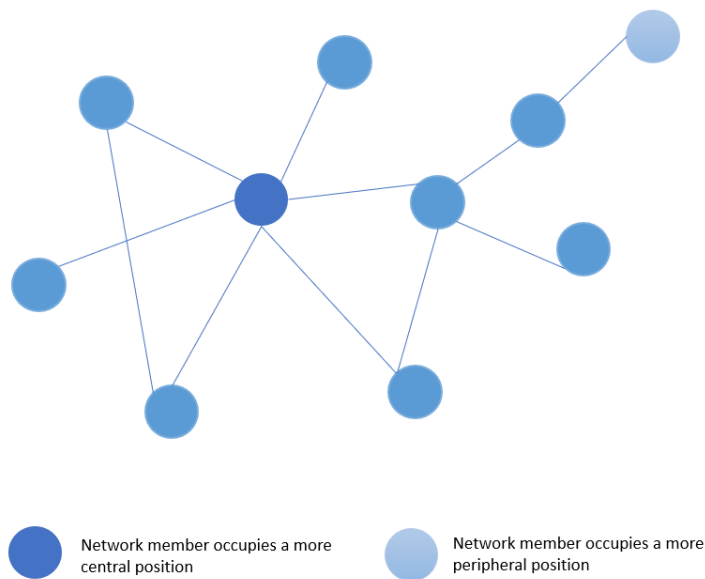


Figure 1: A central position and a peripheral position in a network

Closeness centrality describes how connected an organization is to other organizations through direct ties and indirect ties (as in Figure 2). This perspective assumes that resources and information can be acquired in the network through indirect ties; for example, A is connected to B, who is connected to C and therefore, A is connected to C. An organization close to the centre of the network can access the information and resources of other organizations with fewer effort resources than an organization that is less close to the centre. In other words, having ties with a very central player in a network can lead to indirect connections with many other members.

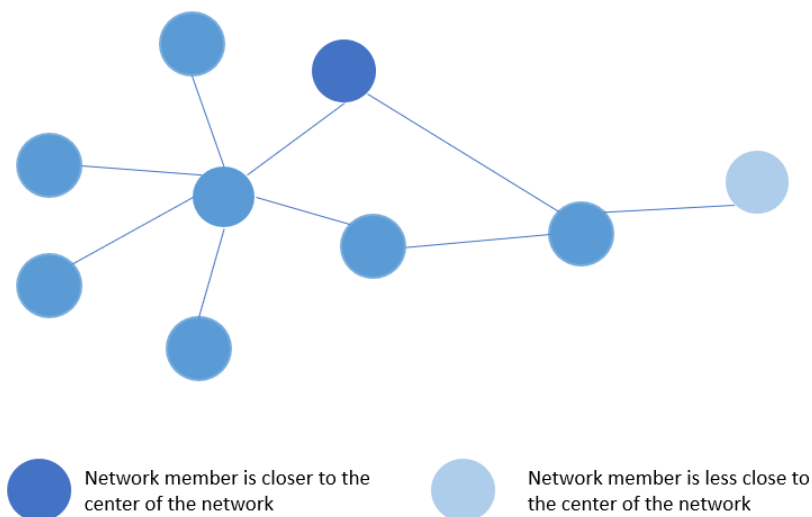


Figure 2: Some members in a network can have more central position than others

Betweenness centrality means that the extent how much an organization serves as a gatekeeper within the network. In other words, the gatekeeper maintains intermediary links between organizations that are not directly connected (as in Figure 3). A network member who takes the role of an intermediary can increase the information flow between members who would not otherwise be connected. Especially geographically and culturally distant network members can be connected by intermediators (Vuori, Helander et al. 2019).

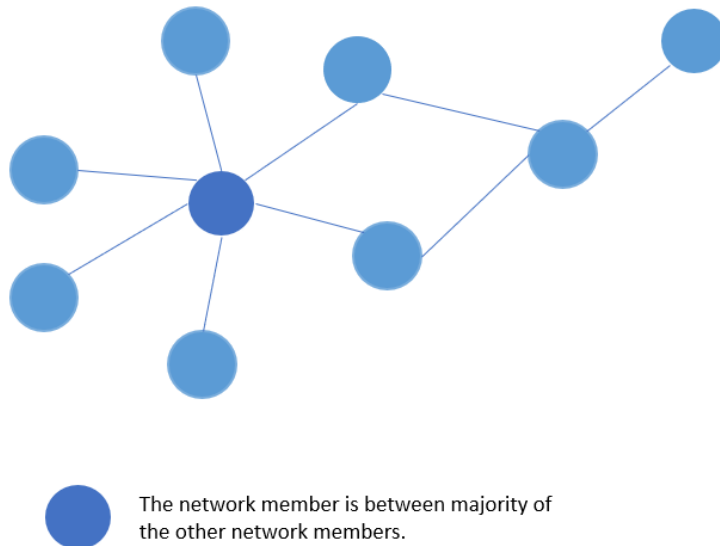


Figure 3: A gatekeeper connects network members who are not associated with each other

Finally, broker relationships are formed when an organization spans gaps or structural holes in a network (as in Figure 4). When a network member has a broker role in the network, it significantly influences how the information and resource flow in the network. A structural hole is a gap between two networks whose members have no connections with each other. Brokers establish a relationship between the networks, and then a structural hole is filled.

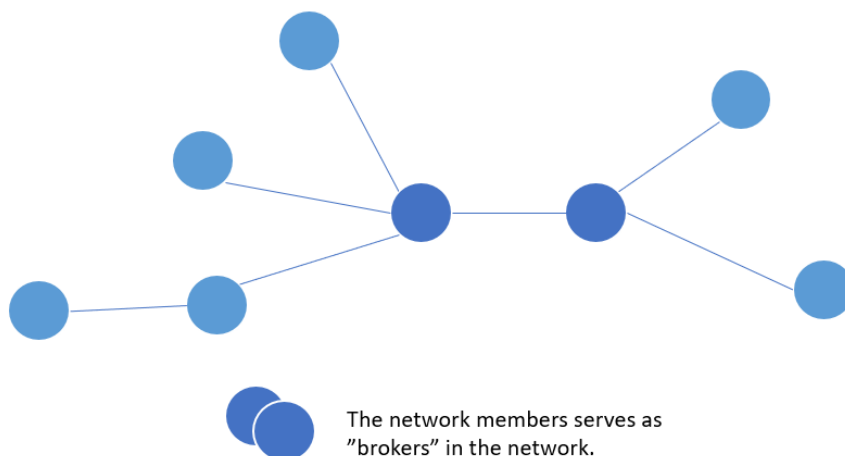


Figure 4: A broker relationship between two separate networks

If the network is studied as a whole, there are three aspects to consider: density, fragmentation, and centralization. Density means how connected the members are in the network. In other words, how many links there are between the members of the network (Figure 5). Density can impact the effectiveness of the network. If there are more links between the members, the information and resources flow more easily than if there would be fewer connections. However, more connections between the members do not always increase the effectiveness. The more there are links, the more coordination is required.

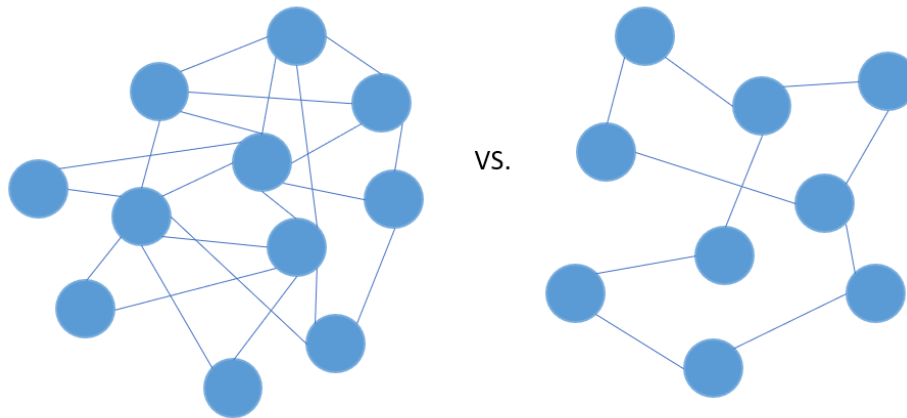


Figure 5: *The number of connections between network members can vary in a network*

Fragmentation means how well all or most of the members of the network are connected. If there are more connections between members and fewer with others, the network has cliques or dyads. In the clicks, due to more connection between the members, the information flow is higher than information flow outside of the clique. The information may flow in a clique very well because people with the same knowledge base learn faster. This is called cognitive proximity. (Boschma, 2005)The cognitive proximity between the people who want to exchange information should be small to reach a common understanding (Nooteboom, 1999). However, because the members in a clique are so tightly connected to each other, the members can become isolated from other members. Broker relationships can connect the cliques members with other network members.

Centralization means whether one or few members are considerably more centrally connected than other members. In this kind of network, a central member is connected very well with other members, but the other members might not have so many connections between each other. Thus, in decentralised networks, links are spread more evenly among members.

2.3 Network Governance

Networks need to be governed to ensure that coordinated actions are done. Provan and Kenis define network governance as using institutions and resources in order to coordinate and control joint action across the whole network. (2008) There are three governance modes: shared governance, lead organization governance and network administration organization governance. The network studied in this thesis uses the two latter governance modes, although not at the same time. Provan et al. propose that the governance change and evolve as the network grows and

matures (2008). As in this case, the studied network currently uses the lead organization governance mode to establish a network administrative organization (NAO). Both lead organization governance and NAO forms are more stable and less flexible than shared governance, where there is no separate governance entity. Still, the coordination is ensured through regular meetings and by having organizational representatives.

In lead organizations governed network, as presented in Figure 6, one network member coordinates critical decision making and all major network-level activities to ensure that the network-level goals are achieved. The governance is thus centralized and brokered, and the power is not distributed symmetrically. In lead organization governed networks, the power is more centralized. It is usually the network members who decide that a single network member should take the lead. Usually, in horizontal networks, the network member who is chosen to lead the network has sufficient resources and legitimacy. Even though one network member has more power than others, it does not necessarily mean that the lead organization can establish an official command line. The authority is more based on status.

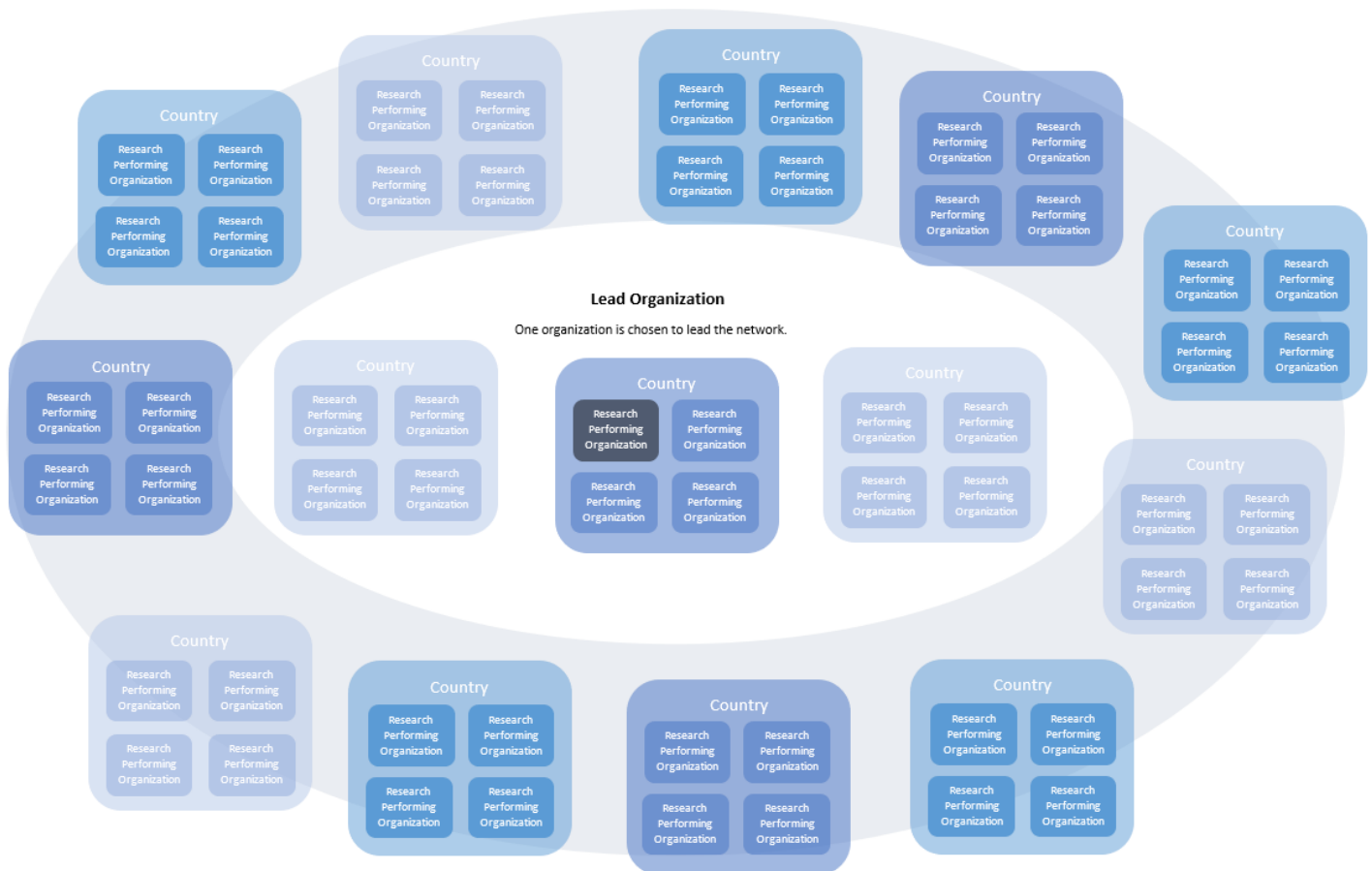


Figure 6: Example of a network lead by a lead organisation

A network administrative organization (NAO) differs from a lead organization because the NAO is a separate administrative, legal entity. In other words, the lead organisation is one of the network members. NAO is set up to govern the network and its activities. It plays a central role in coordinating and sustaining the network. NAO gets its mandate from the network members. The

NAO can deliver services to the network through network-level service providers. In Figure 7, there is an example of a network lead by an NAO.

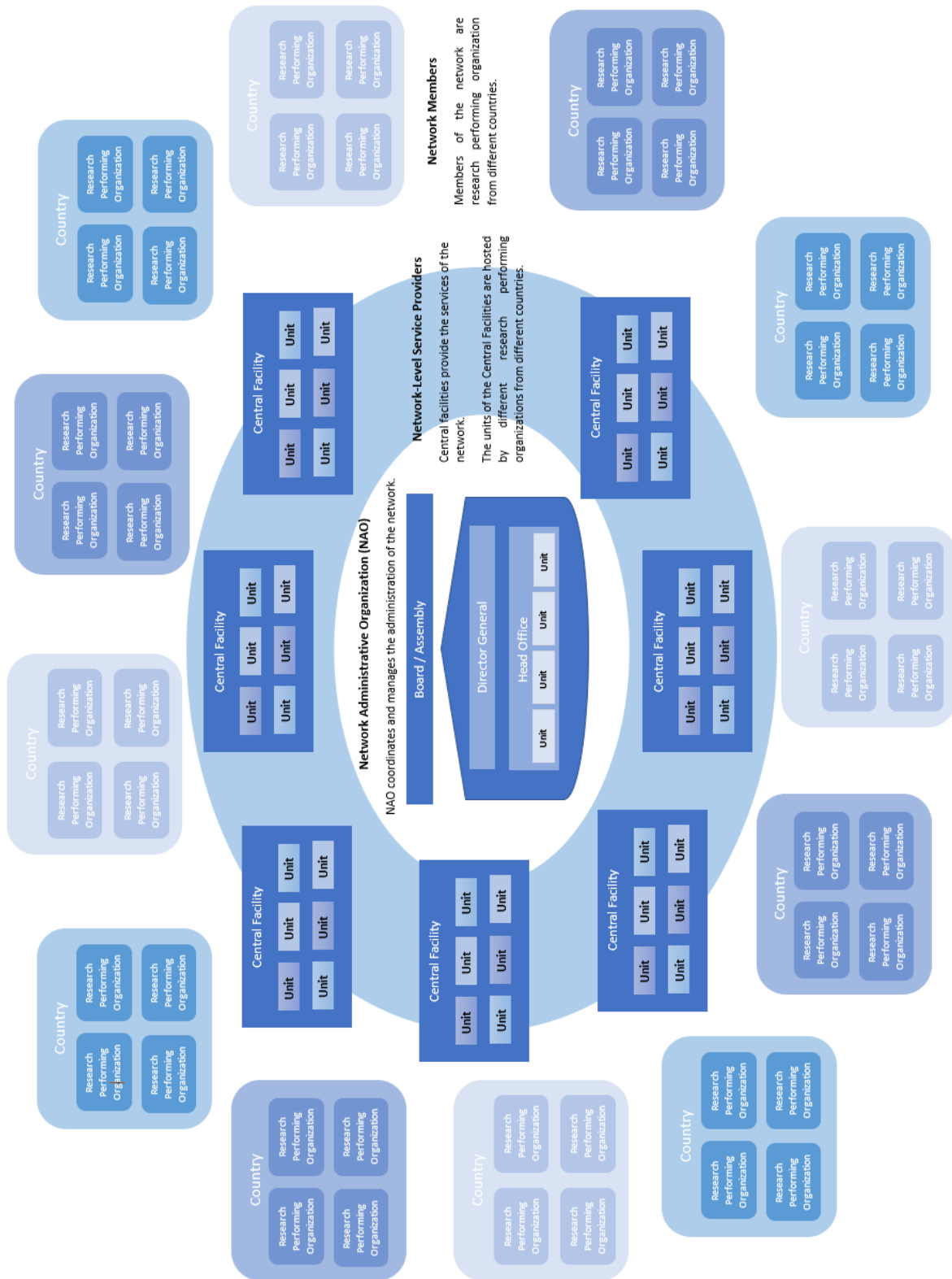


Figure 7: A network lead by a network administrative organization which delivers services to the network members through network level service providers.

2.4 Network Management and Leadership

The challenge with network governance compared to organizational governance is that there is hardly any hierarchy or ownership. The network members are legally autonomous organizations, and therefore, no organization has the authority to command others. In addition, network participants don't have much formal accountability to the network-level goals and the rules and procedure are negotiated socially and conforming to them is voluntary. (Provan & Kenis 2008) Therefore the most successful network leaders usually put focus on people, and leadership communication focuses on inspiration, consultation, and coalition. (Eglene et al., 2007)

Network management is managing the interaction processes between the network participants instead of managing individual or resources and tasks. Because the network participants autonomous organizations, the network leader cannot control them, but it can facilitate and guide the interactions (Friend et al., 1974). The aim of management is to change network arrangements in order to have better coordination in the network.

Agranoff and McGuire propose that there are four network management behaviours that are crucial for getting work done in a network. These behaviours are activation, framing, mobilizing, and synthesizing. Activation is engaging the right participants in the network and directing their resources. The network managers job is to create a situation where the network participants become interested in investing their resources. (Lynn 1981) Sometimes network management might also call for deactivation: absence of opposition from other participants who have similar resources and may block initiatives. (Scharpf, 1978)

Framing is establishing the operating rules of the network. This includes shaping and influencing the norms and perceptions. (Agranoff & McGuire, 2001) According to Stone, "Framing gives shape to purposes and has great influence in the alignment of various forms of engagement" (2001) . A network leader can frame the network context, for example, by introducing new ideas and new participants or arranging meetings where topics can be debated (Kickert et al., 1997).

Mobilizing is generating commitment by ensuring participation in common activities through sharing resources and by motivating and inspiring. Finally, synthesizing is enhancing condition for favourable and productive interaction amongst network participants. (Agranoff & McGuire, 2001) The network leader can promote network participation by appropriate interaction process design. Opening the discussion to a wide audience and ensuring a safe space for voicing one's opinion promotes interaction and participation.

2.5 Motives and Benefits of Interorganizational Collaboration

Organizations can accomplish tasks more effectively by partnering up with other organizations. This chapter outlines the different motives and benefits of interorganizational collaboration.

2.5.1 Collaborative Advantage

The concept of competitive advantage assumes that to succeed in the market economy, the organization must own and organize the valuable and scarce resources it has, and especially the organization must guard them so that other organizations cannot imitate them (Barney, Jay B., 2014). Although not all organizations, such as not-for-profit organizations, face market pressure, they still compete for funding, customers and government endorsement and aim to build capacities that enable them to address social problems more effectively, and thus the acquisition of valuable resources still has a 'competitive' advantage (Hardy et al., 2003). While the competitive advantage is built on an organization's internal resources, the cooperative advantage is built on combinations of resources that produce new or improved capabilities that allow organizations to do something they could not do alone. (Hardy et al., 2003). On the other hand, competitive advantage benefits only the organization that owns it, but collaborative advantage should benefit all the participant organizations.

This is a significant shift in the mindset: instead of focusing only on the organization's core goals, the collaborators need to find common ground in terms of what is essential (shared vision or shared goals) and what needs to be done (the collaborative activity itself). Cooperative advantage requires a mutual relationship between organizations and shared resources, which enable the organizations to produce advantages that they would not be able to produce on their own. A reciprocal relationship means that it is not based on the traditional buyer-seller type of relationship facilitated by the market and where one organization has power over the other.

However, the goals of collaboration have been identified to be very often messy and wicked (Ackoff, 1974; Horst W. J. Rittel & Webber, 1973) because there is a large number of poorly defined interrelated elements, an excessive amount of parties (individuals and organizations), lack of hierarchy and associate authority which influence the management and the undefined or vague time scale over which collaboration should occur (Vangen & Huxham, 2012). Yet, some benefits have been identified. Various researchers have contributed to the discussion of the benefits that can be gained through collaboration. In this sub-chapter, I will review the literature related to collaborative advantage and the potential impact that can be achieved through collaboration.

2.5.2 Resources

Parmigiani and Rivera-Santos propose that one motive for organizations to collaborate is to gain access and control over vital resources. According to the resource-based view, a firm is a bundle of resources and capabilities to build a competitive advantage (Hillman et al., 2009). Even though the resource-based view is a concept used in companies' strategic management, the general idea can be transferred to any organization. The resource-based view highlights the important resources and capabilities for an organization's survival, growth and overall effectiveness (Barney, Jay, 1991; Wernerfelt, 1984). Organizations can be dependent upon resources that other organizations may own, which leads to uncertainty and interdependence. Thus, through interorganizational cooperation and coordination, this dependence can be decreased. (Parmigiani & Rivera-Santos, 2011).

The potential of cooperation arises from building organizational capacities by transferring or pooling resources. Organizations can improve their strategic performance by developing their capabilities by sharing resources and participating in joint activities. Huxham outlines three pitfalls when organizations do not collaborate: repetition, omission, and counter production, contributing to discussing the benefits of the potential resources of collaboration.

Through collaboration, organizations can avoid repetition, which is directly linked to the efficient use of resources. Avoidance of repetition means that organizations can avoid duplication of activities or processes through collaboration. (Huxham, 1993) For example, instead of every organization creating and maintaining a database of the same information, the databases could be handled through cooperation, and thus, redundant work could be eliminated. Although, duplication of work can serve as a backup against individual failure. (Landau, 1973) Resources are scarce in every organization, and therefore finding ways of operating more efficiently can be a benefit for an organization.

On the other hand, counter production refers to the problem when several organizations take similar actions with the same motive, which leads to cancelling the efforts and the results of each other's work. For example, two organizations arranging a networking event for the same target audience around the same time. In this case, the goal of both events is to get people to socialize with each other. If two organizations start to arrange a similar event, it requires twice the resources. However, the result can be that the individuals of the target audience end up participating only in one of the events. Therefore, the number of event participants may be low, which affects the socializing event.

Omission linked to the problem where many organizations regard that a certain activity is important, but everybody assumes that others are handling the problem, which leads to no one handling the problem. (Huxham, 1993) Sometimes, a task can be important, but no single organization is willing to contribute the full resources needed to handle the task. This kind of activities can be handled through collaboration.

All in all, organizations have a motive to participate in a network if the collaborative activities benefit the organisation's main operations, for example, by providing services more efficiently and effectively. (Provan, Keith G. & Milward, 2001)

2.5.3 Social Capital and Organizational Learning

The collaborative advantage is not only related to sharing resources and resource efficiency but also related to social capital. Many studies have linked network position to positive performance (Athanasios & Nigh, 1999; Burt, 2001) Borgatti and Foster discussed the consequence types that social networking has. First, through social interaction in collaborative activities, existing knowledge can be shared, and new knowledge can be created. (Hardy et al., 2003). Second, social networking can increase the structural social capital of the organization: by occupying a central position in a network or having an ego network with a collaborative structure, the organization can exploit the network ties to reach certain objectives. (Borgatti & Foster, 2003) Third, through interaction, shared attitudes, culture, and innovative practices can diffuse. (Granovetter, 1985; Rogers, 1983).

Collaboration enhances organizational learning: through social interaction between the network members, organizations can access information resources, data, know-how and knowledge and thus, the intellectual capital of the organization increases. As a result of knowledge transfer from one organization to another, the organization's performance increases, the cost is reduced, or the quality of the product or service improves. Especially knowledge-based organizations may view acquiring new skills and competencies as a strategic objective, and therefore, inter-organizational network participation can be a way to achieve the goal.

Knowledge creation occurs in the context of a community: it is not located so much inside organizations but rather between them. High involvement and embeddedness facilitate inter-organizational learning and thus knowledge creation. The more there are interactions between the network

members, the more knowledge is created. In addition, the greater the diversity of the partners, the more likely it is that knowledge creation occurs. When the network members communicate and interact, organizations in a network can access information both directly from the network partners that they closely interact with but also from the network partner's partners. When the network is highly embedded, the knowledge flows beyond the boundaries of the collaborative relationship between the members to the whole community. (Hardy et al. 2003)

Knowledge creation is linked to structural social capital. Structural capital refers to the density, connectivity, hierarchy and appropriability of the network of relationships, and it enhances the accessibility of knowledge and increases the exchange of information. Structural capital is the properties of the network, while relational capital is the quality of the relations. (Davenport & Snyder, 2005) Networks have structural properties, and an organisation's position in the network affects the benefits the organization can gain. Closeness centrality means that an organization has "short" connections to all other organizations in the network, which make it easy to exchange network-based resources. (Provan et al., 2007) Betweenness centrality means that an organization serves as a gatekeeper within the network. If an organization acts as an intermediary link between other organizations which are not directly linked with each other's, it spans a structural hole and therefore can influence the knowledge sharing and transfer. In-degree and out-degree centrality means whether the organization occupies a central or a more peripheral position in the network based on the number of network ties it maintains with other network members.

The links between network members are a way to diffuse culture. This can be referred to as contagion. (Harrison & Carroll, 2002). Even though the word is associated with negative meanings, it means adopting and sharing certain (positive and/or negative) beliefs, attitudes and predispositions by network members. In addition, interorganizational networks can function as a mechanism to diffuse innovative practices. Both cultural factors and innovative practices can be of benefit to the network members.

2.5.4 Legitimacy

Dennis Wrong (1961) oversocialized the conception of man in modern sociology. He described people as overwhelmingly sensitive to the opinions of others and hence obedient to the dictates of consensually developed norms and values, internalized through socialization so that obedience is not perceived as a burden.

Sociologists often try to draw attention to the intensity with which people desire and strive for the good opinion of their immediate associates in various situations. This is not the most common view: many theories and ideologies unduly emphasize other motives. For example, economists emphasize that individual behave based on self-serving motives. Thus sociologists have shown that factory workers are more sensitive to the attitudes of their fellow workers than to purely economic incentives. Therefore, how others behave in similar situations and environments is an essential measure for people to know whether they are doing well in the social context.

Institutionalization theorists argue that organizations acquire legitimacy by copying practices by other organizations (DiMaggio, Powell 1983). Suchman defines legitimacy as a generalised perception or assumption that an entity is acting in a desirable, proper or appropriate way within a socially constructed system of norms, values, beliefs and definitions (1995, p.574). Compared to the resource-based view and organizational learning perspective, the focus of organizations actions is imitation. Organizations copy the practices of their peers mainly because they view it as appropriate instead of optimizing their operations to be more cost-efficient or of better quality. (Marquis Tilcsik 2016). As mentioned in the previous chapter, interorganizational collaboration

enhances organizational learning and social capital. Therefore, being part of an interorganizational network makes it easier to learn about the actions of other organizations.

2.5.5 Power and Influence

Organizations collaborate to become connected with other organizations, gain allies, accomplish tasks more effectively, and gain access to more diverse sources of resources and social capital. Through collaboration, organizations can increase the power and influence that they have. Power and influence are similar; however, differences exist.

Power in networks can be viewed as property that prevents or facilitates action. Power is relational, which means that it exists between two or more parties. It requires a conflict in the interest that the different parties have. Power is exerted when the other party sets their own (initial) interest aside and agrees to the other party's wishes. The other party sets aside their own (initial) interest because the more powerful party threatens to invoke sanctions. Thus, the consequences of severe deprivation resulted from not conforming to the other parties wishes are of greater value than the initial interest which would have been gained by disobeying. (Bachrach & Baratz 1963)

There are several sources of power that can be used to invoke sanctions. For example, controlling critical resources such as money and information is a way to exert power. This can be achieved by having a central position in a network. Additionally, if an organization is a strategically important partner, it can have a more powerful voice than other network members. On the other hand, being able to acquire knowledge from a partner can also be a source of power. Therefore, being a central "player" in the network ensures that the member has many ties to other network members, which enable the acquisition of knowledge from many partners.

Influence is similar to using power: the aim is to cause the other to change his course of action. However, influencing does not include threats either tacit or overt of severe deprivation. (Bachrach & Baratz 1963) Janneck and Staar (2010) propose thirteen influence tactics in interorganizational network settings, which are used to shape how the network works. Janneck and Staar (2010) call them micro-politics, which are everyday actions of individual network members to exert influence within an interorganizational setting. Four of the thirteen tactics are about appealing and persuasion. First, rational persuasion uses logical and rational arguments and facts to argue that taking a certain action will result in the desired result. Second, inspirational appealing is using universal values, ideals and aspirations in one's argumentation. Third, one can also appeal to other's feelings of loyalty and friendship in order to argue for taking a certain action. Finally, legitimating is to say that a certain action is aligned with an organizational policy, rule, practice or tradition.

The next four of the thirteen tactics are about close cooperation with the members of the network. First, one can ingratiate, in other words, use praise and flattery to get the other person in a good mood and to feel important or to think favourably of the one giving the praise. Second, the person can indicate future reciprocating by offering an exchange of positive benefits. Third, one can ask others to participate in decision making when the other person's assistance and support are desired, showing a willingness to modify a proposal to accommodate the other's concerns and suggestions. Finally, forming a coalition by securing other person's support is also a way to achieve the desired goal. (Janneck and Staar 2010) All of these forms of interpersonal exchange that people make, and which are crucial in being part of a network.

Janneck and Staar (2010) propose that being assertive such as using demands, threats and frequently checking and reminding about the topic, can result in more significant influence instead

of being passive and quiet. This is also linked with self-promotion. When a person speaks his/her mind, they can be seen as competent, intelligent and proficient and therefore, they have more influence compared to those who do not engage in showy behaviour. However, in some cases, not having a strong opinion can be a benefit. This tactic is called mediating. If two people fight about the topic, then a mediator can be the one who makes the final decision. All these three tactics have in common that the people who are visible are the ones who are influential.

Finally, claiming vacancies, for example, by volunteering for tasks and roles, provides the person more decision-making power and a possibility to act as a gate keeper for information which increases the influence of the person. (Janneck & Staar 2010; Bachrach & Baratz 1963)

2.5.6 Achieving Meta-Objectives

While the previous sub-chapters have discussed the benefits for the organization, it is essential to note that public organizations aspire to create value for the public. Usually, these values are communicated as meta-objectives: objectives that benefit, for example, the whole society or the whole industry instead of just one organization. (Huxham, 1993; Trist, 1983). Bryson et al. refer to shared core goals when an organization have the same motive to achieve a similar objective. (Bryson et al., 2016) For example, shared objectives for public sector organization could be the sustainable development goals by the United Nations. These are objectives that all countries benefit from, and thus public organizations would have a motive to work together to reach the goals.

On the other hand, the problems might not be identified as important to any organization, or the problem does not belong to anyone's responsibility area. Through collaboration, this kind of activity does not get overlooked. (Huxham, 1993) Finding solutions to global problems seems to be, on the one hand, everyone's responsibility and, at the same time, no one's responsibility. No single organization is willing to take full responsibility for achieving such big goals; however, through collaboration, the risk and resources can be divided. (Bryson et al., 2016)

3. RESEARCH METHODOLOGY

My intention of this research was firstly to confirm that the proposed benefits of interorganizational network participation that are proposed in previous research can be achieved; secondly to outline if some of the proposed benefits have not been gained in the case network; thirdly to identify challenges that prevent network members from achieving these benefits and finally to suggest how these challenges can be overcome. The main research questions of this thesis are

RQ: What kind of benefits public sector organizations aim to gain from participating in an interorganizational network?

RQ: What kind of challenges public sector organizations face in trying to gain benefits from participating in an interorganizational network?

In this chapter, the overall methodological approach is presented.

3.1 Methodological Approach

Saunders et al. 2012 propose the research onion framework to be used in describing the research methodology. The onion consists of six layers going from the outer layer to the inner layer: research philosophy, research approach, research strategy, research choice, time horizon, data collection. The methodological research choices made for this research are presented in Figure 8.

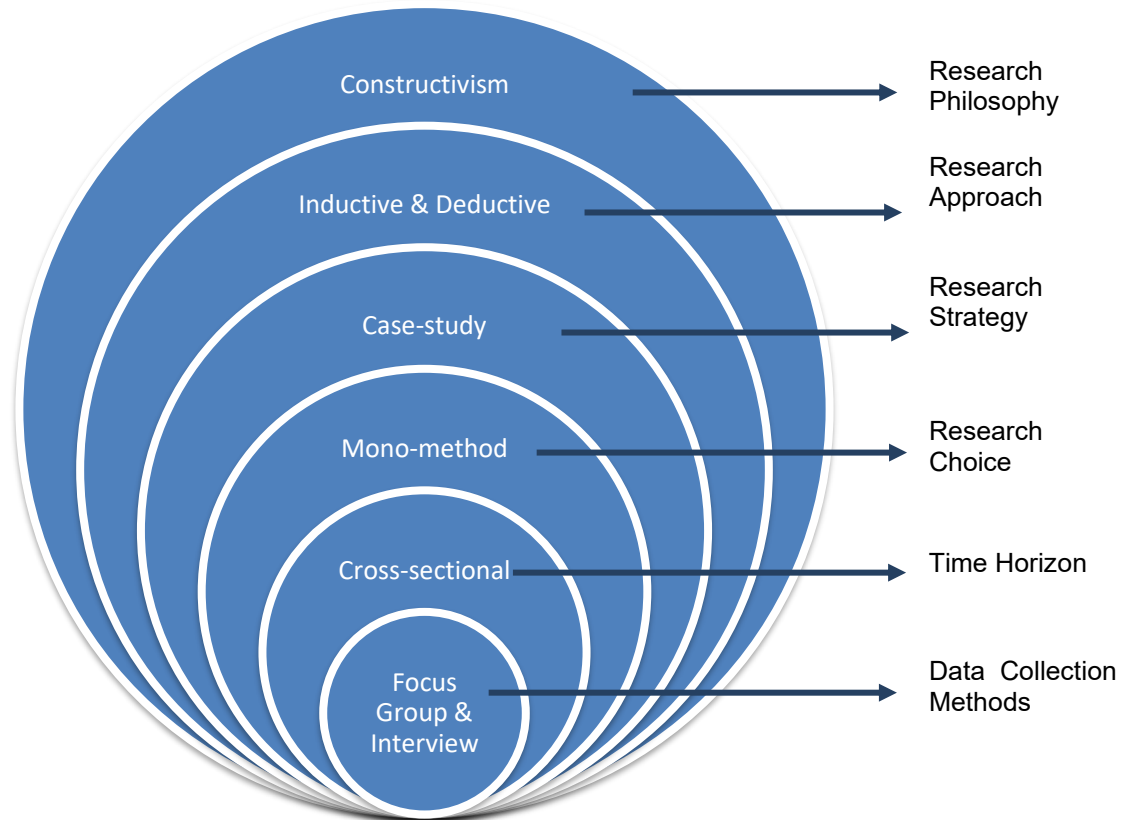


Figure 8: Research methodology onion

In the next sub-chapters, the methodological choices are elaborated.

3.2 Research Philosophy and Approach

The first layer of the research methodology onion is the research philosophy. It describes how data about a research topic should be collected, analysed and used. It is also used to describe the assumptions about the sources and the nature of knowledge. The main research philosophies are pragmatism, positivism, realism and constructivism (interpretivism) (Saunders et al., 2012). Networks are formed and developed by social norms and negotiations. The research philosophy used in this study is constructivism, which is a suitable philosophy for research done about social institutions. The knowledge which is produced through this research is subjective (ontology): the concept of network benefits requires the subject to define what is important and what is not, and in order to gather data for the research, the researcher needs to be actively involved in the data gathering and in interpreting the data (epistemology): in order to understand the subjective realities of the research subjects the researcher must be immersed to the research environment, therefore the researcher can be biased when conducting the research and thus cannot maintain an objective and independent stance to the data (axiology).

Ontology describes the nature of reality or being. There are two different views on what constitutes reality. First, there is the reality which is hard and concrete and real, and which can be described externally. Second, there is the social reality which is individuals create themselves in each daily encounter. (Gupta & Awasthy, 2015) In constructivist philosophy, social reality is the complex of socially constructed meanings. It is the product of processes by which social actors together negotiate the meanings for actions and situations. The main defining elements of the research questions are the networking benefits and challenges in achieving them. Both the benefits and the

challenges are subjective concepts. They require the subject to define what is important, what should be strived for, and to define what is difficult. Therefore, there exist multiple realities; for example, the purpose why different organizations join a network can vary and what is difficult depends on the subject's view on the situation.

Epistemology defines what constitutes acceptable knowledge. There are yet again two perspectives for epistemology. First, the emphasis can be on the empirical world where knowledge is objective, and it specifies the precise nature of laws, regularities and relationships among variables. Second, the emphasis can be on understanding the social reality and its multiple perspectives. (Gupta & Awasthy, 2015) According to the constructivist view, interpretation is an important part of human experience. Rather than focusing only on sensory and material apprehension of the external world, experience is closely linked to how individuals interpret the conditions and the environment where they interact. (Blaikie, 1993) Therefore, in order to find the answer to the research question, the research data needs to be gathered directly from the research subjects and in a way that their personal views can be derived from the data. Axiology defines the role of values in research is. This is elaborated in the research choice chapter.

Empiricism means evidence from the real world, while theory refers to ideas that are abstract or purely analytical. Thus, building theory means creating systematically interrelated concepts, definitions, and propositions used to explain and predict phenomena. Theories are built and tested with empirical studies which reflect the things that are verifiable by experience or observation. (Adams, 2007) The link between theory and empiricism is usually bridged by discussing the two types of reasoning: induction and deduction, which is also the second layer of the research methodology onion.

The research approach refers to the choice between deductive and inductive reasoning. Deductive research aims at establishing universal laws. The laws are formed as hypotheses, and they remain so until research proves that the prediction is not accurate and thus, the theoretical framework which derived the law need to be revisited. It is said that deduction operates from general to specific, and the role of existing theory is well-established. Usually, the main stages of deductive research are reviewing existing theory, formulating a hypothesis based on the theory, collecting data to test the hypothesis and analysing the results in order to reject or confirm the hypothesis. (Adams, 2007).

Inductive research aims at observing the world as it is and then develops a theory based on the patterns in the observation. Thus, inductive reasoning starts from specific observations and moves to broad generalizations, which is the opposite of deductive research. Inductive research usually has the following main stages gathering (qualitative) data on the research subject, observing patterns in the data and developing a theory based on the patterns and themes in the data. (Adams, 2007) It is common in studies that are based on the constructivist philosophy to use induction. Because the reality is constructed socially and is intersubjective, the natural starting point of the research is the empirical world. (Blaikie, 1993)

Pure inductive and deductive research approaches are difficult to apply, especially when the research applies to many different scientific disciplines. Instead, an integrated approach can be used (Ali & Birley, 1999) and one way of integrating the approaches is analytic induction. (Taylor & Bogdan, 1984). In analytic induction, the researcher starts with theory-derived concepts, which are verified based on (qualitative) data and then the researcher discovers the data from a fresh perspective and aims at finding undiscovered patterns (Patton, 1990). The aim of this research is two-fold: first, it aims to test/confirm existing theory by testing whether the case network members

perceive that the benefits of interorganizational network participation, which are presented in the literature review, are achieved in the research performing organization network context. Second, it aims to create a new theoretical framework by studying the challenges that prevent the network members from gaining the benefits from interorganizational network participation. This fits well with the analytic induction approach.

The purpose of using both induction and deduction in this research is as follows. If only a deductive approach was used, the research results would be short-sighted: it would be possible only to test whether the hypothesis is true: whether the network members gain the expected benefits or not. The inductive approach enables to identify what kind of unanticipated factors might exist which affects the hypothesized results: meaning the reason why the benefits have not been gained is either because they cannot be gained from the network (falsifying theory) or because the organizations have had challenges in achieving the benefits (explanatory variable). The combination of induction and deduction regarding the research design is visualised in Figure 9

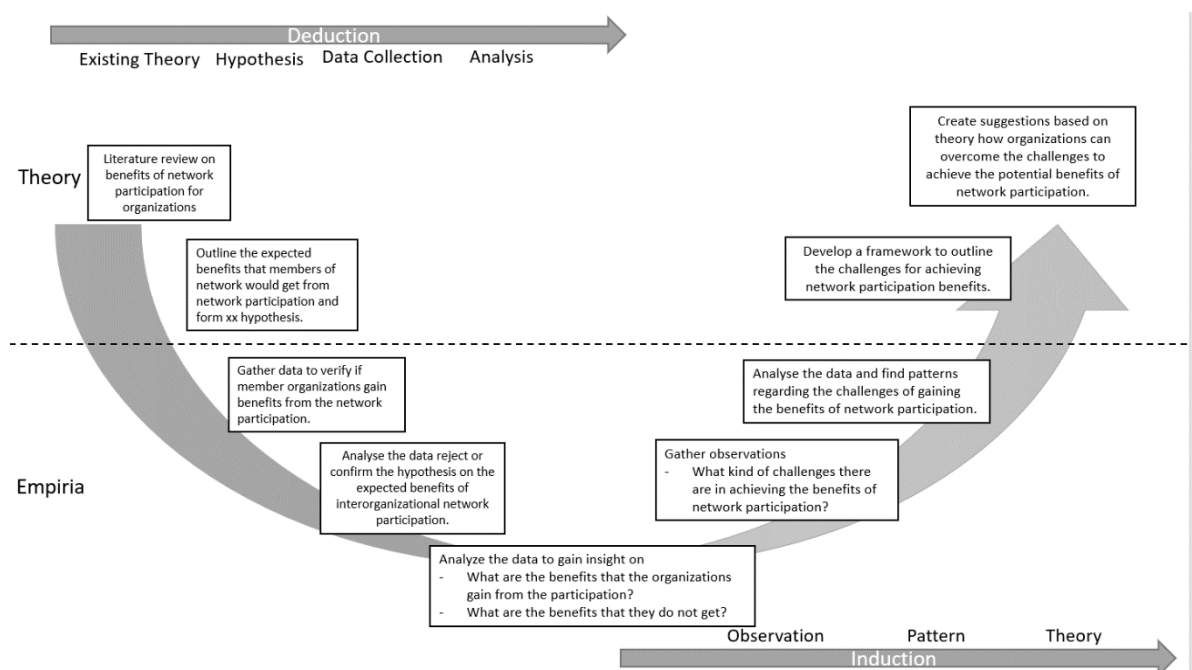


Figure 9: An overview of the research approach in this study

Designing research starts with an interest in a particular phenomenon. In this research, I began with a curiosity towards the pan-European research infrastructures, which lead me to study the literature on interorganizational networks and why and how they emerge. Thus, in the first part of the research, I developed a theoretical framework with relevant concepts which is typical of the integrated approach (Ali & Birley, 1999). I defined that the ACTRIS would be closest to the concept of an interorganizational network.

While in the deductive research approach, specific variables to be measured are defined, in the inductive research approach, research participants identify concepts and explain the relationships between them. The integrated approach identifies some important variables for relevant constructs but enables research participants to identify other relevant constructs (Ali & Birley, 1999). Moreover, Eisenhardt proposes that it can be useful for researchers to specify a priori constructs, which can help shape the initial design of research aiming to build a theory (Eisenhardt, 1989). In this case, indeed, the existing knowledge from the literature was important. I reviewed the theory

of interorganizational networks and different kind of collaborative arrangements between organizations. It allowed me to gain insight into the multiple perspectives about the motives for participating in an interorganizational network.

It was evident from the literature that there is no single motive for organizations to participate in a network, and moreover, the reasons can differ depending on the organization. Thus, it led to two conclusions. First, no single theoretical framework would be helpful, and the research would require a more holistic approach. Second, because the expected benefits were multifaceted and could vary depending on which member organizations were studied and what kind of organizations were part of the network, there was a need first to test the assumptions about the expected benefits and then learn in more detail the factors which affect the gaining of the benefits.

I outlined several benefit categories from the literature, which helped the gathering of the data. The benefit categories directed the gathering of the data. Thus, first, in a deductive manner, I attempted to gather data and analyse it in order to test whether the member organizations had gained the benefits that the literature proposed. The benefit categories helped to contextualize the findings in terms of existing research. After gathering the data, I was able to verify whether the data was consistent with prior assumptions and theories.

By posing a rather general and broad question, it allowed identifying constructs that were meaningful for this case and then the research could continue to explore more in detail the most important constructs. Thus, the research evolved as it proceeded. This is natural for constructivist research philosophy, and moreover, the research process is iterative between data collection and data analysis (Robson, 2011). The next step was to discuss more in detail why benefits in certain categories were not gained.

The research focus moved from a theoretical discussion to a more empirical discussion, and therefore, the research approach shifted to induction. The strength of induction is that it allows research findings to emerge from the frequent, dominant, and significant themes inherent in raw data without being restrained by structured methodologies. In other, words the theory emerges from the raw data, which was the goal of the second part of this research. By posing general questions about the challenges of gaining the benefits, I was able to gather empirical data and then describe the challenges in achieving collaborative advantage.

3.3 Research Strategy and Research Choice

The research strategy is the roadmap towards the goal of the research, answering the research question, and it describes the process of how to achieve the goal. (Saunders et al., 2012) (Remenyi et al., 1998) The choice of research strategy needs to be based on the research philosophy and the research approach. In addition, it will guide the definition of the research choice, time horizon and data collection methods.

In this research, I use as a research strategy the case study approach. The case study is a methodologically flexible approach that focuses on a specific case. The case can be an individual, a group, an organization or a phenomenon of interest. (Rosenberg & Yates, 2007) This study is done in collaboration with ACTRIS, the network of research performing organizations in the field of atmospheric sciences. The case study research strategy is useful when the research topic is complex and highly contextualized and has many variables which cannot be controlled. Thus, it is a detailed and extensive study of a specific contextual bounded real-life phenomenon. (Rosenberg & Yates, 2007) This fits very well with this research context because the concept of network

participation benefits is broad and multifaceted. Thus, there are many variables that would be difficult to control.

The case study research strategy enables the research to be conducted in a real-life context. The context and the phenomenon can be rarely separated. (Yin, 1994) Therefore the case study is not done in a theoretical “vacuum”, and its results can be better applied in practice.

Rosenberg et al. propose a schematic for a case study. It describes the process of conducting a case study. (Rosenberg & Yates, 2007)The research process of this study is visualized in Figure 10

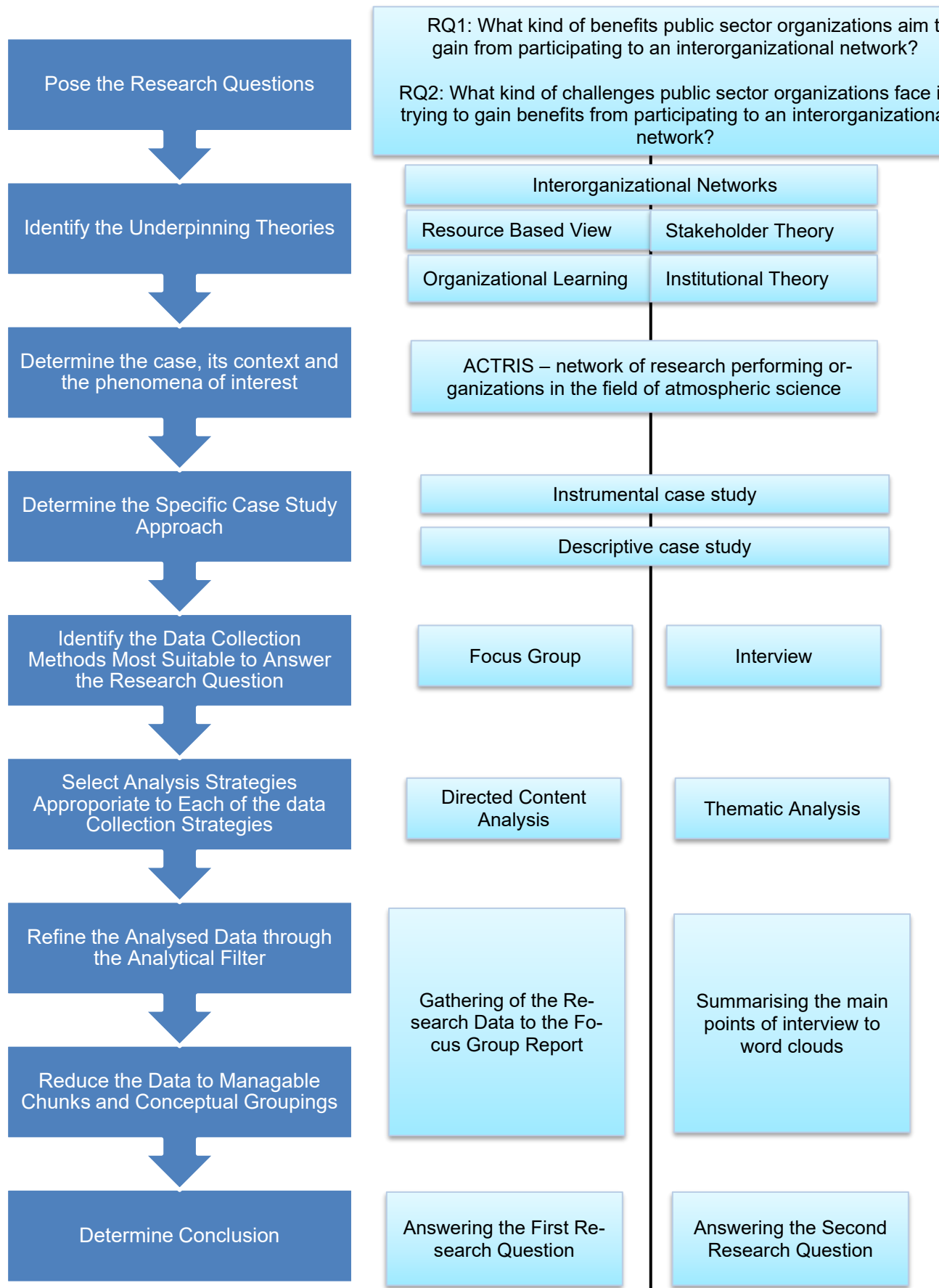


Figure 10: An overview of the research strategy (edited from Rosenberg et al. 2007)

The process starts with defining the research questions, which in this study are

RQ: What kind of benefits public sector organizations aim to gain from participating in an inter-organizational network?

RQ: What kind of challenges public sector organizations face in gaining benefits from participating in an interorganizational network?

The process continues with identifying the underpinning theories and determining the case, the context and the phenomena. Understanding the context of the research is a foundational action in case study research (Rosenberg & Yates, 2007) The context of the research is described in chapter 1, and the theoretical background of this study is covered in chapter 2. The process of case study strategy continues by defining the case study approach.

This case study is instrumental in its nature. Rosenberg proposes that there are several reasons why a case study can be conducted, and an instrumental case study is done when the goal is to understand related issues or phenomena of interest (instead of studying the case for its own sake, an intrinsic case study or studying many cases, a collective case study) (Rosenberg & Yates, 2007): the case (ACTRIS) was studied in order to understand the phenomena (interorganizational networks). Especially in instrumental case studies, the underpinning theories are an important part of the research. Moreover, verifying the theoretical propositions constitute an integral part of the case study (Yin, 2003) and therefore, the case study fits the analytical, inductive research approach.

Moreover, this case study aims to explain and understand a phenomenon. therefore, it is descriptive. Descriptive research aims at casting light on the phenomena through the collection of data that describes the situation more completely than was possible without conducting the case study. There are, in general, three purposes for descriptive studies: to describe, to explain and to validate. (Fox & Bayat, 2008) These purposes fit well with the aims of this thesis. The aim is to validate the potential benefit of interorganizational network participation and explain why and how the benefits are gained and not gained. In addition, it is an effective way to analyse non-quantified topics and issues, and it is less time-consuming than quantitative experiments. (John Dudovskiy, 2019) Because the topic of this thesis is qualitative in nature and the length of the research process is relatively short, the descriptive case study is an optimal choice.

However, the descriptive case study approach has also its disadvantages. the research problem cannot be tested or verified statistically, and thus results may have a certain level of bias due to the absence of statistical tests. In addition, with a descriptive study, it is not possible to identify the causes behind the described phenomenon. (John Dudovskiy, 2019) This disadvantage can be accepted in the study because the aim of the study is not to establish causal relations.

The case study process continues by identifying data collection and analysis methods refining the analysed data and reducing the data to manageable chunks, and drawing a conclusion. These steps are described more in detail in the following chapters.

An important decision regarding research methodology is the choice between quantitative approach and qualitative approach. Quantitative research uses numbers as data, and the results are exact and objective. Qualitative research uses observations and text as data and is more subjective. In my thesis, I use the qualitative approach because the objective is to study a social phenomenon and therefore, personal interpretations are a crucial part of the study.

3.4 Time Horizon of the Research

This thesis presents a snapshot view of the case network, and therefore, this research is cross-sectional. Case studies are often limited to a specific time frame because they describe a particular situation, event or phenomenon. This case study describes the case network in its current form and cultural and political environment instead of describing its evolutions and throughout the time.

Cross-sectional studies are optimal for obtaining information on variables in a different context at the same time. Different RPOs have different kind of positions in the network. Thus, the results can ascertain how various factors differ. For example, are there patterns in benefits that organizations want to achieve in the network and why some organizations have challenges in achieving certain network participation benefits and some others don't?

3.5 Data Collection Methods

In this chapter, I describe the data collection methods of this study.

3.5.1 Focus Group

A focus group is a data collection method for qualitative research. It is a group discussion on a particular topic, and the discussion is monitored by the researcher. The aim is to generate a rich understanding of participants experiences and beliefs. (Morgan, David L., 1997) There are several reasons why I chose to use focus groups as a data collection method. First, it can be used to expand the researcher's knowledge and understanding of an issue which will then influence the next part of the research (Dahlberg & McCaig, 2010) (Frankland et al., 2000) In this study, the central question was to understand what network participants want to gain from the network activities. After this, the research would continue studying more specifically what kind of challenges the participants face in gaining these benefits.

Second, focus groups can be used to gather rich data, which illuminates agreements and inconsistencies between participants. moreover, it is an opportunity to investigate complex behaviour and motivations. (Morgan, David, 1997) Because there is the unity-diversity -challenge, it is fruitful to discuss the differences and similarities in participants' motives. Finally, compared to other qualitative data collection methods such as interview, focus groups allows gathering of information that might not be gathered from a single respondent in an interview because the focus group is interpersonal and interactive in nature. The group discussion enables building on others, ideas and point of views, and therefore, the data which is gathered is richer.

Focus groups also have their limitations. The group discussion also limits the amount of data that is gathered from individuals. Therefore, the data which is collected can be rich but is not in-depth, which is something that could be achieved in interviews. (Morgan, 1997). The purpose of the first data collection of this study is to discuss the varying benefits that participants aim to gain from the network. Therefore, it is more important to get active comparisons of participants opinions and experiences and allow them to elaborate their views based on other's answers than gather in-depth data on one or few participants experiences.

The focus group sessions were held during a face-to-face conference that was arranged by the lead organisation of the network. The participants of the conference were the representatives of

the network participant organizations. The focus group participants were among the people who attended the conference. I assumed that the individuals who participate in the conference are the most active ones in the network. Therefore, they are the ones who have the most knowledge about the network activities. The focus group participants were recruited by sending them an invitation via email, and the participation for the focus group was voluntary.

The sample criteria were maximal variation and convenience. Maximal variation criteria are about disclosing a range of variation and differentiation in the samples and aiming to have as different samples as possible (Patton 2002). In this thesis, for maximal variation, it was essential to have as many countries and RPOs as possible represented. Convenience criterion is about selecting samples that are easiest to access (Patton 2002). The focus group participants were invited to participate in the research, and those who were most willing to participate were selected.

In the meeting, there was in total 78 attendees who represented 20 countries and 58 research performing organizations. In the network, there are 22 countries represented and 144 research performing organizations as participants. Thus, the representation of the meeting attendees was a good sample of the representatives of the network participants. In total, three focus group sessions were arranged, and there were 4-5 attendees in each one. The attendees were from 9 countries and 13 research performing organizations. The sampling funnel is presented in figure 11.

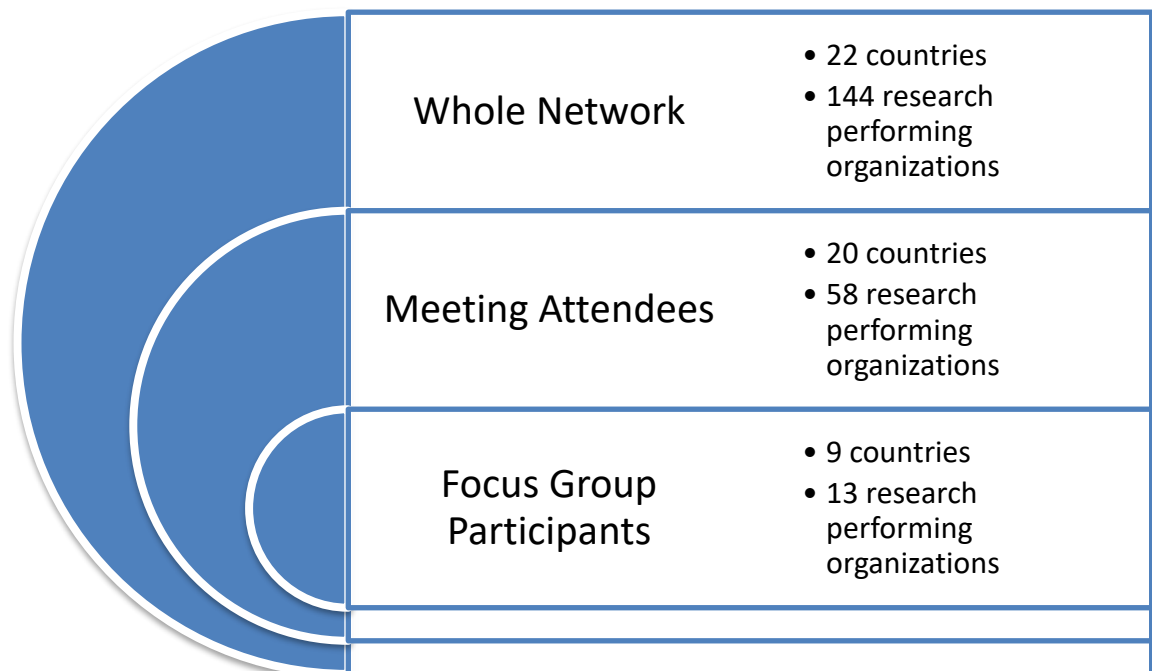


Figure 11: A funnel of the focus group participants

In order to test the theories on interorganizational network participation benefits, I summarised the network participation benefits and created a canvas tool (Figure 12). The tool would be used in the focus group session where individuals from different organisations fill in the canvas and discuss the categories. The canvas enabled a more structured approach to the focus group discussion. It was easier to get concentrated answers to the research question, and it ensured that all the groups discussed the issues in a relatively comparable way.

Network Participant Engagement Canvas		Organisation	
Core Goal of the Network Member Goal(s) that is/are central to the member organization to achieve its mission or mandate.	Shared Core Goal of the Network Members Core goals shared by more than one organization made possible through collaboration.	Negative Avoidance Goals / "Collateral Damage" Goals that are likely or possible negative consequences of strategies to achieve goals and thus are risks that need to be assessed and managed.	
Organizational Learning Facilitating knowledge transfer and creating knowledge that could not have been created by a single network member.	Power & Influence By having a central position in the network, organization can influence and better control the information and resources shared in the network. In addition, through collaboration the participating organizations can have greater influence in other stakeholders.	Meta Objectives Goals valued by the public that extend benefits beyond any organization's core goals and that no single organization is willing to be held accountable for.	
Contagion Through networking attitudes and practices can be shared and elements of culture can diffuse.	Legitimacy Professional norms and practices are developed through horizontal interaction. By adopting these practices, and conforming to the field standard, organizations can enjoy improved legitimacy, status, and reputation.	Managing Unintended Negative Consequences Trying to manage and avoid undesirable public value consequences generated by pursuing strategies to achieve core goals and shared goals.	
Resource Efficiency			
Avoidance of Repetition Organizations can avoid duplication of activities or processes through collaboration.	Avoidance of Counter Production When several organizations take similar actions with the same motive, it can lead to cancelling of the efforts and the results of each other's work.	"Not My Job" The situation where many organizations regard that a certain activity is important, but everybody assumes that others should or are handling the problem which leads to no one handling the problem.	"Not My Goal" Goals of other organizations that those not owning them are not prepared to be held accountable for but are willing to contribute to achieve them.

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Figure 12: The canvas tool used in the focus group sessions

A weakness related to the canvas tool was that there was a trade-off between the opportunity to hear about what the researcher was interested in and less opportunity to hear what matters to the participants. However, this did not matter too much because the first approach of the study was deductive, and therefore, the aim was to test the existing theories. Still, a narrow set of questions and a strong sense of the research question may affect the research data. There is a possibility that the research participants feel the obligation to fill in every part of the canvas tool and felt that they had to come up with benefits to all the categories even though the benefits might not have been gained. This risk was managed in the focus group session by allowing the participants to mark the most important advantages and the least important ones.

At the beginning of each focus group session, the same instructions were given to ensure that every participant understands the aim of the session in a similar way. The instructions included a notice of the recording of the session, assurance of confidentiality and information on how the recording will be stored and used.

In addition, some ground rules were designed to assist the group discussion. During the group discussion, the participants may experience fear of evaluation, and a potential power imbalance within the group or existing group norms may affect the ability of participants to speak freely. (Seal et al., 1998) The ground rules included: there are no right or wrong answers, everyone should be respected, and all participants shall have a sufficient opportunity to contribute. Moreover, because the focus group participants knew each other beforehand and had worked together, the participants were able to experience familiarity and comfort, which made them feel that they were able to speak freely, and they could challenge each other's views comfortably.

In group discussions, there are some pitfalls that affect the produced data and which need to be taken into consideration. First, the participants may experience production blocking. Production

To answer the research question,

RQ: What kind of benefits public sector organizations aim to gain from participating in an inter-organizational network?

the canvas sheet answers were gathered in a summary table (as in table 2). Based on the canvas-sheet answers, if the focus group participant had written an answer which indicated that the research performing organization had gained the benefit from the network activities, the cell would be marked as grey, and if the participant did not write anything to the respective canvas-sheet box the cell in the table would be left white. This table would then show what benefits were gained or not.

Table 2: An example table used to present the research results

		Benefit 1	Benefit 2	Benefit....
Focus Group A	RPO X			
	RPO Y			
	RPO ...			

To further derive answers to the questions,

- what were the most important benefits that the RPOs had gained?
- what benefits the participants would have wanted to gain but did not?

The data from the canvas sheet was summarised in a table (like table 3). In the focus group, session participants were asked to mark with a star the most important benefits for their host organization and to write down to the other side of the paper the benefits that they would have wanted to gain but had not. The most important benefits would be marked with the colour green for each network participant in the table, and the one that had not been gained would be marked with the colour red. This information would help to distinguish what the network participants want from the network, and then the research can continue to explore the important benefits which wanted to be gained but had not been.

Table 3: An example table used to present the research results

		Benefit 1	Benefit 2	Benefit....
Focus Group A	RPO X			
	RPO Y			
	RPO ...			

The analysis of the focus group data would then guide the answering of the second research question

RQ: What kind of challenges public sector organizations face in trying to gain benefits from participating in an interorganizational network?

In other words, the focus would be on the important benefits which were not gained. This research question would be answered with interviews.

3.5.3 Interview

The aim of the interview was to answer the question

What kind of challenges RPOs was when trying to exert power and influence in a network and through a network?

Thus, the interview focused on two topics: power and influence in two situations inside a network and using the network as a means of exerting power and influencing outside the network.

The interview consisted of two questions which were discussed in an unstructured way. An unstructured interview can also be called an in-depth interview. Minichiello et al. define in-depth interview as “repeated face-to-face encounters between the researcher and informants directed toward understanding informants’ perspectives on their lives, experiences or situations as expressed in their own words” (1990) According to Zhang et al., unstructured interviews are most valuable when the aim of the research is to gain an in-depth understanding of a phenomenon within a particular cultural context. In addition, when the research paradigm is interpretive in which it is assumed that the reality is socially constructed by the research participants and the aim is to understand their experiences, in-depth interviews are the best method for data collection. (2009) This study is planned based on constructivist research philosophy, and an essential part of it is to understand the experiences of the network participants. Probing questions were used to ensure that the interviewer had understood the meaning of the answer that the interviewee gave (Minichiello et al., 1990). All interviews were digitally recorded, and the recordings were used in the interview analysis to extract quotes.

In total, five interviews took place. Similarly to the focus groups participants, the sample criteria were maximal variation and convenience. The interviewees represented different RPOs from different countries. The interviewees were recruited from the network by sending an invitation to the network members, and the ones who volunteered were then interviewed. All interviews were digitally recorded, and the recordings were used in the interview analysis to extract quotes. Interviews were arranged either face-to-face or using a virtual teleconferencing system.

3.5.4 Analysis Method for Interview data

The interview data were analysed using thematic analysis. In thematic analysis, the aim is to examine the data to identify broad themes and patterns. The strength of the thematic analysis is that it can be used to extract people’s opinions, views, experiences from qualitative data. The research question for the interview is **What kind of challenges public sector organizations face in trying to gain benefits from participating in an interorganizational network?** Because the question focuses on challenges that organizations face, which are experiences, thematic analysis is a suitable choice for the analysis method.

For thematic analysis, there are two approaches: inductive and deductive. In the inductive approach, the qualitative interview data determine the themes of the analysis, while the deductive approach starts with predetermined themes based on theory or existing knowledge and the data is reflected against those themes. For this analysis, the inductive approach was chosen because it fits the research strategy of this thesis.

There is also a distinction between semantic and latent approach. In the semantic approach, the content is analysed through explicit meaning, while in latent approach involves reading the sub-text and assumptions of the data. In this research, the more suitable approach is the semantic one because the interest is in the research participants stated opinions, not in the underlying assumptions and social context.

4. FOCUS GROUP RESULTS AND DISCUSSION

4.1 Focus Group Results

The analysis of the focus group data was done as follows. The data from the tools were combined into two tables. The first table presents what had been gained and what had not been gained (grey cells), and the second table presents which benefits were the most important ones (green cells) and the benefits which the participants would have wanted to gain (red cells). Furthermore, in this chapter, the data is analysed first based on single focus groups, second comparing the answers between different focus groups, and finally, an overview of the results is presented.

4.1.1 Focus Group A

Based on the focus group A's answers the all the benefit categories were gained by at least one focus group participant. However, as illustrated in Figure 13: two benefit categories were gained by only one participant, and the rest of the participant indicated that the benefit was not gained. These benefits were Not my goal and Not my job. In addition, two participants claimed not to have benefitted from contagion.

	Core Goal of the Network Member	Shared Core Goal of the Network Members	Negative Avoidance Goals	Meta Objectives	Managing Unintended Negative Public Value Consequences	Not My Goal	Avoidance of Repetition	Avoidance of Counter Production	"Not My Job"	Organizational Learning	Power Influence	Legitimacy	Contagion
RPO1													
RPO2													
RPO3													
RPO4													
RPO5													

Figure 13: The answers of focus group A

For focus group A, the most important benefit was the core goal of the network member, which everybody agreed to, as illustrated in Figure 14:. Other significant benefits were power and influence, and legitimacy, which were mentioned by two participants each. Other benefits were not seen as important, although they had been gained.

The benefits that the focus group A participants would have gained were managing unintended negative public value and avoidance of counter production. However, only one participant mentioned each of these.

	Core Goal of the Network Member	Shared Core Goal of the Network Members	Negative Avoidance Goals	Meta Objectives	Managing Unintended Negative Public Value Consequences	Not My Goal	Avoidance of Repetition	Avoidance of Counter Production	"Not My Job"	Organizational Learning	Power Influence	Legitimacy	Contagion
RPO1													
RPO2													
RPO3													
RPO4													
RPO5													

Figure 14: The answers of focus group A

For focus group A, it seemed that the benefits that the participants wanted to gain were also gained.

4.1.2 Focus Group B

For focus group B, three out of four participants had gained the majority of the benefits, and one participant marked that four of the benefit categories were not gained, as illustrated in Figure 15. The representative of RPO 7 marked that their organisation had not achieved meta objectives, and the representative of RPO 6 marked that they had challenges in gaining the following benefit categories: managing unintended negative public value consequences, not my goal, avoidance of counter production and organisational learning.

	Shared Core Goal of the Network		Negative Avoidance Goals	Meta Objectives	Managing Unintended Negative Public Value Consequences	Not My Goal	Avoidance of Repetition	Avoidance of Counter Production	"Not My Job"	Organizational Learning	Power Influence	Legitimacy	Contagion
RPO6													
RPO7													
RPO8													
RPO9													

Figure 15: The answers of focus group B

The most important benefit for focus group B participants was the core goal of the network members. Every participant marked this as important. There were three benefits that were marked as important by two participants, and the benefits were: shared core goal of the network members, contagion and organisational learning. The two first-mentioned benefits were important for RPO 6 and RPO 9. Other important benefits which were marked as important by one participant were avoidance of repetition, power and influence and legitimacy.

In focus group B, there were only a few benefits that wanted to be gained but not had been gained. These were power and influence, which was marked by two RPOs and organisational marked by only one RPO (Figure 16).

	Shared Core Goal of the Network		Negative Avoidance Goals	Meta Objectives	Managing Unintended Negative Public Value Consequences	Not My Goal	Avoidance of Repetition	Avoidance of Counter Production	"Not My Job"	Organizational Learning	Power Influence	Legitimacy	Contagion
RPO6													
RPO7													
RPO8													
RPO9													

Figure 16: The answers of focus group B

4.1.3 Focus Group C

For focus group C, there was one benefit that no participant had gained, and it was not my goal, as illustrated in Figure 17. There were three benefits that both RPO10 and RPO13 had not gained: these were avoidance of counter production, not my job and legitimacy. RPO10 and RPO12, on the other hand, had not gained the benefit of organisational learning. In addition, there was one (RPO12) which had not gained the benefit of contagion.

	Shared Core Goal of the Network				Managing Unintended Negative Public Value Consequences	Not My Goal	Avoidance of Repetition	Avoidance of Counter Production	"Not My Job"	Organizational Learning	Power Influence	Legitimacy	Contagion
	Core Goal of the Network Member	Goal of the Network Members	Negative Avoidance Goals	Meta Objectives									
RPO10													
RPO11													
RPO12													
RPO13													

Figure 17: The answers of the focus group C

The most important benefit categories for focus group C participants have shared core goal of the network members, avoidance of repetition, organisational learning, and power and influence, as illustrated in Figure 18. These were mentioned by two participants. In addition, legitimacy and contagion were viewed as necessary, although they were marked by only one participant.

The biggest challenges were in gaining the benefit of avoidance of repetition, power and influence and legitimacy. These were marked by only one single participant (RPO12). Therefore, overall in this focus group, the participants did not have challenges in achieving the benefit categories.

	Shared Core Goal of the Network				Managing Unintended Negative Public Value Consequences	Not My Goal	Avoidance of Repetition	Avoidance of Counter Production	"Not My Job"	Organizational Learning	Power Influence	Legitimacy	Contagion
	Core Goal of the Network Member	Goal of the Network Members	Negative Avoidance Goals	Meta Objectives									
RPO10													
RPO11													
RPO12													
RPO13													

Figure 18: The answers of the focus group C

In focus group C, there are overlaps in benefits that were not gained, which were important, and which would have wanted to gain. These were organisational learning, legitimacy, and contagion.

4.1.4 Comparison between Focus Groups

Both focus group A and B participants agreed that the most crucial aspect of network participation was to get support for achieving the core goal of the RPO. Every focus group participant agreed with this. However, in focus group C, this was not the case. Only one focus group participant in focus group C stated that it was essential to get support for achieving the organizational goal.

Both Focus group A and C generally agreed that the network participation had not focused on doing things that are not necessarily part of any organization’s primary operations. Meaning that there were very few operations that were no one’s responsibility, and yet everyone could benefit from them (not my job). Additionally, external goals imposed on the organisations (not my goal) were not a crucial part of the network operations.

Organizational learning was seen as an essential advantage in focus groups B and C: half of the focus group participants agreed. In contrast, in focus group A where no participant marked it as important. This was also the case for the avoidance of repetition. It seems that overall, the most critical collaborative advantages for focus group A were power and influence, legitimacy and core goal of the organisation. For the focus group B and C, the important advantages varied much more.

It seems that in focus group A, the answers are somewhat similar between the participants, while as in focus group B and C, there is no clear trend. There are several explanations for this. First, the atmosphere in the focus group A discussion could have been less relaxed and open, and the participants might have felt a strong need to agree. Second, the participants who were selected to focus group A could have represented very similar RPOs, and therefore, the answers would be similar.

4.1.5 Overall

According to the focus group data, the benefits that were not gained from the network participation (left as blank in the canvas tool) were Not my goal and Not my job. The overall range of answers is illustrated in Figure 19.

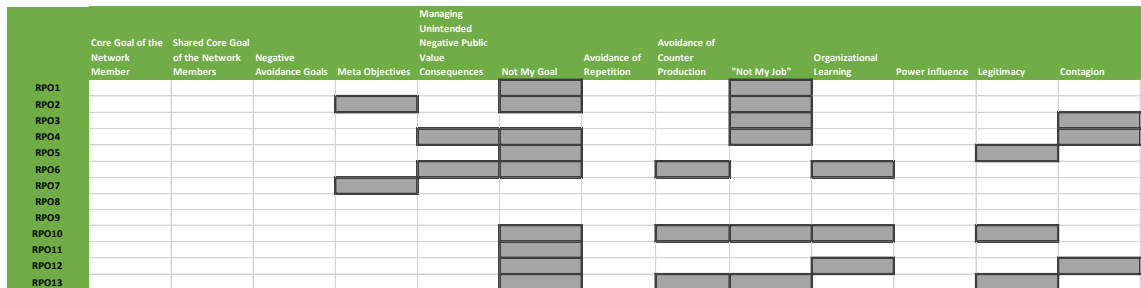


Figure 19: Overall range of the answers of the focus groups

The most important goal that the network members wanted to achieve was the core goal of the network member organization (Figure 20). Every focus group participant, except three participants, highlighted the importance of the core goal of their organization. There were also other benefits that many organizations wanted to achieve. These benefits were power and influence (5 agreed), organizational learning (4 agreed), legitimacy (4 agreed) and the shared core goal of the network (4 agreed). Finally, some benefits were somewhat significant overall for the focus group participants. These benefits were avoidance of repetition (3 agreed) and contagion (3 agreed).

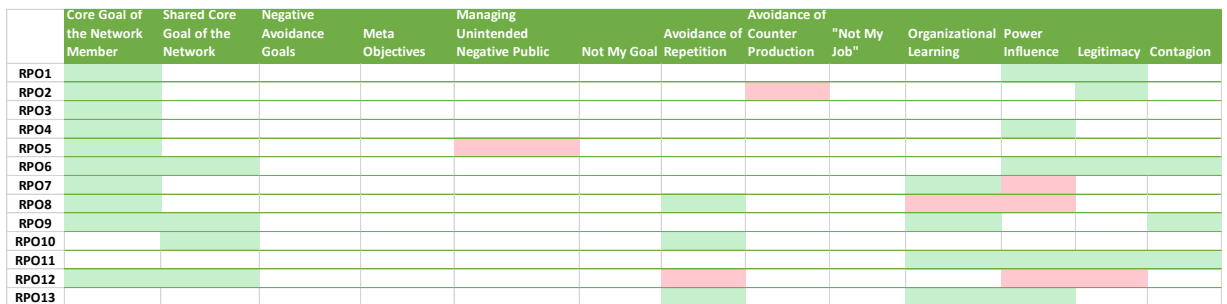


Figure 20: Overall range of the answers of the focus groups

4.2 Discussion

According to the focus group data, the benefits that were not gained from the network participation (left as blank in the canvas tool) were Not my goal and Not my job. In **Error! Reference source not found.**, the unfilled parts of the canvas are marked as grey. This means that the network participants viewed that almost every important activity was handled and taken care of, and thus there was no need to share the responsibility among the network.

However, there were a few answers that did contradict the overall view. One participant wrote 'filling the gaps, volunteering to do the work nobody wants to the Not my job category and during the group discussion, there was a comment 'this is the most common thing in ACTRIS'. Therefore, it seems that this benefit was not achieved because the network participants may perceive that all the work which is done is important and their responsibility, and thus they see the work as "my job" compared to "not my job".

Many network participants had not gained the following benefits: avoidance of counter production, organizational learning, legitimacy and contagion. According to the data, it was three participants in each of the categories who had not gained the benefit. However, compared to the rest of the focus group participants (9 out of 12), it seems these benefits are still possible to gain. The reason why these benefits were not gained can be related to the shared characteristics of the individual network participants because the grey areas in Figure 19 are concentrated on a few RPOs.

Almost all network participants said that the most important goal to achieve is the core goal of the network member. This is supported with the comment from the first group discussions where the participants mentioned that one of the shared network goals was to keep up making the observations and keeping the stations running. This indicates that the network is needed to ensure the basic operations of the research performing organizations. In addition, the fact that many focus group participants left the "not my goal" and "not my job" categories blank support the idea of focusing mainly on the core goal.

The network can be seen as a means to achieve the core goal of the organization. This contradicts the traditional view of an organization where the organization needs to own all the important resources to achieve its main goal. Instead, the organizations rely on resources of other organizations and therefore, it is important to be part of a network to gain access to needed resources such as knowledge and expertise. This is supported by the fact that many organizations agreed that organizational learning and contagion was important. An essential resource for an RPO is its employee's intellectual capacity which is used to create new knowledge through research. Both information and knowledge acquired by organizational learning and mindset and attitude developed through contagion are ways to create new knowledge better.

The core goal of the organization was also the easiest part to fill in in the canvas tool. This might also indicate that the main reason and motive for the organizations to be part of the network is to ensure that their mission or mandate is achieved. All in all, this supports the conclusion that the research performing organizations are part of the network because of the support they can get for the basic operations and achieving their own core goal.

Some of the respondents also marked that the shared core goal of the network members is vital to achieve. In one of the canvas tools, the shared goal was formulated as 'creation of a RI capable of self-sustainability. In another canvas, the shared goal was formulated as excellence and RI (research infrastructure). This indicates that the aim of the network is to ensure the sustainability of the research infrastructure, which again points to the importance of basic operations of the stations.

The answers to the shared goal of the network members, which were marked as not so important, varied a lot. On the one hand, the answers highlighted the importance of science, for example, 'focus on climate analysis in the frame of aerosols and clouds', 'better science' and monitoring and understanding the atmospheric composition change at a large scale. On the other hand, the

answers also highlighted the goal to create common ways of working, for example, 'standards to follow', 'unified measurement methodology and quality controlled and assured data', global kept standards, unified identity and standardization. Thus, the shared goal of the network does not seem to be unified and clear for the network members, which might also explain why it was not marked as important.

The second most important benefit that the network participants had achieved was power and influence. The main gain of the network members regarding power and influence was collaboration and link with the stakeholders and the ability to influence them. As an example, one of the participants mentioned 'helping public policy as a means of influence. In addition, funding, visibility and status were closely associated. This is supported by the following answers: 'central position in the network helps visibility at other levels, local national and also for funding', 'Securing the status of (organisation) and helping operational level, getting funding, especially from the government.' Thus, the network participants seek the network better status and visibility to get funding and reinforce the need for high-quality information in decision-making at the national level.

Additionally, the influence on the activities in the research domain was significant. For example, 'important to be aware of what's "going on" in the research domain', 'You should support all the goals: open science, open access etc.' and 'To make countries and organisations affect open science better' demonstrate the willingness to have an impact on how science is done. This showcases the desire and perceived ability of the network members to develop the research domain.

The power and influence -category was also the one where the participants had the most challenges and concerns. First, the limited resources of smaller partners were a challenge. The issue was not that there would not be a motive to be more involved but because there was not enough resources and money, which then limited the participation. Second, the importance of having a central position was raised up in the answers and in the discussion as follows: 'Central position in the network helps visibility at other levels, local national and also for funding'. The central position was also a challenge: 'we do not have a central position, try and positively support, no pathway for inclusion or encouragement from leadership,' and 'problems smaller partners can often not be in central positions it a lack of manpower or funding is ad-hoc'. Thus, on the one hand, the network members mentioned the need for support (inclusion and encouragement) from the network leaders to participate more in the activities and on the other hand, they mentioned the problem with varying amount of resources (workforce and funding) which affected the participation which then prevented the network members from having a more central position.

Central positions are often associated with power and influence (Nohria & Eccles, 1992; Brass & Burkhardt, 1962). The strategic contingencies and resource dependency approaches posit that power derives from control of the relevant resources. If a network member has a central role in the network, it can better control the information flow and act as a gatekeeper of resources and information. Clearly, the number of resources and the support from network leaders were identified as vital to get a central position in the network in order to influence.

Because the power and influence were both a very important benefit to achieve and the most difficult one, the interview focused on studying more in detail what kind of challenges the network members experience when trying to influence in the network. The interview analysis is presented in the next chapter.

5. INTERVIEW RESULTS AND DISCUSSION

5.1 Interview results

There were in total five interviews, which lasted on average one hour each. The questions discussed in the interview were:

Q1: What kind of challenges research performing organizations (RPO) face when trying to exert power and influence in a network?

Q2: What kind of challenges research performing organizations face when trying to exert power and influence outside of a network?

For the first question in the interview, five themes were deducted from the answers. These themes were representation, size of the network, legacy, country, and most developed research infrastructure.

Many interview participants mentioned several skills, qualities, and experience that the person who represents the RPO in the network should have. In general, it was important for the RPO to choose their representatives wisely. The person should have skills for communicating one's opinions and abilities to direct the discussion to solutions that benefit all. The ideas related to representation are summarized in Figure 21.

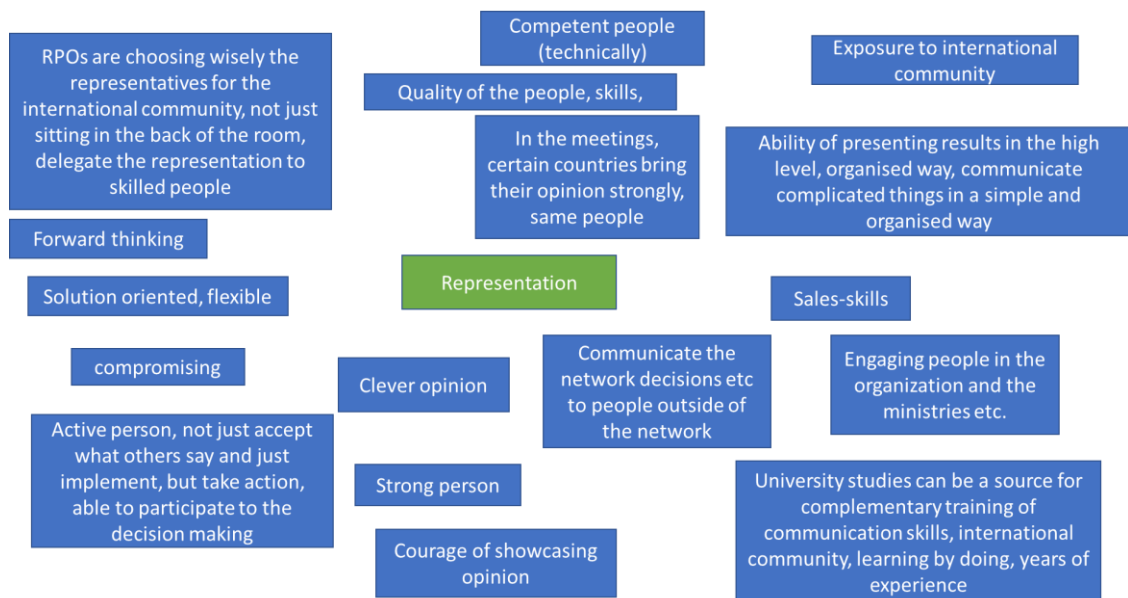


Figure 21: Many of the answers were about the representative of the RPO

RPOs had been part of the network affected the extent of how much influence they had in the network. It seemed that the longer the countries and their RPOs had been part of the network, the more influence they had. This was predominantly related to past projects and their deliverables. These ideas are summarised in Figure 22.

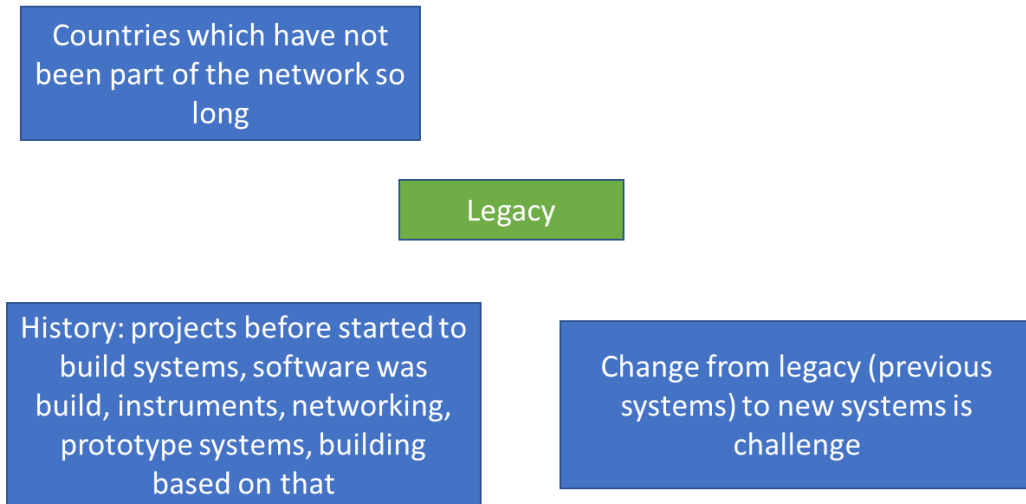


Figure 22: A few answers were about the participation in the network in the past.

Additionally, the country where the RPO was based and the culture and history also affected how much the RPO had influence. Some points about the country’s government, politics and political history were raised. Mainly, how organised and clear the political scene affected how well the network members could communicate their perspectives to the network. These points are summarised in Figure 23.

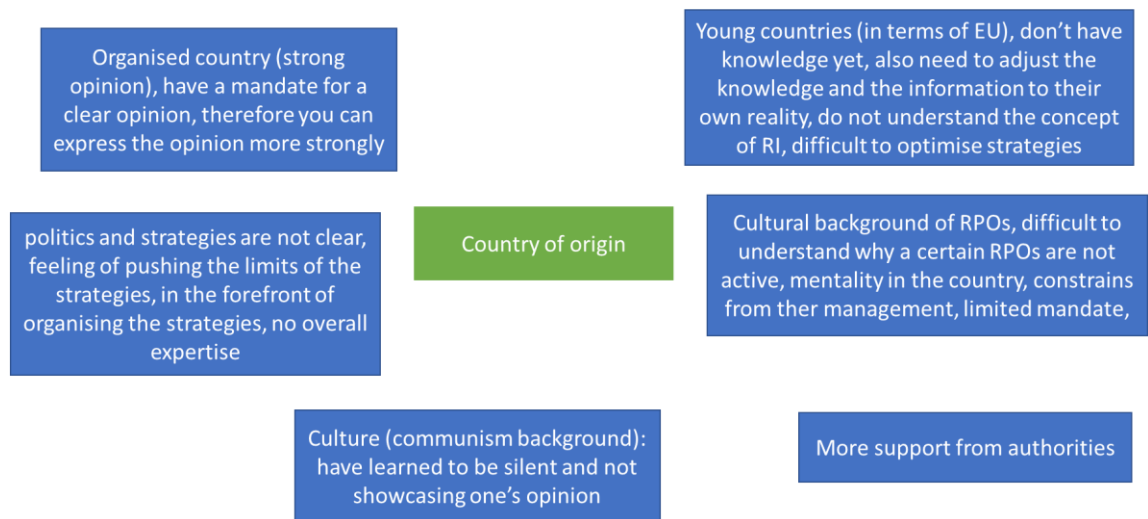


Figure 23: Some aspects about the country where the RPO was based affected how much influence they had

Many interview participants mentioned that the size of the network and how distributed it is makes it difficult to influence. There were some subgroups in the network where the information flew much better compared to the whole network. The participants felt that they could understand what was happening in the subgroup but not in the entire network. It seemed that there were so many participants in the network that sustaining relations with the majority of them or finding the best networking strategy was difficult. The points are summarised in Figure 24.

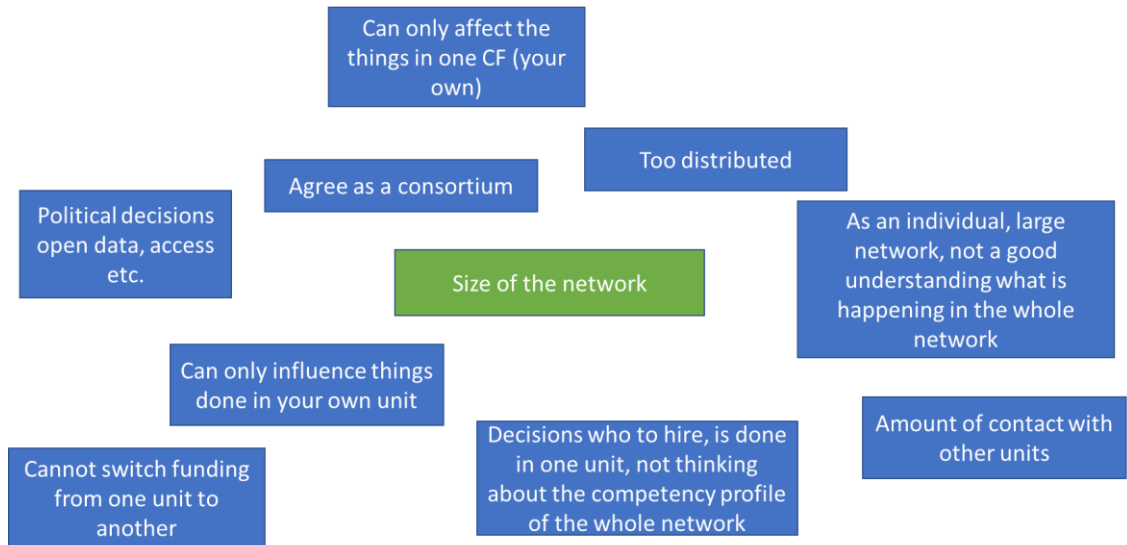


Figure 24: The size of the network had an effect on influencing the network

Finally, the interview participants mentioned that scientific excellence and previous development efforts to the research infrastructure were seen as good status in the network. Thus, it would be easier to influence others. In addition, scientific excellence was regarded as a sign of being an attractive partner for the network. These points are summarised in Figure 25:..Figure 25

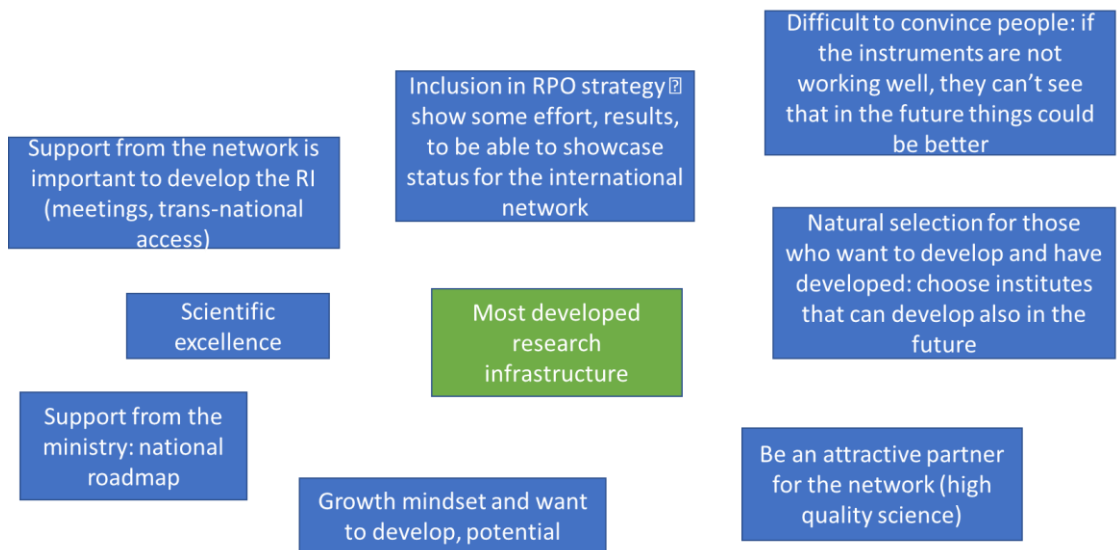


Figure 25: Scientific excellence and willingness to develop were seen as factors that help to influence the network

The thematic analysis of the answers for the second interview question is presented in Figure 26. The second interview question focused on having an influence on things outside of the network.

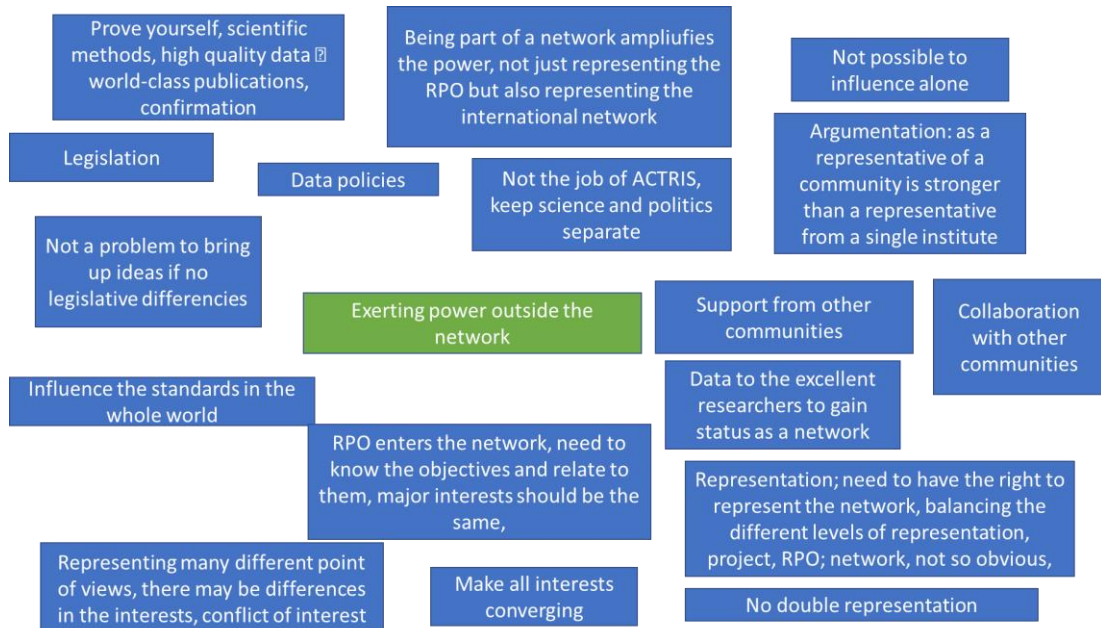


Figure 26: The network can be a way to influence the discussion and decision that are made outside of the RPO and the network.

5.2 Discussion of the Interview Results

The majority of the interview participants claimed that power was not important in a network setting, but the influence, on the other hand, was. All of the interview participants mentioned that the way how things can be changed in the network is through rational persuasion or through status. Power was seen as somehow overruling other network participant's ideas and opinions and forcing the network to comply with their way. However, there were a few cases where power could play a role even in a network.

The network has a long legacy, and there have been many projects where software instruments, prototypes were built and developed. The ownership of these creations can be used as a source of power because the member(s) who own the results have the final word on how it is developed and used in the future. Especially if the creation is later used in a different project, the organization that owns it will be part of the new project too.

5.2.1 Representation

One theme that all of the interview participants were the individuals representing the RPO in the network. One interview participant said

"RPOs should choose their representatives wisely. They (the representatives) should not just be sitting in the back of the room. The representation should be delegated to skilled people."

The interview participants mentioned several skills that the representative of the RPO should have in order to be able to influence the network. In addition, some personal characteristics were also mentioned.

Working with people with different kind of realities and opinions is an experience that people who have been exposed to an international community have. One interview participant brought up that

“university studies can be a source for complementary training of communication skills and international experience.”

In some university's students are offered opportunities to expand their knowledge by going on exchange, participating in other kinds of international activities and taking additional courses on communication. Working with people from different cultures already while studying builds on experience, which is very useful when working in an international network. Therefore, individuals with such experience might be better representatives for an RPO in a network than those who do not have previous exposure to international activities.

When it comes to communication skills, it is important to be able first to understand the topic and then to be able to communicate it verbally or in written language effectively. An interview participant phrased it as follows.

“The ability to present results in the high level in an organised way, meaning that to be able to communicate complicated things in a simple and organised way”

Termeer and Koppenjan (1997) claim that in order to network members to make a decision, mutual perception of the topic is needed. Sometimes the perception of the topic being discussed is different among the network members, which means that interaction and dialogue are required so that the network members adapt their perceptions and form a mutual perception and view about the topic. However, sometimes network members can be fixated on their perceptions, and therefore, they are incapable or unwilling to change their perception. There are ways how perceptions can be managed in a network, and possibly a person who can utilise these strategies is the one who “communicates complicated things in a simple and organised way” as the interviewee put it.

Termeer and Koppenjan (1997) proposed several perception management strategies. Two of them is related to communication: furthering common language and introducing new ideas. The first strategy is about developing a common language. Lack of common language can hinder the discussion. In some cases, if the discussion participant does not know the terms and jargon used in the network, his/her ideas can be ignored completely. Therefore, the person who wants to influence in the network needs to learn the network language and be part of developing it.

The language is developed during the interaction, and therefore, the people who participate in these interactions are the ones who learn the “language of the network” and thus are the ones who can speak it. (Termeer & Koppenjan 1997). This point is supported in the interviews. Many interview participants mentioned that it is important to know who things work, and therefore participation in the meetings is vital. Meetings and conferences are an optimal place to influence because there are many people present and thus, voicing an opinion there will reach much more ears than talking one-on-one. Because the network is socially constructed and the networks behaviour, vision and operations are shaped through social interaction, it is important for RPOs to be aware of this and to see meeting participation as an important way of influencing.

One interview participant also brought up that internal motivation is an important factor. The people who want to know how things work are those who have an open mind, try to understand, are active, and make an effort in reading documentation.

The second strategy for managing perceptions is about organising a confrontation with new ideas. However, an important factor in presenting new ideas is that the new ideas, on the one hand, should not deviate too much from the dominant thinking of the network members and on the other hand, the ideas should deviate enough to shed new light on the discussion topic. (Termeer & Koppenjan 1997). One interview participant raised a point that it is important to make “clever points” in the meetings and discussions. By a clever point, the interview participants most likely meant new ideas or different ways of thinking. Based on Termeer and Koppenjans work a clever point is an idea that does deviate from the previous ideas just enough but not too much.

One interview participant mentioned sales skills as an important skill to have when interacting in a network. Sales skills mean that the representative is capable of thinking the point of view of another network participant and modifying his/her message in a way that showcases that his/her idea will help to achieve the participants' needs or wants. This also requires balancing the unity and diversity aspects of the network. On the one hand, making decisions that the majority of the network participants agree with is important. However, each participant may have different motives to be part of the network, and if the individual needs are not taken into account, the network will not exist for a long time, or it will suffer from a serious loss of members.

The interview participant mentioned that active participation is important in the meetings and conferences and that it requires skill to take part in the discussion. On the one hand, the representatives need to be competent in the topic to be able to make relevant points, and on the other hand, it requires motivation to take part in the discussion. These points were raised by other interview participants. They pointed out that in order to influence the network, it is an advantage if the representative is a technically competent person who understands the topics which are discussed in the meetings. Being able to understand the discussion topic and to be able to follow the discussion flow is an important skill to have.

Another interview participant complemented this point by pointing out that it is important to have the courage to voice one's opinion. The interview participant especially raised the point about cultural background. In some cultures, such as in countries which have communistic history the citizen has been taught to not to state their opinions. This kind of cultural background affects individuals' behaviour and expectations. For example, does the individual expect to be told what to do by another person possibly with higher authority, or does the person believe that he/she can take action on their own and think by themselves. Of course, this kind of tendency might not be the result of a culture, but it can also be a quality of an individual. An interview participant mentioned that a representative should be a strong person. This might mean that the person has the courage to voice his/her opinion and to be proactive, in other words, not wait for someone to tell him/her what /he/she needs to do but think by himself/herself and to take action based on that.

The interview participants also brought up other qualities that the individuals who represent the RPO should have in order to influence the most. These qualities were forward-thinking, solution-oriented, flexible and compromising. The point about being forward thinking means that the individuals should be able to come up with practical ways how the ideas and the vision of the network can be achieved. This is related to being solution-oriented. Being solution-oriented is to focus on solving the problems and challenges and not just complaining about them. These points were summarised by an interview participant who said

“The focus should be in building, not in destroying.”

The points about being flexible and compromising are essential because, in a network, there are participants who can be very different from each other. RPOs can come from very different realities, and thus, they may want very different things from the network and its activities. Therefore, finding common ground is a vital skill that the representatives of the network participants should have.

5.2.2 Size of the Network

In general, the size of the network affects how much an RPO can influence it. Obviously, the number of partners in the network affects how much say one partner has. On the other hand, if the network is large and too distributed, it can be challenging to influence the network. For one interview participant, it seemed that

“The network is too distributed. It is difficult to get a good understanding of what is going on in the whole network.”

Analysing the network composition and the member's position in the network can shed light on why it is difficult for the member to influence the whole network.

In the network, there are groups of participants who interact more together, and it felt to one interview participant that they could only influence the decisions in that specific group. Therefore, there are cliques in the network which restrict the information flow between the members. Relations inside of a clique are dense compared to outside of the clique. Thus, limiting the interaction with the clique members and using the time and resources in building relations with members outside of the clique is a way to increase the influence.

The case network consists of six scientific fields, and each field has its scientific practices. This can mean that the cognitive proximity is high between the members from the same scientific field, which means that information flows better. Maintaining high cognitive proximity with many members can be difficult (Nooteboom, 1999).

From the resource perspective, a member in a network can maintain interaction and relations with only a limited number of members. The connections can be strong and few or many and weak. Therefore, it is vital for the network participants to be strategic with their interactions and to choose wisely the relations which to foster. This can be done by carefully selecting the meetings in which to participate or to be proactive and arrange meetings where these vital relations can be nurtured further. Additionally, utilising broker relationships can be a way of accessing information from other members with no direct ties. This is a resource-efficient way of accessing information because it requires only one relation.

5.2.3 Legacy

One challenge in influencing the newcomers in the network is that the older participants benefit from the legacy of the network. In other words, past projects that the participants had together started to build systems, software instruments etc., and the current projects build on top of the previous project outcomes. The older network participants, who have been making the systems,

have gained experience and knowledge about the systems and own the systems and thus will have a stronger position in the new projects which utilise the previous results.

Change from legacies such as the old systems or instruments to complete new ones is a big decision and therefore not a likely one. However, introducing a completely new idea that makes the existing solution useless can be an opportunity for newcomers to the network. So-called disruptive innovations or ideas are developed by outsiders who are not part of the market (Bower Joseph & Christensen Clayton, 1996). In a network, disruptive ideas can be introduced by entirely new members. Although, change resistance can be a reason why new ideas are not immediately accepted.

5.2.4 Country

Some interview participant mentioned that the country origin of the RPO affected the ability to influence in the network. Five explanations were given. First, some RPOs receive more support from the authorities (funding agencies and ministries) than others. The support can be information, guidance, or trust that the authorities will support the work done in the network. In addition, some countries may have a stronger commitment to be part of the network.

Second, some countries were described to be more organised, which meant that the country had a strong opinion about the topics related to the network. Therefore, the RPO representative would be able to voice stronger opinions knowing that they would have support from the funding organizations. One interview participant raised a point that if the politics and the strategies at the country level are not clear, it creates an insecure feeling for the representative because he/she feels that he/she is pushing the boundaries of the strategies and making decisions that are not theirs to make. In comparison, in some countries, a mandate from the country level was given to a person, which meant that the person had the right to voice opinions and knew what stance to take in discussions. One interview participant elaborated:

“Because of differences in the cultural background of RPOs, it is difficult to understand why a certain RPOs are not active. It can be because of a mentality in a country, constraints from the management or limited mandate.”

Public organizations often get a different type of support from different actors and organizations in their environment. Therefore, managers often have to sustain relations with various external actors and organizations. The networking activity can be directed at political support, bureaucratic coping (understanding the legislation, regulations etc.), and coproduction (scientific community) and different prioritising of the networking resources can lead to differences in the performance of the public organisation. (Torenlvied et al., 2013) Potentially RPOs which have strong relations to authorities and funding agencies and frequent communication with them have more courage in influencing the network.

Third, culture can also play a role in how much people dare to voice their opinions. One interview participant mentioned that people coming from countries with a communistic background have learned to be silent and not showcase one's opinions.

Fourth, the European Union as a working context can be new for some countries and thus, there is limited experience of how things work in the EU context. In addition, the concept of ESFRI RI

is very complex. According to Klijn et al., closedness in a network affects the network interactions and thus also affects the influence that the network participants can have on the network. Moreover, unconscious cognitive closedness means that communication is only possible if the member speaks the language (jargon) of the network. (1997) In order to shape the decisions made in the network, there is a need for understanding the ESFRI frameworks and jargon.

Finally, one interview participant mentioned that the fewer there is RPOs in the country (that are involved in the network), the more power one RPO has. If there is more RPOs involved, there is more competition. If there is only one RPO from the country, there is no need to select a natural leader. Usually, one RPO can have a more dominant position in the country than others, and it might take the leader role in the network inside the country.

5.2.5 Status and most developed research infrastructure

Many interview participants mentioned that status in the scientific community had an effect on influence in the network. The interview participants felt that those who had demonstrated higher-level research and scientific expertise in the field were more influential. In addition, having an excellent track record of results such as publication with high impact factor was an advantage. Some felt that in case there were many network members who had an excellent track record in science, the ones who came from RPOs, which were more “famous”, had more influence than those who came from less known RPOs. People with high status might also have communicative competence: the person can manipulate and exploit norms and expectations and use vocabulary that signal social meaning (Gumperz, 1982). By using internal words or terms that have a solid meaning to a network, a person can demonstrate that he/she is adhering to shared norms and values (Diamond, 1996), and thus, the person may more likely influence the people around him/her.

Status in a network is related to social norms, and expectations and the ones who follow the norms and expectations are more likely to have more influence. On the other hand, high-status people tend to have a more expansive network compared to low-status people (Potts et al., 1994; Smith et al., 2012) and therefore, they can utilise the connections to spread norms and expectations that are aligned with their own personal interests.

RPO representatives who were already recognised attracted more network members, and therefore, their personal network grew more than those who were not recognised. People with high status and large network have a better opportunity to create new norms and expectations. Creating symbols of membership and ideology in a network increases the network members influence (Diamond, 1996) However, if an RPO with high status becomes a network leader, it has the opportunity to design interaction processes that promote participation in the network. In addition, it is in the interest of a single network participant not only to promote their own interests but also to ensure that the interest of the whole network is considered.

The national research infrastructure (stations etc.) and how developed it was, was a way of showcasing status to the network participants. Both the (national) research infrastructure and the high-quality science was seen as a way to promote the RPO as an attractive partner for the network.

Finally, it seemed that there was a feeling not been accepted, no trust in one’s value and no feeling of being powerful among some network participants. One interview participant explained:

“It is difficult to convince people. If the instruments are not working well, they can’t see that in the future, things could be better.”

To summarise, there were feelings of hopelessness. This raised a feeling that there could be a strong status quo in the network and that the network participants who were already influential and had status would also continue to have it in the future. Participants with less status and less developed research infrastructure had difficulties in influencing and developing status.

5.2.6 Exerting power and influence outside of the network

The second topic which was discussed in the interviews was how RPOs could exert power and influence outside of the network. This means that an RPO could affect things happening outside of the network by using the network as a means. In this case, the network could take part in the discussion, for example, about open data, policies, climate change and air quality at the European level. The majority of the interview participants supported the assumption that the network should affect things outside of the network; however, one interview participant claimed that this should not be the case. In other words, the interview participant stated that politics and science should be kept separate.

One interview participant gave an example that being part of a network can support the argumentation: stating an opinion as a representative of a network is stronger and stating an opinion as a representative of a single RPO. Another interview participant backed up this point by stating that being part of a network and not just representing the RPO but also representing the international network amplifies the influence. In addition, one participant stated that it is impossible to influence alone. If there is a need to take part in the discussion about regional or global topics, a network’s voice is louder than an individual’s voice.

There were two main challenges regarding the network trying to influence the external world around it. First, the network participants need to agree on the shared opinion of the matter that they want to share. An interview participant explained that when an RPO enters the network, it needs to know the objective and relate to them, in other words, major interests should be the same among the network participants. If the network participants cannot agree on a stance about a topic, they can’t voice the opinion.

Second, the network itself does not influence, nor an RPO but influence is done in practice by the representative of the network or the organization. One interview participant pointed out that the network can’t truly influence unless the network members have the right to represent the network. So, in order for the network to voice its opinion, it needs to have individuals who talk for it. This was challenging in the case network because individuals who were part of the network also represented an RPO. Therefore, if they would voice an opinion, would they talk on behalf of the RPO or the network. This would be a problem, especially if the interest of the RPO and network would not be completely aligned. In addition, the individuals might also have other roles, which makes the representation issue more complicated.

There are several interest levels in the whole system: the individual (what the individual thinks), RPO level (what is best for the RPO), country-level (what the country wants to achieve), project (the work in a network is done in a project form). Diamond explains that interaction strategies in a network range between two poles: self-assertion and group preservation. The individual furthers his/her own rank at the expense of others, and the individual furthers the groups (identity and

membership) at the expense of his/her individual rank. (1996) However, in the case network, it seems that the situation is more complex because there are more groups (RPO, country, project etc.) that the individual is part of. Therefore, he/she needs to ensure belonging to all of the various groups constantly.

6. DISCUSSION AND CONCLUSIONS

The benefits of interorganizational collaboration are many folded. As the extensive theoretical background states, there are many ways how organizations can achieve collaborative advantage. This research studied what was the collaborative advantage that the network participants had gained and what the network participants thought was most important but difficult to achieve. Almost all network participants agreed that the most important goal to achieve is the core goal of their own organization. It seems that the primary motive for participation in an interorganizational network is to find external resources which can be used in improving the primary operations of the organization. The second most important benefit that the network participants had achieved was power and influence. The power and influence -category was also the one where the network participants had the most challenges.

The challenges regarding exerting power and influence in the network were five folded. First, representation was an important factor. The representative of the RPO had to have skills, attitude, and experience so that influencing was easy and effortless. Especially understanding how to manage perceptions in a network and knowing the language and jargon of the network is vital. From the managerial perspective, it is important to choose skilled people to be the representative of the RPO or to ensure appropriate training. Influencing in the network had several links to communication and discourse. Therefore, arranging training for network representatives in communication and public speaking may be beneficial.

Second, the case network was very distributed and therefore influencing the entire network seemed difficult for some participants. In this case, it can be important to be able to clearly define what the RPO wants from the network and prioritize network participation appropriately. Additionally, creating more awareness of the importance of network participations and what is needed in terms of resources in order to gain collaborative advantage from network participation is crucial.

Third, past network participation affected the present network influence. It was easier for the network participants, who had already a legacy in the network, had participated in projects and fostered relations with other participants to influence the network. Therefore, it is vital for RPOs to view network participation as a strategic decision and a long-term commitment. Fourth, the country where the RPO was based had an effect on how easy it was to influence. The characteristics of the country and its history were brought up. Finally, the status of the RPO and its representative impacted the influence in the network.

6.1 Limitations

This chapter describes the limitations and difficulties of the characteristics of the current study's methodology, which may impact the interpretation of the results. In this chapter, the concepts of reliability and validity are important. Reliability means the extent to which the results of the research can be reproduced by repeating the research under the same conditions. If the context and the research method are the same, the results should also be the same. Validity means the extent to which the results measure what they should measure. If the measure does not provide

information on the studied topic, the information is incorrect, and the research results cannot be trusted.

6.1.1 Limitations of Time Horizon

The limitation of the time horizon of this study relates to reliability. The results are reliable if they are consistent across time, i.e. are the results the same when the data collection is repeated. However, in a cross-sectional study, this is not likely the case. The research results describe the reality in one moment, and thus, the results cannot be generalised across time. In this study, it is important to note that when the network activities change, the activity level of the network participants change and the network level operation evolve; the gained benefits are also likely to change, and also the challenges which the network participants face are likely to change. In addition to the changes in the network itself, the environment where the network operates can also change, which will affect the network, its vision, operations and members.

6.1.2 Limitations of Case Study

The primary limitation to the generalization of these results is the case study approach: the case study approach allows an in-depth investigation of a phenomenon in a particular context. The limitations of the case study approach are three-folded. First, Yin (2003) identifies three tests applicable to descriptive case studies to establish the quality of empirical research. They are constructs validity, reliability and external validity, which is also called transferability.

Construct validity means identifying correct operational measures for the concepts being studied. If a sufficient operational set of measures are failed to develop, it leads to subjective judgement and biases in data collection. (Yin, 2003) In this study, construct validity is especially important in the focus group method. The research participants were asked to describe in each benefit category what they had gained from the network participation. The explanations of each benefit in the canvas affect whether the data collected is valid or not. For example, one of the benefits was avoidance of repetition. It was elaborated in the canvas as follows "organizations can avoid duplication of activities or processes through collaboration." If the explanation and the benefit were not understood by the focus group participants, it would have affected the validity of the data.

This risk was managed by asking the focus group participants to write down to the canvas what kind of benefit they had gained instead of using a multiple-choice (yes/no) answer sheet. In addition, the explanations were taken from the literature, which enables an insight into the focus group participants thinking, and thus the quality of the answers could be validated. In order to further increase construct validity, the canvas tool could have been reviewed by someone to ensure that the explanations are clear and understandable by those who are not familiar with the literature. Also, utilising multiple sources of evidence is a way of increasing construct validity () For example, asking more than one person in the organisation to contribute to the filling of the canvas would have contributed to the construct validity.

External validity refers to the transferability of the results. In case studies, this is problematic because it studies a phenomenon in a specific context and thus, if the context changes, the results might not apply. The network which is studied is greatly affected by the European Commission and the working groups. Because the network will become an ESFRI (European Strategic Forum of Research Infrastructures) research infrastructure thus, it will have to be aligned with the requirements that the ESFRI working groups sets. This means that if the research organizations

would exist outside European Union and the research infrastructure would not be guided by ES-FRI, the network would operate in a different societal, political environment, and then the results of the research might not be applicable.

Reliability means demonstrating that the operations of the case study can be repeated, and the same results are produced. Because the research is a case study of a social phenomenon (inter-organizational network) that has a unique context (ESFRI research infrastructure) it is very difficult to reproduce the results of the research. The network which was studied evolves and develops all the time, and the context where it operates is heavily affected by the societal, political and environmental situation and, therefore, even though the exact same research methodology would be used, if the context were different, the result would be different too.

6.1.3 Limitations of the Research Choice

As with the majority of studies, the research choice of the current study is subject to limitations. Arora proposes three criteria for describing the limitations of qualitative research. These criteria are credibility, dependability and confirmability. (Arora, 2015)

The credibility of qualitative research means ensuring that the results of the research are credible in the eyes of the research participants. Moreover, because the purpose of qualitative research is to understand the phenomena, the participants perspective is crucial for credibility. (Arora, 2015) The research was done in close collaboration with the network itself, and thus the researcher was not an outside observer. Both the focus group method and interviews rely on the input of the network members. Thus, the network members perspective was at the centre of the research methodology, and thus the research could be considered credible. In addition, previous experience in working for the network helped the researcher to have insight into the case network and to better understand the perspective of the research participants.

Dependability of qualitative research means the need to account for the changes in the research context. The changes which occur in the setting and how these changes affected how the research was done. (Arora, 2015) The research process started with very wide definitions and theoretical background, and the research topic was heavily influenced by the research participants. For example, the benefits of interorganizational collaboration were studied from various theoretical perspectives, and the focus group participants had an important role in defining the most important benefit, which should be studied more in detail was. This kind of openness increases the dependability of the research and is important when studying a phenomenon that is socially constructed.

Confirmability of qualitative research means the degree to which the results of the research can be confirmed by others. (Arora, 2015) The level of confirmability in this study is low since the research was done by a single researcher, and therefore, the results of the procedures could not be confirmed by other researchers. However, some attempts to increase confirmability were made. First, using a multimethod in the case study helped to gather qualitative data. Second, in the discussion chapter, negative instances which contradict the research results were described. Third, the data collection and the analysis procedures were done in accordance with the research methodology literature.

6.1.4 Limitations of Data Collection and Analysis

The findings of this study have to be seen in light of some limitations.

Reliability of the focus group data was ensured by having clear written instructions for the participants and providing the same instructions to all focus groups. However, because there was only one responder for each RPO, there is no way to ensure that another person from the same RPO would have answered in a similar way to the canvas tool used in the focus group sessions. If there had been more resources, it would have been beneficial to have more than one representative from each RPO in different sessions.

The validity of the focus group data is highly affected by the canvas tool. It is unsure whether the focus group participants understood the headings of the canvas tool in an intended way. If the heading were not understood well, therefore, the canvas tool did not help to gather the correct information. However, because there was a group discussion, the participants had a chance to reflect on their answers. The researcher was able to hear the participants' thoughts and clarify if something was unclear.

The reliability of the interview data was somewhat good due to clear interview questions, interview protocol and recording of the data. However, because the interview had a very loose structure, it can be difficult to reproduce the same results. In addition, because there was only one interviewer, the information which was gathered and analysed can have biases compared to if there would have been more interviewers present.

Construct validity means whether the data which is gathered can be confirmed with other sources of information. In this research, triangulation of information sources was not used, and therefore the construct validity is poor. In the focus groups, as mentioned before, there could have been more participants per RPO, and in the interviews, the answers that the interviewees gave could have been confirmed from other interview participants.

The validity of content means the extent to which the measure covers all different aspects which are closely associated with the concept. In the focus group session, the validity of content was somewhat poor because there was only one way of measuring each benefit category, and the explanation of each benefit category was concise and did not allow different interpretations. On the other hand, the group discussion provided an opportunity for discussing different interpretations of each benefit category. In the interviews, the validity of the content was somewhat good because the loose nature of the structure of the interview questions allowed the participant to answer the question from different perspectives.

The main limitation of data analysis is that it was done by a single researcher who is involved in the network. This creates a bias for interpreting and analysing the data. Thus, the results of the analysis could have been very different if it would have been done by an external researcher.

6.2 Future Research Ideas

There are number of gaps in the knowledge about network and collaborative advantage that follow from our findings and would benefit from further research. First, the cultural aspect was brought up during the interviews. It seems that culture may have an effect on how easy it is to influence the network. In the future, it could be interesting to conduct comparative studies of public organisation networks in different cultures. Second, similar network participation strategies may

not work for all network participants. It could be also interesting to study more in-depth the networking strategies that RPOs use and evaluate what kind of strategies work the best. Third, studying network position-specific strategies could be helpful. For example, it could be useful for a network member who does not have a central role in the network to know what kind of strategy they could use to become a more central “player” in the network.

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