Innovation networks in the public sector

A literature review on barriers and opportunities for innovation networks for public organizations

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Abstract

Engaging in innovation networks have been proven an effective way of gaining valuable insight and external knowledge to fuel the innovation process of organizations. While different types of innovation network strategies have been developed and applied to different kinds of context and organizations, there is little known on how public organizations can effectively apply these strategies. This thesis therefore aims to synthesize a literature review, focusing on how public organizations organize themselves in terms of innovations and collaborations. By tracing what is known of innovations and innovation networks in public organizations, this thesis seek to explore the preconditions for innovation network strategies in the public sector and provide insight in future effect and development of innovation networks in the innovation process for public organizations. The findings show that public organizations have many contextual and cultural factors negatively affecting their ability to be innovators. Although, a combination of a non-focal actor role with developing a platform where the public organization act as focal actor, can achieve many of the desired goals for public organizations to become more innovative and effectively engage in innovation networks.

Keywords: Public sector, public organizations, innovation, innovation network.

1. Introduction

Much of recent research focusing on innovation and organizations innovation capacities have moved from focusing on single organizations and instead looking at organizations from a network perspective (Corsaro, Ramos, Henneberg & Naudé, 2012). This shift from looking at single organizations and their innovation strategies to studying different types of collaborative clusters of a wide variety of organizations stems from the idea that external knowledge is highly valuable in the innovation process (Chesbrough, 2003). This means that organizations have to move beyond their own comfort zone and search for input from other external sources and that innovating is more of control and management of network, rather than spending money on internal R&D (Corsaro et al, 2012). The collaborative setting is therefore something that have gained increased interest in research, where benefits and potential barriers and challenges have been empirically investigated. For example, collaboration can reduce the amount of time and resources spent in the innovation process for the single firm as well as spreading the risks from one organizations to many (Ritter & Gemünden, 2004). Although, technological leadership and first to market have been proven successful business strategies, lack of competence in managing networks is negatively correlated with innovation success (Ritter & Gemünden, 2004). Looking at the swift development in technology and the shift on the market, it is clear that organizations need to be aware of external resources as highly valuable in the innovation value chain; hence new business strategies needs to be developed, from closed innovation to open innovation (Ritter
On the one hand, this also means that external sources need to be continuously explored and moving from the organizations own field of operation into other fields can be fruitful (Goerzen & Beamish, 2005; West & Gallagher, 2006).

Furthermore, in collaborative settings, diversity can be both a strain on the including parties but it can also be a foundation for novel innovations if handled and exploited properly (Sandberg, Holmström, Napier & Levén, 2015; Goerzen & Beamish, 2005). In this regard, the combination of particular fields is not the explaining factor for benefits of diversity but it is rather about the combination of different field itself that is the essence for generating innovations based on knowledge from different fields (Levén, Holmström & Mathiassen, 2014). How to handle diversity in complex settings have been addressed, however not in the light of public organizations which is made up of diverse network of a consumers, such as citizens and private companies and different actors in the public sector. In this regard, another important issue in terms of managing innovation networks, it also brings forth the question of which strategy is best suited for different organizations. What is best suited for the organization, if it is being at the center of the network or at the peripheral, research on innovation network have come up with two different perspectives (Selander, Henfridsson & Svahn 2013). One such perspective highlights the organizations ability to be the focal point of the network, meaning that they should act as the enabler and thus orchestrating the ties and goals of the network (Eaton, Elaluf-Calderwood, Sørensen & Yoo, 2011). This mean that the notion of the focal actor highlights the specific organizations ability to recruit, lead and maintain the network so that all participants feel that they have something to gain and in the end, reach the same goals (Shah, 2006; Bengtsson & Ågerfalk, 2011). Full attention and commitment is hence usually spent on a single innovation network in order to foster it and to make it prosper. Control and governance is therefore crucial to ensure that establishing lots of resources and time on a single network is resulting in valuable insights (Eaton et al. 2011). Another perspective puts the notion that organizations do not have to be a focal actor to gain value from networks, but instead they can spend time and effort in multiple networks. This type of strategy enables organizations to diminish the risk of long-term relationships not providing the expected outcome (Selander et al. 2013). However, these different types of perspective is suited for different kinds of organizations, depending on their constitution and business processes. This however, does not mean that one perspective is better than the other or that organizations must commit themselves to one strategy. Instead, the same organizations can be a non-focal actor in one or many networks and still be able to create their own network as a focal actor (Selander et al. 2013). In the end, depending on how organizations manage their network setup and what type of role they see themselves in, it is reflected in the organizations perceptions of the network and what type of desirable outcome they want from engaging in this network.

Examining the research on innovation network, it is evident that much focus has been directed towards private organizations and their management and strategies for becoming more innovative and increasing the success of their innovations. Not much have been directed towards the public sector and their ability to engage in innovation networks and which type of strategies are best suited for them. Hence, there is a gap in the research where
the public sector have been left out. Many organizations in the public sector will gain much from becoming more innovative, resulting in better and more effective services for all consumers of public goods. Hence, this thesis aim to fill this gap and seeks to identify a brief pathway for how public organizations can become more open and better at utilizing external resources in their innovation processes. My research question is therefore: What are the barriers and opportunities for the adoption of innovation networks within public organizations and what is the potential role of IT?

To answer this question I will conduct a literature review on existing research on public sector innovations and collaborations. The goal of using a literature review is to synthesize what is known about public sector and their barriers and opportunities they are facing when it comes innovation networks and innovations, and from there identify a pathway on how innovation networks can be adopted for public organizations. Because literature in the IS field regarding public sector innovation is somewhat limited, research in other fields regarding public sector innovation are used. These fields are political science and public management, but they all highlight IT as an important factor.

1.1 Layout

The lay out of this thesis begins with a review of existing research on important factors for innovation network, such as diversity, followed by a description of different strategies for innovation networks. After related research comes a section describing the method used and how the data was extracted and analyzed. The next section is the result section describing the findings of the analysis. Finally, the results are discussed in relation to existing research and a potential future for research as well as how public organizations can manage innovation networks is proposed.

2 Related research

The essence of innovation networks rely heavily on the idea that external resources are beneficial in terms of creating and generating new types of innovations (Chesbrough, 2003). A shift from internal R&D expenditure towards managing and mobilizing resources outside the organizations boundaries is therefore crucial for picking up new knowledge from external sources (Corsaro et al. 2012; West & Gallagher, 2006). Innovation success is therefore not only being at the forefront of technology, but also having the ability to exploit external ties with different actors (Ritter & Gemünden, 2004). Moving from the comfortable boundaries of ones own context, tapping into the the vastness of other domains where external sources can spark new ideas for innovations is therefore crucial for successful innovations (Ritter & Gemünden, 2004). In relation, this notion highlights the interaction and management of ties with external partners, something which in itself comes with many different challenges, such as establishing trust and managing complex negotiations (Levén et al. 2014).

Trust is crucial for sharing knowledge and to establish a sense of security for participants, and to ensure that others will meet their expectations and commitments (Scott, 2000). Although, IT has the ability to remove time and space issues when it comes to handle communications between participants, face-to-face interaction are often needed to establish
stronger ties towards each other. Therefore, trust is a factor that often needs to be established via social interaction, especially at the early levels of the collaboration since trust needs to be established towards each other, and not only in the network (Scott, 2000; Westergren & Holmström, 2012). For public organizations, establishing trust with external actors such as citizens can be hard to accomplish with social interaction, because it would require too much time and effort to interact face-to-face to such a large population. However, as (Bélanger & Carter, 2008) argue, establishing trust in government based e-services can be achieved with high level of awareness of citizen skepticism towards e-services, such as mistrust towards the Internet. Transparency is a way for making citizens trust the public organization itself, and it paves the way for establishing trust towards using e-services. Collaborating with well-known private actors, can help achieve a better perception of public e-services (Bélanger & Carter, 2008). This mean that public organizations needs to investigate potential ways to establish trust towards many different external actors, and hence diversity needs to be managed effectively. Diversity is hence an important factor to consider and trust needs to be manged in a network with many different actors. In today's society where cross-industry innovation networks are becoming more common, diversity can be viewed as beneficial but also as a potential obstacle for novel innovations (Sandberg et al. 2015; Goerzen & Beamish, 2005). However, a diverse and well-managed innovation network, in terms of strong commitment and negotiation, can yield a high degree of innovativeness (Sandberg et al. 2015). In relation, Sandberg et al. (2015) argue that

“the more innovation networks are able to discover and exploit opportunities, the higher the performance of the network. In particular, network relationships can be both beneficial and detrimental to the discovery and exploitation of opportunities. The effect depends on the configuration of openness, trust and mechanisms for knowledge transfer." (Sandberg et al. 2015:63).

The potential benefits for organizations in innovation networks is that it can help reduce costs for exploring and testing new innovative process and products, in ways that was previously unexplored due to not having access to knowledge from different fields (Levén et al. 2014). This means that interacting with other organizations and going beyond the organizations own field of operation, could help achieve better innovations in terms of a wider range of knowledge, generated by a diverse network. In relation, Levén et. al (2014) argue that the potential increase in innovativeness is not a result from the combination of some particular fields, but rather from the consolidation of knowledge shared across different fields.

On the one hand, diversity can be fruitful for shared knowledge across contexts, but on the other hand it could also result in hindering the sharing of knowledge, if not thoroughly considered upon (Brown & Duguid, 2001). Since outsourcing mean that previous knowledge of that particular technology is no longer part of that organization, knowledge production and the ability to coordinate is therefore more critical. This means that that generating stable connections to other parts of the network become more important; to be able to capture a
broader range of knowledge production. Organizations must therefore consider the external input when they develop local solutions to their problems throughout all parts of the organization and not allocated to a specific person or department (Brown & Duguid, 2001).

2.1 Types of innovation networks

In the light of these claims, innovation networks can benefit from relying on diversity but another important feature is how the network is perceived. As Selander et. al (2013) argue engagement in innovation networks is not an option, but rather a necessity for individual organizations if they want to fully cultivate themselves in innovations. Therefore, understanding the underlying role of individual organizations in the network is needed to better help capture the different types of roles actors can have. Focus have often been towards how a network is governed and upheld and where the driving force from this network come from and how and where knowledge is extracted. Because of this, research on innovation networks, the leading organization or the focal firm has been the most dominant research subject. However, recent research has begun to highlight the importance of non-focal actors, which does not aim to control and maintain a specific innovation network but rather make use of multiple networks. Hence, I will describe and present two different research perspective regarding innovation network strategies: focal actors and orchestration of a innovation network, non-focal actors and multiple networks.

2.1.1 Focal centered networks

As a focal actor, focus lies on a specific firms ability to govern the network and their dedication to uphold and maintain other actors and the feedback generated throughout this network. Furthermore, a focal actor is the main focus and the main driving force of the network and much of time, resources and efforts are put into maintaining the stability of this network (Eaton et. al, 2011). Therefore, an focal actor often become the owner of the network and must exercise control and have some sort of authority over this network. (Eaton et. al, 2011). Control and property rights needs to be established throughout the network, to secure trust and continuous prosperity to develop a sense of fairness (Shah, 2006). Hence, the overall usefulness as well as survival of the network is dependent on one single actor to fuel the participation of other actors (Bengtsson & Ågerfalk, 2011). Furthermore, all participants in the network rely on the focal actor to reach the goals of the network which makes the focal actor the dominant factor. If the focal actor cannot convince other participating actors of the usefulness of the network, instability will most likely occur and the prosperity of the network is at stake (Bengtsson & Ågerfalk, 2011). Thus, focal actors do have an opportunity to steer the direction and the flow of resources and knowledge within the network, ultimately leading to focal actors ability to chose the types of innovations created (Perks & Jeffrey, 2006).

The potential benefit from creating and controlling the innovation network also poses some serious challenges. For example, the level of control and engagement needs to be balanced in order for the innovation network to thrive. As argued by Perks and Jeffrey (2006) too little involvement will most likely lead to a loss of control, and too much will most likely impede on the innovative capabilities of actors within the network. Also, strict and highly
governed networks relying on too much control will most likely lead to less innovative behaviors of network partners. This also means that sharing of intellectual property and knowledge is crucial, the balance between too much and too little is impeding on competitiveness on the one hand and innovativeness on the other (Perk & Jeffrey, 2006). In relation, incentives for following the “lead” also needs to be established in order to ensure the participants wants to stay in the network; they need to see some sort of reward for spending time and resources in the network. Concluding the challenges and potential benefits for focal actors in innovation networks, there is much to be gained from successful networks but they require much knowledge, time and effort to orchestrate. A potential barrier for focal firms is related to having too strong ties to the participating actors within the network. As Capaldo (2007) argue, having strong ties often indicate a strong yet small network and as a result diversity often does not exist. An implication of lack of diversity makes the network tied and locked in on certain knowledge and technology and hence not aware of different angles from others outside the network. Thus, the power of collaboration with other organizations is therefore not fully exploited, since strong ties often makes the network homogeneous and the participants cannot fully be explorative (Capaldo, 2007). Even though strong ties yield more benefits for the focal firm, a dual network consisting of having both strong ties to few organizations and weak ties to many, will allow the focal firm to fully exploit the network. Thus, focal firms needs to handle diversity in order to be fully innovative and managing strong and weak ties is therefore something that needs to be present when developing a network strategy.

2.1.2 Non-focal actors

Another stream of research regarding the role of organizations have in innovation networks, non-focal actors is another concept explaining how innovation networks can be viewed and profitable for organizations. Against the backdrop of focal actors in innovation networks, Selander et. al (2013) argue that non-focal actors are positioned at the periphery of the network, compared to focal actors who usually can be located at the center. This mean that the network is not dependent on non-focal actor in terms of sustainability and the survival of the network. This also means that non-focal actors generally do not seek strong long-term relationships and hence do not invest lots of resources and time in one network, instead focus lies on extension. Thus, a benefit from being a non-focal actors is that engagement in many networks can be established and therefore extending the potential resources gained from these networks to fuel the innovativeness of the organization (Selander et. al, 2013).

Furthermore, leaving networks and joining new ones is a strategy that allow non-focal actors to ensure that not too much resources and efforts are put into networks that does not yield profitability in terms of innovation capabilities (Selander et, al. 2013). In essence, this means that non-focal actors search for membership in already established networks. Since non-focal actors lack control it is imperative that they engage in multiple networks, since they cannot steer the direction to a desirable outcome. Hence, they must adopt what Selander et al. (2013) calls capability search and capability redeem. Capability search refers to “a firm’s activity of locating external capability deemed valuable for extending its innovation habitat”
In relation, capability redeem refers to “a firm’s activity of cultivating its innovation habitat with external capability for developing, distributing, and/or monetizing its products and services” (Selander et al, 2013).

A challenge for non-focal actors is the balance between investing the right amount of time and effort in each innovation network. Too much time, effort and involvement can make a non-focal actor stuck and locked in and if the network loses its momentum, they will exposed to a unfavorable self-reinforcing circuit. In relation, too little involvement and too much of distribution across networks can cause the innovation incentives becoming fragmented, where internal resources cannot comfortably handle all incentives (Selander et al, 2013). Another challenge is, similar to managing different types of organizational ties in focal networks, non-focal actors must also ensure that they contribute continuously to the flow of knowledge within the network. In order for them to gain entrance and to stay within a prospering network, it is crucial to establish trust towards others, without being at the actual center of the network. However, when trust is established in an open innovation network, trust between technology and peoples need to conjoin. A precondition for organizations to trust the more concrete parts of the network, i.e. the information or material such as different kinds of technology being distributed, trust must be established socially within the network (Westergren & Holmström, 2012). A non-focal actor must therefore ensure that trust is established through social interactions before relying on other types of communication channels via the use of technology (Westergren & Holmström, 2012). Thus, a challenge for the non-focal actor is to create ties that ensures trust to the network as well as the individual organizations, meaning that both aspects of trust needs to be mutually developed in order for the non-focal actor to effectively gain valuable insight from the network (Westergren & Holmström, 2012).

2.2 Summarizing

Summarizing these two perspectives in existing research, we find that they are different but this doesn't mean that one organizations have to rely solely on either being a focal or a non-focal actor. For example, one organization could be a focal actor in one network and a non-focal actor in another network. However, these roles require different strategies to operate effectively and in the end the they are used to reach different goals. A focal actor depends on control and governance to steer the direction of the network while a non-focal actor aims to gain valuable insight from the network without affecting the direction of the network. This also mean that organizations must consider what type of input they want in order to maximize the effectiveness of role they have in the network. If the goal is to create a sustaining network where it is important for the organization to influence the direction of the network, a focal role is desirable. If the goals is to gain input from multiple networks which are thought to have a generated interesting insights and holds valuable knowledge for future innovations, a non-focal role can be more advantageous. Also, one must also have in mind that they both have different drawbacks and challenges related to them. Focal actors needs to invest more time and resources while non-focal actors must have the ability to asses in time
whether or not the network will be beneficial or not - Figure 1 summarizes the two research streams.

Table 1. Research streams on two different types of innovation network strategies

<table>
<thead>
<tr>
<th>Research stream</th>
<th>Definition of roles</th>
<th>Example references</th>
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| Focal actor     | The ability to govern and control a specific network in order to stimulate the flow of information and knowledge that fruit new types of innovations. | • Eaton et al. (2010)  
• Shah (2006)  
• Bengtsson and Ågerfalk (2011)  
• Perks and Jeffrey (2006)  
• Capaldo (2007) |
| Non-focal       | The ability to exploit innovation networks from the periphery, making use of multiple networks to broaden the external flow of knowledge into the own organizations | • Selander et al. (2013)  
• Westergren and Holmström (2012) |

3 Method

The proposed method consists of two stages, review and search stage and coding and analysis stage. This section consists of a brief review of literature review and then a description about literature reviews in the IS field and a description of how the review and coding was conducted.

3.1 Literature review

To tackle the issues and challenges public organizations are facing when it comes to innovation and innovation networks, I will conduct a literature review to map out important concepts and patterns that previous research have found important when it comes to innovation process withing public organizations. However, the literature on innovation networks for public organizations which moves beyond trust and control issues and more specifically targeting the role of public organizations in innovation networks are fairly limited. This also brings forth a challenge, lack of research in the IS field targeting public organizations and innovations. However, relevant literature can be found in other fields that can be fruitful and applicable to the IS field (Webster & Watson, 2002). Therefore, by reviewing the topic of innovations in public organizations, this thesis can help capturing the concepts previous research in innovations in public organizations have generated and propose a future for the role of public organizations in innovation networks. Furthermore, Webster & Watson (2002) argue that the youth of the IS field is the result of few theories emerging in the field itself, most likely it is the case that most theories are copied from other
fields and then molded and shaped into the IS field. Hence, literature reviews are a key factor in strengthening the IS field in its own (Webster & Watson, 2002). From this backdrop, this thesis will make use of relevant literature in order to understand the impact of innovative opportunities and barriers for public organizations. To conduct a thorough analysis which captures the topic and covers the concepts which are applicable to public organizations, I will therefore search for literature regarding IT innovations in public organizations. Drawing upon what has is known in this area, I hope to generate a better understanding of the future for innovation network as a strategy for innovativeness for public organizations, which in itself is not addressed in research.

3.2 Review process
The review process started with searching the most top rated journals, namely the Senior Scholar’s Basket of Journals (ww2.), because often the most important contributions can be found in the top rated journals (Webster & Watson, 2002). However, following the approach suggested by Webster and Watson (2002) a good literature review must cover more than one set of journals and therefore I chose to extend the search to include more journals that are peer-reviewed other than the top rated journals. To help me in the process after reviewing the top 8 rated journals, I made use of databases like Web of Science and LISTA (Library, Information Science & Technology Abstracts) to find articles citing the articles found in the top rated journals and from there identifying whether or not they are relevant. This also meant moving beyond the field of IS and searching in other related fields to extend the scope. The search continued when new articles could not add new concepts, and thus the review process ended when the data felt saturated and where no new insight from the articles could be found to extend the scope of the review. Searching by keywords proved to be very effective for the outcome of this study, because it made it easier to find articles that were not known prior to starting with the review process. For example, many articles were found in journals that is not so well-known in the IS field, but are well-known in other fields of research. However, to further increase the scope, articles which proved to have significant value for this thesis were reviewed by references and citations to find other articles. To assess whether or not the articles used in this thesis were relevant or not, a review of introduction, abstract and conclusion were conducted. Initially, 34 articles were found at the beginning of the search process. However, reviewing the 34 articles, 20 articles were found to be relevant after an review of all 34 articles. The period in which the 20 articles that were used in the analysis dates from 2001 to 2014.

3.3 Analysis
The analysis consisted of identifying concepts and generating codes, grouping together these codes into new concepts. This means that the process focused on identifying concepts which are found to be important in the articles and which have the ability to be applicable in the IS field. Initially, the analysis began with coding the articles. The coding process started with open coding of all 20 articles, which meant that all articles were coded individually. The codes emerged by reading the articles, meaning that preconceived notions were not present
and thus some bias towards the results were eliminated. Later, when all articles had been coded, they were then grouped into barriers on the one hand and opportunities on the other. Dividing them into these two different categories were a result of the nature of the articles, some addressed opportunities in which public organizations could be come more open to external resources to become more innovative. Some articles were targeting the challenges and barriers in which impeded on the innovativeness of public organizations. Also, some articles targeted both the potential future for public sector innovation and what barriers exists for reaching a more innovative climate. Because of this, it felt like a logical step to group the codes in a similar way that previous research was based upon. The next step was to group all codes into to relating concepts that could capture the essence of these codes. These concepts became Lack of innovation capabilities, Organizational restraints and Collaborative atmosphere. These concepts consists of different but related themes, capturing a wide view of what previous research has identified. All of these three concepts are viewed as potential barriers that negatively affect the innovativeness of public organizations and hinder their ability to collaborative effectively with other external stakeholders. The fourth concept is named Opportunities and this captures the possible future of how public organizations can become more innovative and more open to collaboration. The concept is based on what have been found in articles that points to promising development in the public sector to increase their innovativeness and ability to collaborate. All concepts are described in the result section and all of them are used to discuss the results and to propose what public organizations can do to become more innovative. See appendix 1 for authors and the codes and concepts.

3.3 Replicability

To increase the trustworthiness and to discuss the replicability of this study, I will describe some of the search criteria and steps I followed when I collected the articles for the literature review. First and foremost, the search terms were a combination of “public”, “public organizations”, “public sector” and “innovation network”. Secondly, as mentioned earlier I started with the most well-known journals within the IS field and then moved on to other peer-reviewed journals in adjacent fields. Finding a couple of relevant articles from the IS field helped with finding other articles citing the initial articles which proved to be relevant and solid articles. Thirdly, the articles were then chosen based on their relevance and after a quick scan of the article I decided if the articles was going to be a part of the review or not. The criteria for ensuring that the articles could contribute to the review was to see if other articles have already covered that research subject. This meant that the articles covered a wide range of different topics in public sector innovations.

4 Results

Reviewing existing research on public sector innovations and innovation networks, three main concepts have been identified to affect innovation processes negatively. One concept have been identified which highlights promising factors that can increase the innovativeness of public organizations.
4.1 Cultural and organizational restraints

This concepts highlights the potential barriers on innovations and innovation networks which stems from the uniqueness of public organizations.

One of the most cited and crucial aspects of barriers for innovations and innovation networks for public organizations comes down to the traditional constitution and culture of public organizations. The public sector has and still is influenced by a bureaucratic approach to the layout of organizing work in the organization. Typically, this is reflected by a top-down approach which is known to impede on stimulating innovations (Sørensen & Torfing 2011). Most often, the nature of strict roles and hierarchy does not acknowledge that a wide range of inputs are greatly improving the pool of knowledge and hence increasing the success for innovation projects. In the light of the nature of organizing in the public sector the

“characteristics of bureaucratic government ignore the innovation resources, which are available on different levels of an organization and across its borders to fuel the innovation cycle. Hence, it is argued that the quantity and quality of ideas generated, selected, implemented and diffused is reduced. Moreover, the closed nature of public sector innovation reduces transparency, trust and commitment to take up innovations and as a consequence weakens the implementation and diffusion of innovations.” (Bommert, 2010:21)

This tradition of closed government is evident for not being suited to establish new channels to funnel new ideas which can stimulate the growth of innovations (Hilgers & Ihl, 2010). Furthermore, it also acknowledges that usually public organizations rarely engage in innovation networks, targeting external actors outside ones own context (Savoldelli, Codagnone & Misuraca, 2014). In relation, this type of independence keeps fortifying ones own borders and thus keep outsiders from moving inside the organization. The idea behind this protective stance is fueled by the idea that one must protect knowledge and sensitive data that could be dangerous ones it is moved outside the control of public organizations (Pardo, Cresswell, Thompson & Zhang, 2006). Moreover, the independence also causes collaboration between public organizations to be fairly limited. As a result of this independence, public organizations do not influence each other, thus innovations created in one public organizations is not likely to be adopted by others solely by collaboration between public organizations. Diffusion of innovations is therefore likely not to move beyond the context where it was initially created (Korteland & Bekkers, 2007). Instead, innovations are more likely to be copied without influence, meaning that the risks for reproduction is high. The dangers of reproduction is that innovations are being directly brought out from the context where it was created, and reproduced in another context without the knowledge behind the innovation (Korteland & Bekkers, 2007). This idea of doing what others already have done continues to strengthen the lack of incentives and initiatives for innovating in the public sector. In relation to a strong “not invented here syndrome”, public organizations rarely seek external influence in terms of stimulating new innovations. It is instead characterized by
reproduction, rather than learning from what others have done (Duivenboden & Thaens, 2008).

One of the key factors for the continual strengthening of cultural norms, such as the continuous fortification of boundaries is the fact that the bureaucratic philosophy of top-down hierarchy. This mean that seniors has the strongest voice and are most valued in terms of reasoning, and most likely views which challenges these ideas are scrapped (Peled, 2001).

### 4.2 Collaborative atmosphere

This concepts explain the factors that previous research have identified as important when it comes to how public organizations traditionally collaborate with others.

One of the barriers identified for collaboration between public organizations is that even though they operate in the same sector, they have very different goals and agendas in which they operate in. This mean that collaboration, even between public organizations is somewhat challenging because their local policies and organizational boundaries differ, even though they are a part of the same sector. This is also holds true for public and private collaboration, where goals and policies highly differ. Context and organizational boundaries make collaboration difficult because they differ a lot in terms of goals, incentives and policy. Roles, knowledge and hierarchy also differ a lot, which makes it harder for private actors to cope with the complex settings of public organizations when they collaborate (Bygstad, Lanestedt & Choudrie, 2007).

Furthermore, public organizations often require a strong legal foundation and contracts in their collaboration with external actors, both private and public. Without a strong legal foundation, trust is most likely to be nonexistent. However, building a network solely on contracts could impede on what is shared across actors in an innovation network (Dawes et al. 2009). Too much control and governance, can potentially make participants feel watched. Especially for participants collaborating with public organizations, government control can become frustrating and resulting in protecting knowledge rather than sharing (Dawes, Cresswell & Pardo, 2009). Furthermore, the strong legal requirements also makes trust incentives invisible, instead trust is sought to be secured through legal requirements. This mean that goals and requirements are not shared, but instead agreed upon through tedious negotiation between participants. Through the lack of incentives, trust and shared goals, collaboration with technology suppliers often mean that the best solution is not sought for from the suppliers view. Instead, they tend to be locked in on their own technology and process and therefore not open to creative development with public collaborators (Kalvet, 2012).

Another barrier for collaboration between public and private organization is the fear of losing the authority and control of the production of public value. A potential risk is that public organization can lose the claim on public production value, meaning that private collaborators seek to establish control and secure financial benefits at the expense of public value (Bommert, 2010). Hence, public organizations needs to ensure that private actors are trustworthy, in the sense that they can look beyond purely financial benefits and thus be aware that they are contributing to the welfare of the public. In relation, because public
organizations are financed by taxes, losing authority over public resources could mean that the trustworthiness of public organizations are decreased (Pardo et al. 2006).

Often collaborations in public organizations are recognized as discrete programs, developed between public organizations who are very similar, i.e. between nearby municipalities (Savoldelli et al. 2014). Because they do not differ that much in terms of local or organizational context, collaboration is hence easy due to many similarities and few differences. These type of programs are often steered and reflected by policy, rather than solving a problem (Duivenboden & Thaens, 2008). However, these types of collaborations do lack the creative atmosphere cross-boundary collaboration and diversity can enable. Even if cross-boundary collaboration is desirable, it could mean that public organizations might have to share information which can be dangerous or strictly unethical if it were to leave the domain of the public organization, therefore diversity can be hard to achieve (Bommert, 2010). When public organizations do seek external collaboration they do so with an outside to inside approach, meaning that they absorb external knowledge but not letting knowledge from the inside flow beyond the organizational boundaries. The lack of inside to outside approach makes public organizations block the view from the outside and hamper the transparency of public organizations (Lee, Hwang & Choi, 2012).

4.3 Lack of innovative capabilities
This concept is capturing the challenges for innovations that public organizations face due to factors derived from how they usually tend to traditionally handle innovations.

Among the results derived from the concepts of innovativeness in public organizations many articles highlighted that public organization usually have a strong risk-aversion when it come to innovating. The freedom to experiment is traditionally absent in public organizations and much of this come down to the public scrutiny of public organizations. Much of this come down to the important role of public voices concerning the success of public innovation. An unsuccessful project runs a high risk of putting the public organization in bad light and in the end impedes on the overall image of public organization from the public (Duivenboden & Thaens, 2008). This mean that experimental process of generating innovations, which is often an incentive for the private sector, is not applicable in the public sector due to the risk of public blame for unsuccessful innovations projects.

In the light of the absence of experimental design, this also mean that there are no incentives for stimulating continual innovations, for example with a dedicated R&D department (Albury, 2005). Furthermore, there are rarely any rewards or monetary benefits at the individual level to stimulate and increase the innovativeness for employees in public organizations, which is common in the private sector (Albury, 2005). An explaining factor for the lack of institutional feedback for innovations can be reflected in the type of context in which public organizations operate in. The need to compete, be first to market, is highly irrelevant for public organizations and therefore innovations often stem from immediate threats. Accordingly, some of the factors which stimulates innovations in the private sector are not applicable for public organizations, who operate on a very different level and with different goals and customers in mind (Duivenboden & Thaens, 2008).
Another area of concern is regarding the factors for successful innovations project in public organizations themselves. As mentioned before, public organizations do, on somewhat rare occasions and most often due to immediate threats, innovate (Sørensen & Torfing 2011). However, when they innovate, a very crucial factor for success is the need for key actors and champions to come forth in order to increase and maintain the level of engagement needed for stimulating the innovation process (Korteland & Bekkers, 2007). Otherwise, funding and lack of participation are put at risk and the result is abandoned projects and not much have been learned from project in terms of experiences (Albury, 2005). This need for key actors and champion is the result of the overall lacking innovativeness from employees in the public sector. They are not used to innovate and often they are not obligated to do so, therefore when they are needed to engage in the innovation process they often lack the knowledge (Bommert, 2010). Key actors and champions thus are important since they are the driving factor behind all parts of the innovation project, from sparking the initial idea to diffusion of the innovation. However, champions and key actor who is willing to put in time and effort, not only for their own sake, are somewhat rare to find (Pärna & Tunzelmann, 2007).

In relation to the fact that innovation projects do happen in public organizations, exciting and successful projects can still pose threats to further hinder the innovativeness in the public sector. What Peled (2001) coin the term “controlled transparency” highlights the dangers of successful innovations projects becoming a threat to further innovations once they have been institutionalized. This means that institutions rarely take a life of their own, but instead they build upon the policies on which they’ve been founded upon. Hence, they continues to strengthen the boundaries of their own instead of diminishing. What this means is that “institutions are much more likely to defend their current technologies against ‘incumbent technologies’ by slowing down innovation.” (Peled, 2001: 199). This means that innovation projects are highly dependent on policy, where most often the type of innovation is dependent on the policy. The result is that what is best solution and what type of innovation is developed is perhaps not decided by what is the best for the organizations, but rather what fits with their policy. In regards, this also mean that powerful seniors, defending the “essence of the institution” are the ones whose voices are heard the most, whilst challenging views are considered as intrusion on the overall policies (Savoldelli et al. 2014).

4.4 Opportunities

According to the literature reviewed, several suggestions and opportunities have been identified as important when it comes to innovation networks for public organizations. Considering the articles reviewed, there existed a consensus that innovation network and collaboration with external actors is much needed in order to develop the public sector. Furthermore, a common suggested tool was the use of IT, which was viewed as a must if sustainable collaboration were to be established (Potnis, 2010; Pang, Lee & Delone, 2014; Lee et al. 2012). Today, IT is a big part of every organization and there is a strong shift in the new wave of public management to become highly adapted to IT. This adoption is not only visible in terms of more sophisticated technology, but as well in how IT management is becoming a more central part. This is a crucial factor, since management is needed in order to foster the
use of IT and to diminish the idea that IT will solve everything in itself (Savoldelli et al. 2014; Pardo et al. 2006; Potnis, 2010).

With a new transformation towards many instead of few, it is proposed that public organizations can outmatch single entities in terms of being innovative. In relation, IT is needed to become more communicative and to increase participation from a wide range of actors, which is needed to broaden the identification of public needs (Hilgers & Ihl, 2010). Thus, a platform where actors, such as citizens, can interact with public organizations is desired. Increasing the commitment from external sources makes public organizations also do more with less resources (Janssen & Estevez, 2013). Furthermore, this also brings forth a shift in the traditional roles, especially for citizens who become more than just taxpayers. Instead, they become users and customers who have the opportunity to raise their concerns about public services and propose new services. As a result from a larger engagement from the public, co-creation and public ventures are more likely to be created (Wise, Paton & Gegenhuber, 2012; Hilgers & Ihl, 2010).

Although, engagement with the users and customers of public services, private actors are also needed to take in consideration. Collaboration with private actors is crucial in terms of funding and to decrease the risk aversion of public organizations. If public organizations collaborate with private actors the risks become more spread, and hence they will be better to cope with risks in a more satisfying manner. The risks will be spread in the sense that all resources, time and effort will not be directed solely towards the public organization, and hence risks and challenges can be spread to many actors (Kalvet, 2012). In relation to establishing a platform, public organizations will have the ability to control the flow of communication without performing too strict governance which can impede on the participation of external actors. A platform is also central in the idea that diversity can be beneficial for innovativeness because it can handle input from many different actors. Increasing the cross-boundary interaction and diversity, is beneficial for public organizations because it allow them to broaden their innovation process fully (Janssen & Estevez, 2013).

From the initial ideas being generated, to the development and diffusion of innovation. Furthermore, in terms of transparency and public image, collaboration with a wide range of external actors is also desired. Transparency can also increase the flow from inside the organization to outside and in the end make external actors aware that public organizations are willing to share knowledge (Vigoda-Gadot, Shoham, Schwabsky & Ruvio, 2008).

Another important feature of public organizations starting to look outside their own boundaries is that successful innovations can change the culture of the organization, which is needed for public organizations to become more innovative (Lee et al. 2012). This also mean that innovations need to be context-based, meaning that they need to be developed or at least reshaped to fit the specific organization. As Duivenboden & Thaens (2008) argue:

“successful innovations seem to lead to cultural changes in local organizations. So in practice there is a kind of interplay, an iterative process of mutual influence between innovation and cultural change that points at innovations being successful if they co-evolve with the specific environment in which they come about. Successful innovations are, in
essence, context-based innovations that interact closely with the situational circumstances of local stakeholders, their values, preferences, routines and behaviour” (Duivenboden & Thaens, 2008: 229-230).

In relation, public organizations seem to learn from both positive and negative experiences from innovations, which makes innovations in the public sector a cumulative learning process (Vigoda-Gadot et al. 2008). Becoming more innovative will thus change the culture of public organizations, and the change will stimulate more innovations in the public sector (Pärna & Tunzelmann, 2007). However, even though innovations in the public sector need to be context-based to be successful, external sources are still important in order to fully develop them.

5 Discussion

To answer the research question on what type of barriers and opportunities exists for innovation networks within public organizations and the role of IT, I will discuss the results of this thesis in relation to the related research about diversity and the different types of innovation network strategies. In this thesis, diversity is viewed as the overarching foundation of innovation networks and thus an important aspect in every innovation network, whether it is private or public, or viewed from an focal or non-focal perspective. Furthermore, different types of innovation networks and their constitutions are dependent on constitution and organizational goals and context. Hence, the discussion will be focused on how innovation networks strategies can be understood in the light of the concepts derived from the results. Each concepts are therefore discussed in relation to diversity, innovation network strategies and finally the opportunities which can flourish the innovativeness for public organizations.

5.1 Diversity

According to Levén et. al (2014) diversity is arguably a strong contributor to promote successful innovation projects, since it makes use of wide variety of knowledge that stems from different fields and contexts. On the one hand, it can make innovations flourish but on the other hand it also can impede on the communication and negotiation due to differences between actors (Sandberg et al. 2015). Looking at the concept of collaborative atmosphere among in the public sector, diversity is problematic due to contextual differences, even among public organizations themselves. This is perhaps the results of how the strict conservative state of public organizations, and their long tradition of independence. Furthermore, participation with private actors is perhaps even more challenging due to further political, contextual and cultural differences. These challenges are becoming fortified since public organizations tend to protect their own boundaries, making it harder for external actors to gain knowledge from inside the public organization. This lack of transparency is however understandable, since public organization handle sensitive information and knowledge.
In relation to this, diversity is also hard to achieve due to the fact that public organizations are build on a strict legal foundation, and hence the collaboration with public organizations require a legal foundation and thus trust can be harder to achieve since collaboration is often based on contracts. External actors can therefore feel that the negotiation process is too tedious for the collaboration to be fruitful. Considering the innovative capabilities of public organizations, they tend to copy instead of collaborate and their innovation incentives is very low. In relation to their innovative capabilities the top-down approach makes challenging views non-existent. Diversity is hence not thoroughly acknowledged in the public sector, which is evident due to public organizations fragmentation of having different departments instead of gaining knowledge and resources from each other or outside their own context. Instead, everything is going to be handled in-house, for example via the IT department instead of hiring expertise from the outside. This makes the allocation of resources specific to certain routines and departments, instead of shared throughout the organization. Considering Brown and Duguid (2001) and their notion of knowledge and practice, the knowledge in public organizations is therefore stuck and locked in at certain locations and to specific individuals. The bureaucratic constitution of public organization is therefore in itself differentiated, since different departments operate quite independently. However, the lack of interaction for innovative purposes is absent since they are working independently and not cross-boundary, which does not promotes diversity (Levén et al. 2014). Moreover, when innovations projects are initiated it is often up to specific key actors and individuals to fuel the innovation process, consisting of few instead of many inputs to create and maintain innovations. These innovations are also often initiated by policies, instead of problem-based, which makes the external actors somewhat counterproductive in the sense that they do not have the knowledge to cope with complex settings of public organizations. Exploitation and exploration is therefore absent when it comes to diversity, both external and internally.

Although, these recent claims highlights a big gap in acknowledging diversity, new waves of public management have begun to reconfigure their strategies targeting external input. For example, the notion of citizen-sourcing allow citizens to interact more openly with public actors. Also, the same can be achieved towards private actors who can makes use of public knowledge to gain entrance to new markets. Both private actors and citizen inputs are considered valuable in terms of identification of what needs to be done in society. However, these types of strategies are highly dependent on IT. In both cases, platforms can be a solution to how public organizations can increase their interaction with a wide variety of external actors. But, changing their IT capabilities does not mean that they do not have to change their organizational capabilities, so that both aspects conjoin. Otherwise the notion of platforms will not increase the interaction between public organizations and other external actors. A change in IT will not make a change in how public organizations are structured by itself. Therefore, investing time and effort in a platform must also result in a transformation in how public organizations are structured when it come to handling external input. What is promising in this case, is that public organization do tend to learn cumulative. This mean that successful platform implementations will increase cumulatively and promote other types of
innovative behaviors. Furthermore, it is also the case that public organizations have the ability to adapt to successful implementations. This means that the culture and context of the organizations and the innovations created are influencing each other. But, without proper management of such platforms, success will be hard to achieve.

5.2 Public organizations as focal actors

When it comes down to control and governance, public organizations do have great experience and a long tradition of dealing with these aspects. However, reviewing existing research about public organizations in innovative settings, it is evident that control and governing aspects of networks is different from the type of control present in the public sector. Orchestrating an innovation network is highly dependent on keeping control and balancing governance and therefore knowledge and experience of previous networks are essential to create a dynamic and flourishing environment for all actors within the network (Bengtsson & Ågerfalk, 2011). Successful focal actors are in an advantageous position to steer the direction of knowledge flowing throughout the network and to explore the opportunities arising from this collaborative setting. For public organizations this could be a considerably advantageous option, since it will enable the public organization to manage the setting of the network to fit their liking. Controlling and governing is useful as well in terms of regulatory measures for public organizations, meaning that they are in a strong position to chose who will gain entrance on requirements that are suitable for collaboration with public organizations. For example, external actors who see potential value in collaboration with public organizations other than financial benefits are more trustworthy and are more aligned with the same goals as public organizations. Also, this type of innovation can enable public organizations to extend, rather than completely reconfigure their organizational boundaries and context. What this mean is that instead of adapting to other networks, public organization can create and orchestrate their own so that the environment of the network is capable of producing suitable outcomes for public organizations.

Furthermore, to reach an innovative climate recent research have highlighted the importance of IT as a tool for establishing a creative environment (Eaton et al. 2011). Especially a platform holds much of the desired flexibility and availability needed for extending the external input towards public organizations. Controlled platforms is therefore a viable option to increase the transparency and awareness of public needs, especially increasing the engagement of citizens to identify societal needs. This means that expectations from users of public services and goods can be more effectively met. Moreover, this also means that private actors can see the potential gain from collaboration with public organizations, since they are interacting with both the provider and the consumer of public services.

Although, there is much to be gained from public organizations as focal actors, barriers regarding their innovative and organizational context brings forth serious concerns regarding their capability to orchestrate innovation networks. First and foremost, fully committing to an innovation network will not reduce the risk for public blame. Since the idea of a focal actor will put the public organization at the center of the network, the survival of
the network is dependent on the success of governance and control from public organizations. Thus, the success or failure is all coming down to the orchestrator, which in this case mean that the risks will be more centered rather than spread. Public organizations are therefore in a position of assessing whether or not they are able to handle the risks of orchestrating an innovation network. Avoiding failure and taking responsibility for failure is all up to the focal actor, and thus public organizations as a focal actor will not eliminate or reduce the risks identified. Another area of concern is that public organizations have limited experience and traditionally few incentives for innovation. This mean that they need to explore new opportunities and gain new knowledge of how public organizations can better stimulate innovation within their own boundaries, before they can exploit innovation networks. Also, since public organizations needs to ensure that ties to external actors are strong enough to not let others take advantages of sensitive public data and knowledge, it can be hard to achieve a network based on diversity. As Capaldo (2007) argue, strong ties are often impedes on the overall outcome of the network, public organizations need for strong integrity could mean that they spend too much effort and resources establishing homogeneity instead of heterogeneity. Thus, they become too locked in on certain aspects and the explorative nature of the innovation network is non-existent.

Second, the lack of previous efforts to establish innovation networks means that public organization do fall behind private actors in terms of knowledge and experience, which is needed to fully create and sustain a creative atmosphere within the network (Ritter & Gemünden, 2004). Achieving diversity in a network without previous experiences or knowledge will most likely lead to unsuccessful attempts. As is evident in previous collaborative attempts for public organizations, diversity is not fully acknowledged. Therefore, public organization will struggle in terms of establishing an explorative network with a wide variety of external actors from different fields. For example, due to lack of incentives and rewards internally, making incentives and rewards for innovation will be hard to constitute externally as well.

Third, the policy-driven culture of public organization could also impede on the overall goals established in a network orchestrated by a public organization. Instead of being fueled by problem-based incentives, a policy-driven climate could yield little benefit for other external actors other than the public organization. This could mean that policy will have too much influence on the overall goals of the network, and thus it will create an environment steered by political agendas and ideas. To make participants follow the lead, as Perk and Jeffrey (2006) frames it, incentives needs to come from the focal actor to ensure that all participants establish trust and prosperous vision towards the network and the focal actor.

5.3 Public organizations as a non-focal actor

As previously mentioned, a focal centered network strategy is, according to the results derived from the literature review, perhaps not the most suitable choice for public organizations. Much due to limitations in previous experiences and knowledge, organizational boundaries and culture, and policy-driven culture. Instead, public organizations should begin with a mindset of being a non-focal actor in innovation networks,
rather than investing all time and effort in orchestrating their own without previous experiences in engaging in collaboration networks. This strategy is a good start for public organizations because it enables them to adapt to new environments, without changing their own culture too much. Although, as described by Duivenboden and Thaens (2008), a cultural change is needed for public organizations to become more innovative, and the way forward is cumulative learning. This means that, the more explorative and adaptive towards new innovation processes and strategies public organizations become, the more they will also change the culture and context of how public organizations operate. However, starting of with becoming a focal actor would perhaps be too big of a change for public organizations, while being a non-focal actor would mean change to a lesser extent but still benefiting from a more innovative climate. Especially in terms of becoming less risk-averse, public organizations as non-focal actors would mean that they spread the risks more effectively. Establishing themselves in already created networks mean that the network itself is not dependent on the public organizations, thus they will not take the fall if the network would prove to yield little benefit (Selander et al. 2013). Thus, they can avoid public blame for failed innovation networks because they are not the founders or bear the heavy burden of funding the innovation network.

Furthermore, targeting multiple and already existing networks is beneficial for public organizations in the sense that they can focus more on an outside-inside approach rather than inside-outside approach. This means that they do not have to give away too much of their own organizational knowledge and information in order to gain knowledge from the outside. This type of strategy is more applicable for public organizations since they do not need to put their own context at risks, as could be the case if they would establish their own network. Mainly because public organizations have a need for integrity, for example in terms of defending and protecting public data, a non-focal actor strategy is more aligned to handle these issues. More importantly, public organizations will, due to cumulative learning, learn from the cross-boundary interaction that comes from being a part of a innovation network and their success from these types of collaborations. Because public organizations do not have a tradition of incentives and rewards for innovations themselves, collaboration with external actors can be beneficial in terms of gaining incentives from the outside (Selander et al. 2013). Also, since innovation has been proven to be very dependent on key actors or champions within the organization itself, a non-focal perspective can help prevent such a strong need. Instead, much of the incentives and driving forces can come from the outside, and handled throughout the whole organization and not being stuck with few individuals. Consequently, relying on external input can further help public organization becoming more problem than process oriented, and thus innovative on a regular basis rather than as a response to immediate threats. This also mean that interacting with multiple stakeholders can help innovation projects in the public sector not becoming institutionalized. Since many instead of few voices are being brought forward, they do not run as big risks of becoming protective and more open to challenging views of their own context.

However, even though the non-focal perspective is promising for public organizations, there are some risks and challenges that needs to be met. Being able to balance
the right amount of time and effort between multiple networks is crucial to on the one hand avoid fragmented capability redeem and capability search, and on the other hand avoid being locked inside a network with decreasing momentum (Selander et al. 2013). To tackle these issues, public organizations not only need to develop network strategies but as well strategies to prevent a culture and organizational context that hampers the innovative capabilities of the organization. For example, public organizations, in their own sector needs to become less independent and acknowledging cross-boundary collaboration as well as collaboration within their own field to increase diversity. Moreover, engaging in innovation network will most likely not lead to increased transparency itself, therefore public organizations need to balance their ability to open up their boundaries for interaction to establish trust to others and within the network (Westergren & Holmström, 2012). Although, being a non-focal actor does imply a outside to inside approach, transparency is perhaps more than ever, crucial for public organizations to sustain their trustworthiness. A balance between giving away, without giving away too much needs to be explored for public organizations to sustain their authority over public services and goods.

Public organizations as a non-focal actor cannot in itself solve every problem in terms of becoming more innovative and promote diversity, and still maintain a high level of openness and transparency towards all external stakeholders. Therefore, I propose a solution of public organizations for meeting all criteria, namely having a mindset where they see themselves as mostly non-focal actors, but still as focal actors for transparency. This means that for innovative purposes, they should adopt a non-focal strategy where they target private companies in terms of innovation networks. However, because being non-focal actors does not imply that they become more openness and transparent; they should also focus on a platform targeting citizens. A platform targeting citizens mean that they establish loosely coupled ties while interacting with citizens and still controlling the flow of information and hence sustain trust with citizens. For example, an open data platform has been suggested to increase innovative capabilities and increase trust and transparency of public organizations (Janssen et al. 2012). Thus, this combination can help them cover all important aspects for becoming more innovative, mostly by changing their interaction with external stakeholders. In conclusion, creating new and better innovations can be met with interaction with multiple private actors while identification of public needs and increased transparency can be met with the establishment of a IT based platform. Furthermore, applying these strategies will make public organizations ability to interact with a many different external actors and will likely lead to them becoming more explorative when it comes to innovations. The focus on many instead of few will increase the public organizations ability to adapt to diversity, and acknowledge that trust and transparency are crucial factors to effectively engage in innovation networks.

### 5.5 Further research

Based on the findings in this thesis, I suggest that future research within the public sector targeting innovation and innovation networks dive into more concrete and practical solutions for collaborations. Moreover, future research investigating the possibilities for public
organizations existing in multiple networks, both as a focal as well as non-focal actor is highly relevant. Finally, research targeting the use of technology and their relation to individuals within the organizations and causal effects on the innovative climate is also needed.

5.6 Limitations
This thesis have barely scratched the surface of the possibilities for innovation network strategies in public organizations. Accordingly, the thesis is not without limitations and one of the limitations is that this thesis is the limitation of that the results are based on articles found by specific key words. Therefore it is hard to know whether or not all relevant literature within the area of public sector innovations have been found, and what the impact on the results with other key words could have been. Furthermore, another limitation is that the coding was done quite subjectively, with only one person reviewing and coding the material. Finally, there are some concerns when one talks about innovations and innovation networks in general, and IT innovations. However, the line between innovation and IT innovation is perhaps more blurred today, because much of innovation studies either put IT as a tool for innovations or that the innovations are IT based. Because of this, much of the recent research focusing on public innovations are a mix of both and hence this thesis do not aim to make a separation between public innovations in general and public IT innovations. Although, it could be beneficial to make a clear line between IT innovations and innovation, it will require too much time and effort to establish a framework to assess when IT becomes irrelevant for innovation purposes.

6 Conclusion
In this thesis, the result has provided new insight in how innovations can be handled within public organization, especially targeting innovation networks within public organizations. The results indicates that there is a strong need for change in organizational culture to increase the innovative capabilities for public organizations. Changes can be accomplished via a interacting with external stakeholders. An explorative analysis is used to identify barriers and opportunities for innovations and innovation networks in the public sector. Based on the findings in this thesis, it is suggested that emphasis is on public organizations as non-focal actor, but with a complementary platform approach to increase the scope and transparency of public organizations. Therefore, a mindset of dual networks is highly relevant for public organizations to stimulate new innovations as well as increasing their transparency and trustworthiness.

References


## Table 2: Concepts and description of codes

<table>
<thead>
<tr>
<th>Barriers</th>
<th>Description</th>
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<tbody>
<tr>
<td>Lack of innovation capabilities</td>
<td>- Highly risk-averse,</td>
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<td>- Public blame for unsuccessful projects.</td>
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<td></td>
<td>- Few rewards and incentives.</td>
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<td>- No dedicated innovativeness, i.e. R&amp;D</td>
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<td>- No competition</td>
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<td></td>
<td>- Rare to find champions and lacking of funding</td>
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<td>- Innovations mostly often sparked from immediate threat</td>
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<td>- Public innovations project run the risk of becoming controlled</td>
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<td>transparencies ones institutionalized</td>
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<td>Organizational restraints</td>
<td>- Bureaucratic culture, top-down approach impeding on innovativeness.</td>
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<td></td>
<td>- Bureaucratic rules strengthens the boundaries, protecting one's own</td>
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<td>knowledge.</td>
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<td>- Public organizations are fairly independent, no influence on others.</td>
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<td>- Organizational goals are reflected by seniors, challenging views are</td>
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<td></td>
<td>dismissed and protection of technology.</td>
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<td>- Strong tradition from copying from others, resulting in reproduction.</td>
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<td>Collaboration atmosphere</td>
<td>- Different goals and context across domains in the public sector</td>
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<td>- Collaboration often rests on strong legal foundations, no incentives for</td>
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<td></td>
<td>trust.</td>
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<td>- Afraid that collaboration with private sector can undermine public value;</td>
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<td>claim on production of public value from external investors.</td>
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<td>- Communication with external actors is lacking because of contextual</td>
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<td>differences.</td>
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<td>- Technology suppliers are locked in and not open to creative collaboration,</td>
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<td>not developing best solutions.</td>
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<td>- Risk of losing authority</td>
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<td>- Traditionally aimed towards discrete programs instead of cross-boundary</td>
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<td></td>
<td>collaboration.</td>
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<td>- Collaboration mainly consists of outside-inside approach, no inside-</td>
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<td>outside approach.</td>
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| Opportunities                  | Description                                                                 |

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25
• Transition from few to many, allow collaborative organizations to outmatch single entities.
• Cumulative learning, successful projects lead to good learning experiences and further development and change.
• IT is important to stimulate and increase communication, collaboration and knowledge sharing.
• Focus on management on IT instead of IT as technology.
• External actors are needed to identify public needs, enable cross-boundary collaboration and drawing engagement from wide variety.
• Transformation of roles, taxpayers (citizens) become users and customers.
• Internet allow for new trends, co-creation and public venture companies.
• New wave of public management, highly adapted to IT.
• Wide range of actors and stakeholders are key for increasing trust, transparency and image.
• Diversity is central, greater input: Citizens, politicians, private sector integration.
• Doing more with less, problems solved with collaboration of society, provide with limited resources.
• Risks become more spread due to incorporation of external actors, cope with risk-aversion.

Literature review articles


