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WHY AND HOW DO MUNICIPAL AREAS GOVERN INTERORGANIZATIONAL ICT COOPERATION: INDEED, "THE EMPEROR HAS NO CLOTHES"

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Abstract

Information and communication technologies (ICT) are significant for the development and production of municipalities' services and activities. Yet, municipalities typically operate their ICT independently with only limited resources. Limited resources are a key incentive for inter-municipal ICT cooperation. We investigated, how inter-municipal ICT cooperation was executed and governed in 20 Finnish municipal regions including 144 actual municipalities. As the theoretical background, we reviewed Transaction Cost Economics and the Resource Based View theories, and the literature on IT governance practices. These theories and literature were used to identify theory-proposed ICT cooperation benefits and governance practices. We then compared theory-proposed benefits and practices empirically to those perceived in the actual regions. Finally, we used Granovetter's social network theory to understand the empirical findings on ICT cooperation benefits and IT governance practices. Our findings reveal distinct differences in perceived ICT cooperation benefits, in ICT cooperation, and in the governance of IT between Finnish municipal areas, and the lack of social ties helps to understand detected differences. Our findings also indicate that the emperor will not enjoy new clothes – ICT cooperation benefits – unless ICT cooperation is systematically organized and governed. The extension of the theory base in IT governance research is our main contribution.

Keywords: IT governance, Inter-organizational IT governance, ICT cooperation, Municipalities.

1   Introduction

Municipalities produce most of their services by being supported and enabled by ICT. The country in the present study (Finland) consists of 313 municipalities. They produce most public services for the country. The several hundreds of services include social welfare, healthcare, educational, infrastructure, and other types of services produced for citizens, companies and third sector organizations. A medium-size municipality with 20 000 inhabitants may have thousands of ICT devices located in its various premises that are connected via local area networks (LAN) or wireless LANs to the ICT infrastructure of that municipality. These devices provide access to the hundreds of information systems (IS) and applications used to produce and deliver municipal services. They also provide access to municipal data storages, divergent governmental ICT services and any Internet service. ICT devices owned by citizens and/or organizations may also be used to access municipal services and data storages via the Internet in addition to the thousands of devices purchased/leased by the municipality. The work of municipal civil servants cannot be performed nor a municipality managed without ICT

since digital data on its various activities and services are created, processed, stored, and reported via ICT. The deployment of ICT will continue to grow. Further digitalization of municipal services, digitization of printed/analogue legacy materials, and the Internet of things (IoT), e.g. to monitor municipal traffic or buildings are just a few examples of ICT's constant and ever-increasing use.

Municipalities develop and operate their large and increasing stock of ICT services as well as manage service continuity and data security risks with surprisingly small ICT resources, both people and money. From the enterprise architecture perspective (TOGAF, 2016), the infrastructure, applications, data, and process layers of municipal ICT are both complex and business critical. Physically, their ICT are often placed into just a few data centers. In a medium-size municipality, its data center could even reside in a locked storage room. Such a municipality typically has only two to five full-time ICT professionals to operate and manage the entire ICT. A smaller municipality may not have recruited any full-time ICT professionals at all. It thus appears to us that municipalities have not recognized how ICT- dependent their activities and services actually are. Scarcity of resources and time could also be incentives for ICT cooperation between nearby municipalities, as they produce similar services. Are the pooling and sharing of ICT resources, the joint development and production of (ICT) services, and the combined sourcing of ICT services useful means to achieve lower unit costs/prices, savings in total costs, better quality (ICT) services, lower ICT usage- induced risks, and other benefits? What is the role of organized inter-municipal ICT cooperation and inter-organizational IT governance in the achievement of such potential benefits? Answers to these questions are both practically and theoretically important. As the amount of prior research is limited, there is also a research gap here.

The social welfare and healthcare services reform in Finland makes our research topical. In 2015, the National Government decided that 18 provinces, to be established, would take over the responsibility for these services at the beginning of 2019. The responsibility for close to 60 % of current municipal services with related taxes and other income, facilities and ICT will be transferred to these 18 provinces. Due to this reform, inter-organizational IT governance and ICT cooperation have received unprecedented attention, as answers are needed for the questions articulated above. The benefit expectations resemble the famous H.C. Andersen's fable, where there was a lot of commotion about emperor's new clothes. In summary, the generic research problem in the present study is why and how can nearby municipalities jointly govern ICT cooperation and will they benefit from that cooperation?

To solve this research problem, we reviewed the literature and analyzed secondary data. First we reviewed the literature on why organizations cooperate. We selected seminal and state-of-the-art articles from two complementary, well-established boundary theories, transaction cost economics (TCE) theory (Coase, 1937; Williamson, 1975, 1985) and the resource based view (RBV) (Barney, 1991; Wiengarten et al., 2013). TCE explains from the cost efficiency perspective, what a firm should do it self, what should be purchased from markets and what should be done through alliances. RBV evaluates the same question from the value increase perspective. We used these theories to reason theoretically the connection between inter-organizational IT governance and inter-organizational ICT cooperation benefits. We define that one of the purposes of inter-organizational IT governance is to achieve inter-organizational ICT cooperation benefits. Then next issue to review was how do organizations govern IT inter-organizationally? The research on what IT governance practices are used to implement IT governance was deemed relevant. We built our research especially on De Haes and Van Grembergen (2009) and Almeida et al. (2013). We augments this line of research, which has been conducted so far primarily in intra-organizational contexts, toward inter-organizational contexts.

Inter-organizational ICT cooperation and IT governance takes place between social groups. As social groups, municipalities differ in size, in economic and industrial structures, and in many other features. These differences and municipalities' Constitution-guaranteed taxation right and legal independence impact (ICT) cooperation and IT governance. Both are voluntary. Against this backdrop, we wanted to understand how the relations between social groups impact ICT cooperation and IT governance practice usage. We thus reviewed Granovetter's social network theory (Granovetter, 1973, 1983, 1985,

and 2005). In our opinion, this theory offers a robust and well-established theoretical basis for understanding how the existence and/or lack of social ties do influence cooperation and governance.

The complete data of a countrywide research (ICT-muutostuki, 2015) funded by Finland's Ministry of Finance was made available to us. These data included detailed information about municipalities, such as their size, the number of civil servants, number of ICT personnel and ICT spending. The data also addresses ICT cooperation within 20 municipal areas. We also used the data of two earlier studies (Hyvönen, 2015; Dahlberg, 2016). Thus, our data analysis was undertaken using secondary data.

The purpose of this current research is twofold. We aim to examine whether the TCE theory and RBV, together with IT governance implementation practice research and Granovetter's social network theory, provide a solid theoretical basis for solving our research problem. That is, does this theoretical basis offer theoretical explanations about what types of perceived benefits can be expected from ICT cooperation, what inter-organizational IT governance practices are useful in pursuing such benefits, and how the characteristics of ties between social groups do influence IT governance practice implementation and benefit achievement? The other aim of the research was to probe using empirical data the usefulness of the constructs in the theoretical background. Thus, we investigate, whether there are differences in ICT cooperation benefit achievement between those municipal areas that have established formal operative inter-organizational IT governance arrangements and those areas where IT governance arrangements are ad-hoc or non-existent. From this research problem and our purpose, we outlined the following more specific research questions:

1. What ICT cooperation benefits have the investigated municipal areas recognized and do these identified benefits increase the willingness to implement inter-organizational IT governance?

2. How do the investigated municipal areas currently cooperate in ICT, and what IT governance practices do they use to govern inter-municipal ICT cooperation?

3. Are there social ties between the investigated municipal areas that promote or prevent inter-organizational ICT cooperation and IT governance between the investigated municipalities?

The rest of this article is organized as follows. We next depict the theoretical background of our research. We then explicate the research methods we utilized to analyze the secondary data. Section Four discloses the results of the study. The article ends with a discussion of its scientific and practical contributions and conclusions as well as advice for researchers and practitioners.

2 Theoretical Background

2.1 TCE and RBV and the potential benefits of ICT cooperation

The TCE theory calls economic transactions conducted inside a single organisation (=make) as hierarchical governance, and transactions between a buyer and a seller (=buy) as market governance (Coase, 1937; Williamson, 1975). Market governance transactions with one principal and several subcontractors establish hierarchical networks, and transactions in alliances and networks constitute relational governance, also called networked governance (Wiengarten et al., 2013; Williamson, 1985). We use the term relational governance to underscore the voluntary nature of inter-municipal IT governance in the context that we investigated. TCE is a boundary theory since it focuses on who and where economic transactions should be conducted, such as the production of municipal (ICT) services. TCE proposes that market governance is most viable when assets used to conduct transactions are non-idiosyncratic, for example, all municipalities have similar ICT services; when the use of assets is voluminous (or very small), for example, the volume of ICT services is high (or rarely used and expensive); and/or when uncertainties related to asset usage can be lowered, for example, when IT cost uncertainties can be reduced by sharing (Williamson, 1985; Geyskens et al., 2006). Cumulatively, TCE research has identified dozens of cost-inclusive and cost-exclusive metrics (see Geyskens et al., 2006) to depict the various sources of cost savings potentials resulting from asset specificity, uncertainty, and frequency. The rationale for the TCE theory is that an organization (a municipality)

should rely on the form of governance that provides the lowest transaction costs (Geyskens et al., 2006). Our conclusion, which was tested empirically, is that municipalities should conduct ICT cooperation in the development and production of similar high volume (ICT) services, in the sharing of scarce and expensive ICT resources that are seldom needed by one municipality, and in reducing the uncertainties caused by limited resources and/or high-risk ICT service development and operation.

The RBV theory considers each organisation as unique in terms of its value creation potential (Barney, 1991). An organisation (municipality) is equivalent to the broad set of resources that the organization owns or has access to at least (semi-) permanently (Das and Teng, 2000). These resources as a whole, especially those resources that are imperfectly mobile, imitable, and substitutable (Barney, 1991), define the value the organization is potentially able to create. The RBV theory focuses on how to increase the value of transactions by using the assets available, for example, how to increase the value of municipal (ICT) services, whereas the TCE theory considers, how to decrease the costs of these same services (Wiengarten et al., 2013). Alternatives that are considered are own production, sourcing from markets and cooperation. Thus, the RBV theory is also a boundary theory (Wiengarten et al., 2013). Measures of value increase identified by RBV research include, e.g., the following: Conserve resources, share risks, obtain information, access complementary resources, reduce (product/service) development costs, improve technological capabilities, and enhance reliability (Park et al., 2004). The RBV theory proposes that an organization should rely on inter-organisational cooperation if the participants are able to achieve additional value increasing benefits, for example, those listed above, through the pooling, aggregating, sharing, and exchanging of their (unique) resources. For cooperation to happen, it is necessary that such win-win based benefits cannot be achieved easily using other arrangements. In summary, we investigated what RBV (and TCE) theory-based or other benefits municipal areas perceived, expected and/or did receive from inter-municipal ICT cooperation.

2.2 IT Governance practices

During the last twenty years, IT governance has become an established concept, both in practice and in academic research. The practical understanding has cumulated into the international ISO/IEC 38500 standards family and into the best practice IT management/governance methods, including ITIL, CMMi and especially COBIT. The ISO/IEC 38500 standards family is principles based to the extent that according to the 38504 standard, IT should be governed as principles-based. The 38500 standards were included explicitly and widely heralded into COBIT version 5. Close relationships between IT governance standards and best practice methods are understandable since most developer organizations of such methods, such as ISACA, ITsmf, and IEEE, have a liaison relationship with the ISO/IEC JTC1 SC40 WG1 (ISO/IEC Joint Technical Committee 1, Standardisation Committee 40, Working Group 1) that is responsible for the development of the mentioned standards. From the ICT cooperation perspective, it is important that IT governance is considered as part of corporate (enterprise) governance, i.e. ICT cooperation should produce measurable value to cooperation parties. Best practice methods describe, respectively, the object of (ICT) cooperation, that is, what (ICT) services municipalities could potentially develop, operate, manage, and govern given ICT cooperation.

In academic research, IT governance has been defined and investigated in multiple ways (see e.g. Peterson, 2006; Dahlberg and Kivijärvi, 2006; Van Grembergen and De Haes, 2012). In the IT governance implementation research, the view that IT governance implementation happens through structure, process, and relational mechanism practices (Van Grembergen et al., 2004) has become well established. Prior research has investigated what IT governance practices organizations use and how practices used impact IT governance performance (Ali and Green, 2009, 2012), business-IT alignment maturity (De Haes and Van Grembergen, 2009) or organizational performance (Turel and Bart, 2014). De Haes and Van Grembergen discovered that Belgian banks used seven base-line IT governance practices. These were the most used of 33 IT governance practices they identified in a literature review (De Haes and Van Grembergen, 2009). Almeida et al. (2011) listed 46 IT governance practices, many

with a few variations. In this research, we investigated what prior research based or other IT governance practices Finnish municipal areas used to execute and govern ICT cooperation.

2.3 Social ties and social network theory

Municipal ICT cooperation occurs between persons that are employed by various municipalities, that is, divergent social groups. In our opinion, Granovetter's social network theory offers several useful constructs that help one to understand why ICT cooperation between municipalities may or may not happen. According to Granovetter (2005) ties (=social relations) between individuals representing different social groups describe the flow of information and other resources between them as well as the quality of information shared through those ties. Ties are also needed to establish trust between individuals and social groups. Trust means that a trusted individual and/or social group is believed to do "the right things" (Granovetter, 2005). Also the TCE (Geyskens et al., 2006) and RBV (Das and Teng, 2000) theories, and IT governance research (Almeida et al., 2011) emphasize the importance of trust as the prerequisite of relational governance including inter-municipal ICT cooperation.

Granovetter describes the social network (relations) inside a social group with the strong tie construct. The individuals of a social group share the same experiences, values, beliefs, norms, objectives, and other similar factors. These shared factors produce strong ties. For example, each municipality defines its own ICT service priorities to reflect the objectives (strong ties) of that municipality. The higher the density in a network, another construct by Granovetter (1973, 1983), the tighter the strong ties are, since it is easier to enforce norms in a dense social group. For example, the employees of a small municipality may share a strong identity and beliefs. They may want to defend the independence of their municipality (identity) and show distrust toward the activities of a nearby city. If ICT cooperation is seen to increase the risk of a merger between that small municipality and the city, cooperation may not happen. Granovetter claims that social groups are connected through their weak rather than through their strong ties (Granovetter, 1973, 1983).

Weak ties are social connections between different social groups. According to Granovetter the exchange of ideas actually happens through weak ties (1973, 1983). An individual belongs to more than one social group, i.e., family, friends, or work community. The larger the network, the lower the network density, because people have cognitive, emotional, spatial, and temporal limits for how many social ties they are able to sustain (Granovetter, 1985, 2005). For example, the ICT professionals of a municipality may not have either the time or the energy for inter-municipal ICT cooperation. Those social groups that are closer and those with whom the ICT professionals share strong ties, may consume all their time and energy. Granovetter (1985, 2005) uses the term "structural hole" to describe situations where there are no ties between social groups. The reason could be the clash of strong ties (distrust), lack of time (absence of weak ties caused by a too dense network) or another reason. A trusted third party could be used to fill a structural gap. For example, consultants could help to establish ICT cooperation between municipalities. We investigate the constructs of social network theory that are useful for understanding the variations in municipal ICT cooperation perceptions.

2.4 Related studies: ICT cooperation between Finnish municipalities

In 2010, Hyvönen (2015) investigated how ICT services were arranged in 23 municipalities of one Finnish region by interviewing those responsible for ICT in each municipality. The study revealed there was no systematically organized cooperation between the municipalities to develop and/or produce ICT services. The study by Dahlberg (2016) investigated how an inter-organizational IT governance arrangement was established between 5 hospital districts, 68 municipalities, and 33 healthcare centers during 2013-2014. The establishment of this inter-organizational IT governance arrangement (Dahlberg, 2016) was based on the discovery of 13 perceived ICT cooperation benefits as shown in Table 1. The stakeholders saw their existence as a prerequisite for the implementation of voluntary inter-organizational IT governance. The process to develop the inter-organizational IT governance arrangement with its identified benefits was also used to build greater trust between the

parties. Trust building was needed to overcome past controversies. The arrangement included the founding of five IT governance practices: A regional ICT Executive Board (structure), a regional ICT Coordination Board (structure), a regional ICT services planning process, a regional ICT strategy process, and a communication procedure for regional ICT issues (relational and process).

Perceived Benefit of Inter-organizational ICT Cooperation for Municipal Healthcare and Social Welfare ICT with Links to Theoretical TCE and RBV Constructs	Proportion in Strong Agreement (n=68)
Avoid the development of overlapping and difficult- to- integrate IT services (RBV - conserve resources; TCE – asset specificity)	86.8%
Increase the interoperability of patient/customer information systems and data storages (RBV – obtain resources; TCE – asset specificity	86.8%
Create enterprise architectures (RBV – substitute; TCE reduce uncertainty)	79.4%
(Co-) source IT-services both cost-efficiently and effectively (RBV – create difficult- to - imitable resources; TCE – reduce costs of non-specific assets)	75.0%
Implement national level healthcare and social welfare IT services efficiently and effectively (RBV – access to resources that are difficult to imitate; TCE – acquire assets that are specific at a low cost)	75.0%
Ensure ability to participate in the national level development of healthcare and social welfare services (RBV and TCE as above)	72.1%
Use IT resources and assets efficiently and effectively (RBV and TCE – these are the key constructs of both theories)	70.6%
Ensure access to specialized capabilities and competencies everywhere in the area (RBV – ensure access to rare resources; TCE – ensure availability of idiosyncratic assets)	69.1%
Ensure availability of equal healthcare and social welfare services everywhere in the regional area (RBV and TCE as above)	67.6%
Ensure tighter cooperation at the national level (RBV – substitute resources; TCE reduce uncertainty)	89.7%
Ensure tighter cooperation at the regional level (this area) (RBV – share unique resources; TCE – reduce the impact of idiosyncratic assets)	85.3%
Create jointly agreed data models and stick to them (RBV – value through pooling; TCE reduce uncertainty)	85.3%
Ensure tighter cooperation between healthcare and social welfare (RBV – create substitute value; TCE – reduce behavioral uncertainty)	79.4%

Table 1.   Perceived benefits of inter-municipal ICT cooperation

3 Methods

The empirical research material consisted of surveys, documents, and other written material collected in three prior studies. One of these was the large research on 144 Finnish municipalities. We used this data as the key secondary data. The two other studies were regional case studies in Central Finland and Northern Ostrobothnia. These two studies were reviewed in Chapter 2.4. The key secondary data, ICT-muutostukiohjelma, was collected in a research effort conducted by the Ministry of Finance. The purpose of that research was to support and incentivize municipalities to restructure municipal services between near-by municipalities. The English name of the research would be "ICT change support program". Cumulatively, 144 municipalities with strong economic relationships, i.e., unified business and work areas, participated in this research from 20.2.2014 to 31.12.2015. These municipalities constituted 20 regional areas. Each regional area was considered a candidate for mergers between the municipalities in that area. Consequently the 11 largest urban areas of the country were included. The number of municipalities in each regional area varied between 3 and 17. A separate report about ICT within each regional area as well as an evaluation of ICT cooperation within that area were written on

each area. Consultants supervised by the Ministry wrote these reports. We analyzed them as secondary data by classifying the data in the reports without collecting additional primary data.

The reports included information about the municipalities of each area. We collected data on the following background variables: Municipality name, number of ICT personnel, the proportion of ICT personnel from the total of civil servants, the formats for (any kinds of) inter-municipal cooperation and the names of municipalities in that area that participated into municipal cooperation. We then analyzed reports on the following topics: Format of municipal ICT cooperation, areas of ICT cooperation, perceived ICT cooperation benefits (perceptions, expectations/beliefs, experiences), use of inter-organizational IT governance practices, nature of social ties, and ownership of Kuntien Tiera. Kuntien Tiera is a national, municipalities owned ICT procurement company, which operates between ICT service providers and municipalities. To evaluate the quality of the reports, we verified the sizes of the municipal populations by comparing the data in the reports to that for the Finnish Population Register Center (Väestörekisterikeskus, 2016). We deemed the quality to be acceptable.

Three of the reports followed a different approach than followed in the other 17 reports. These three reports focused on limited details or on regional future scenarios. Due to this inconsistency, we excluded them from this data analysis. We read all remaining 17 reports and their appendices and classified the information in them for the variables explained above. Theory-based classifications were used to analyze ICT cooperation, IT governance practice, and observed social ties. Variables and their theory or research based classifications established the framework for the data collection and analysis effort. After the framework was developed, two researchers read the reports and analyzed the data in them independently and separately by journaling their findings. Their findings were then compared and agreed upon. We conducted a second round in the same way to validate our findings further. The approaches and the content of the 17 reports were partially incompatible and non-comparable due to the use of consultants to write them. As a consequence, we decided not to use the ATLAS text analysis software that was available to us, but instead read the documents, journaled and classified the findings independently and then compared the independent findings and classifications of two researchers.

4 Results

4.1 The perceived benefits of inter-municipal ICT cooperation

The data analysis showed that ICT cooperation between the investigated municipalities was very limited and executed via ad-hoc (IT governance) arrangements. Dahlberg (2016) reported a similar finding prior to the establishment of an inter-organizational IT governance arrangement. Sixteen of the 17 regional area reports had text on ideas for how to organize municipal ICT cooperation better, as Table 2 here indicates. The reports also hinted how the ideas to improve inter-municipal ICT co-operation could be linked to the achievement of potential benefits from such cooperation. Table 2 shows how we then connected the ideas to improve ICT cooperation to mainly the TCE and RBV theories reviewed above. As we discovered that ICT cooperation is promoted heavily when the actual cooperation was very limited, if existing at all, we headlined our article by referencing the famous H.C Andersen's fable. Only a small boy had the courage to say that the emperor had no clothes. In line with the citizens' reactions of the empire in that fable, we state, indeed the emperor has no clothes.

Development idea to improve inter-municipal ICT cooperation to gain benefits from that ICT cooperation	Number of regional areas that had considered the idea (n=16 of max 17)	Theoretical background theory: TCE = cost saving, RBV = increased value
Data centre cooperation or server cooperation	9	TCE
Joint procurement	7	TCE
Shared development, national cooperation	6	RBV
Development cooperation within a municipal group	4	TCE, RBV
Buying shares in an existing company or organization	3	RBV
Establishment of a new, shared service ICT company	2	TCE
Discussion forums	2	IT Governance practice
Mergers between municipalities	1	TCE, RBV

Table 2.   Development ideas to improve municipal ICT cooperation and their rationale

Of the regional reports, 14 included more detailed development ideas for municipal ICT cooperation. We compiled these results into Table 3. The titles of the development ideas are shown as the report authors expressed them. We decided not to group them despite seeing some evident overlaps.

Detailed development idea, that is, the potential detailed benefit of ICT cooperation	Number of regional areas (n=14)	Theoretical background theory
Integration of information systems	11	RBV, TCE
Centralization of ICT infrastructure	8	TCE
Development of (regional) digital services	7	TCE, RBV
Renewal of the ICT service model	6	TCE, RBV
Process harmonization	5	TCE, RBV
Organization and development of ICT expert resources	4	RBV, IT governance practice
Development of operating models	4	TCE, RBV
Closer cooperation between business and ICT management	3	RBV, IT governance practice
Harmonization of ICT contracts	3	TCE, RBV
Joint development of IT governance models	3	IT governance practice
Joint Strategic Management of ICT	3	RBV, IT governance practice
Shared ICT service operations, ICT service strategy	3	RBV, IT governance practice
Development of a common guidance	2	TCE
Development of ICT awareness among municipal managers	2	IT governance practice
Development of special knowledge	1	RBV
Development of ICT design activities	1	RBV, IT governance practice
Development of ICT design methods	1	RBV, TCE
Shared management of IT governance models	1	IT governance practice
Identification of ICT services for the core business	1	IT governance practice

Table 3.   Detailed development ideas offered for municipal ICT cooperation

The reports often described inter-municipal ICT cooperation as follows: Civil servants and ICT professionals meet and discuss diverse ICT topics. Yet, since no formal IT governance arrangements are established, the topics discussed remain open and no decisions are made. Meetings are organized to share information and experiences, sometimes without an agenda. Meetings also appear to fulfil the social function of peer support, as feelings about rushing and insufficient resourcing come across in all the reports. Moreover, according to our analysis, the lack of perceived concrete benefits disguises the achievement of potential benefits from ICT cooperation. ICT specialists and civil servants are consumed by their daily routines. They have learned to cope with the stress and insufficient resourcing inherent in the ICT usage of municipalities. In a small or medium size municipality, the most burning ICT infrastructure- related tasks can almost entirely consume the available time of the municipality's ICT specialists. Although inter-municipal ICT cooperation may help them share and pool resources, they have no time to consider how to benefit from cooperation. The achievement of potential benefits also requires input from the municipality's civil servants. They seldom have the time, interest and/or competencies, especially as they may feel that the quality of the ICT services that their work relies on is not satisfactory. Civil servants do not foresee that ICT cooperation could offer them better solutions.

In our opinion, the constructs of social network theory helped us to understand these findings. The establishment of inter-organizational IT governance receives little support from municipal ICT professionals since the necessary social ties do not exist. According to the reports, the ICT services of a municipality have been developed for decades independently of other municipalities. This scenario has contributed to the lack of weak ties and also created clashes related to some of the different strong ties. Nearby municipalities could even develop independently the same ICT-enabled service based on national legislation almost at the same time due to a lack of trust and positive (ICT) cooperative history. The strong ties inside a municipality for prioritized service needs leave no time to establish social ties with other municipalities. The influences of Granovetter's (1973, 1983) construct, i.e., a "large network of internal ties", describe this finding best. The time-constrained diverse service needs of a municipality's internal social groups leave no time for inter-municipal (ICT) cooperation. Nevertheless, ICT professionals have still identified many ways to potentially improve ICT cooperation as Tables 2 and 3 indeed to show. We concluded that inter-municipal ICT cooperation could grow rapidly should the sentiment toward ICT cooperation change.

Inter-municipal ICT cooperation and governance is advanced in one regional area. This area consists of one major city and 8 smaller municipalities surrounding that city. These 8 municipalities have established an ICT alliance. This alliance develops, operates, and governs ICT for all 8 municipalities and also the relationship with the major city. The municipalities have recruited a joint ICT Director, who represents the 8 municipalities in relevant forums and whose salary is divided between the municipalities. This inter-organizational IT governance arrangement has improved the alignment of ICT activities between the major city and the municipalities. In that area, two ICT executive committees have been organized, one with the major city and another with the 8 municipalities. In addition, the major city and the municipalities have their own ICT projects, working groups, and meetings. The ability to provide alternative service channels and mobility to customers with a shared regional learning environment, regional public transportation and well-functioning administration are some of the objectives set for better inter-municipal ICT cooperation. Both the major city and the 8 municipalities have been pleased with these IT governance arrangements and perceive that they have received concrete benefits. The case study of Dahlberg (2016) reports similar findings in another area. In that area, well-organized inter-organizational IT governance with measurable benefits was an explicitly stated objective. On the basis of these two cases, we thus conclude that well-organized inter-organizational governance does positively relate to the achievement of ICT cooperation benefits.

4.2 Inter-Municipal ICT cooperation and IT governance practices

The size of the population in the investigated municipalities ranged from 755 to 623,732 (Väestö-rekisterikeskus, 2016). Due to the large variation in the populations, the number of civil servants and ICT professionals employed also varied between the municipalities. The number of ICT professionals varied from 0 to 483. Table 4 shows the statistics found in the reports.

Number of ICT Personnel	Number of Municipalities (n=110, 34=N.A.)
0	27
<=1	26
1<2	8
2-9	35
10-49	7
50-99	4
100+	3
No information + unknown	29 + 5

Table 4.   The number of ICT personnel in the studied municipalities

Table 4 shows that 27 small municipalities, almost 25 % of the 110 municipalities confirming this data, did not have any ICT personnel. Additionally, in 26 municipalities, the number of ICT personnel was less than 1. In these 53 municipalities, other civil servants carried out ICT tasks in addition to

other duties or a part-time person was recruited. It is worth noting that 29 municipalities did not report the number of their ICT personnel. We were able to calculate most of the missing figures from the total number of ICT personnel in the reports, but then opted to exclude them from Table 4. The comparison between the number of ICT personnel and the number of municipal civil servants revealed that the ratio varied between 0 and 2.4 percent. The highest figure was detected in a very small municipality, where one ICT professional accounted for this ratio. The ratio of ICT personnel to the total number of civil servants was above 1 percent in 9 municipalities only, and 7 had less than 3300 inhabitants. The other 2 municipalities are among the 6 largest municipalities in Finland. There appears to be no correlations between the size of the population in a municipality, the number of civil servants, and the number of ICT personnel. However, we did not perform statistical tests to verify this.

ICT cooperation between Finnish municipalities is most often conducted in healthcare and social welfare ICT. The insufficiency of ICT resources was the most often-mentioned reason for the lack of ICT cooperation. The number of ICT personnel is so small that it has been necessary to allocate all ICT resources to keep the operational ICT services running. That has left no time for ICT cooperation, such as the joint development of ICT services. The infamous double bind (a catch-22) term describes this phenomenon. We also consider the role of social ties important as discussed in Chapter 4.1.

We compiled data on the depth of ICT cooperation from all 20 reports we read and from the study by Dahlberg (2016). We classified the perceptions of the persons who wrote the reports / study. The network density construct of Granovetter (2005) was used to craft Table 5. Strong network density classification value was used for regular or at least semi-official ICT cooperation. Activities, such as joint ICT steering groups, ICT participation in various multi-sector meetings, shared IT governance processes and shared knowledge management, were interpreted as typical descriptions of strong network density. Weak network density meant ad-hoc ICT cooperation and irregular information sharing. Also lack of shared IT planning and/or focus on a municipality's independently developed and produced ICT services indicated weak network density. As Table 5 shows and as is discussed in Chapter 4.1 weak ICT cooperation between municipalities was more common than strong cooperation.

Network Density	Number of Regional Areas (n=21)
Strong	9
Weak	12

Table 5.   *Inter-municipal ICT cooperation network densities*

We even discovered a few structural holes, non-existent ties. Structural holes related to a lack of time or distrust. A trusted person or third party is able to patch a structural hole (Granovetter, 2005). We detected only one inter-municipal ICT cooperation arrangement with a person / party whose task was to act as a liaison between a major city and the smaller municipalities. In all other ICT cooperation arrangements, information moved through weak ties or not at all. Four major cities had implemented IT governance initiatives wherein a person or a group of persons was nominated to act as the internal focal point for ICT issues. These arrangements included such activities as sharing of decision-making information and idea collection and management. Such initiatives could be extended to near-by area.

Even though inter-municipal ICT cooperation appears to be limited in Finland, largely due to lack of time, municipalities have actually cooperated since times immemorial. The Constitution and other laws allow Finnish municipalities to organize their service production in multiple ways. It often makes sense to join forces and organize the production of services together. The history of municipalities has witnessed several forms of such cooperation. One common practice is to create a joint authority to take care of specific services. There were 136 such joint authorities in 2012 in Finland. A joint authority is an independent public entity that operates under the legislation that governs the activities of municipalities and is owned by the cooperating municipalities. Healthcare districts are the largest group of joint authorities. Municipalities may also jointly hire civil servants to deliver shared services. Smaller municipalities especially use this option. Municipalities have established jointly owned enterprises to take care of waste management, business services and tourism. They have also signed

cooperation agreements to execute such services as water management, rescue services, education, and the inspection of buildings and other facilities. Municipalities may even buy services from each other. Thus, there are no legal reasons that would prevent an increase of inter-municipal ICT cooperation. Regional cooperation between municipalities within a specific service area has traditionally been associated with industrial policy and lobbying (Kuntaliitto, 2016). We find it surprising that municipalities have established only a few joint ICT authorities, such as Kuntien Tiera, to ensure that benefits can be obtained through inter-municipal ICT cooperation. We conclude that sparse networks, along with limited time and trust and the lack of weak ties, are the reasons for this phenomenon.

In the data analysis, we grouped IT governance practices into three categories (De Haes and Van Grembergen, 2009; Almeida et al., 2011): IT governance structures, IT governance processes, and IT governance relational mechanisms. These practices were seldom discussed explicitly in the reports, but there were some implicit indications that we used to classify the usage of practices. Similar to other findings, the usage of IT governance practices varied between the regional areas. Municipalities that cooperate actively with their near-by municipalities also most often used IT governance practices.

The usage of structural IT governance practices would indicate that IT governance is systematically organized. The investigated Finnish municipalities focus on their internal ICT services and hence also on intra-organizational IT governance. Inter-organizational IT governance structure practices become needed only after there is well-established, inter-municipal ICT cooperation. In the light of what we have already disclosed, not surprisingly, only three reports and the case study by Dahlberg (2016) mentioned IT governance structure practices. The most often- mentioned practice was an ICT steering group, which monitors joint ICT activities and establishes transparent accountabilities between the cooperating municipalities. Table 6 shows the usage of such IT governance structure practices.

IT Governance Structural Practices Used	Number of Regional Areas (n=4)
IT project steering group	3
IT steering committee	2
IT strategy committee	1
IT expertise at the Board level	1
CIO in executive committee	1
Integration of governance	1

Table 6.   IT governance structure practices used in the regional areas

IT governance process practices (De Haes and Van Grembergen, 2009) are used more often than are IT governance structure practices. Strategic information systems (SIS) planning was the most often used IT governance process practice followed by project governance and budget control practices. The use of a single IT governance process practice was mentioned in 6 reports, and 2 reports indicated that several practices were used. Our findings are compiled into Table 7 here. Why indeed are IT governance process practices used more often than IT governance structure practices? We suggest that in some cases IT governance structure practices are used ad hoc. If our suggestions were correct, it would indicate that the implementation of voluntary inter-organizational IT governance might be easier when starting from an IT governance process than when starting from structure practices.

IT Governance Process Practices Used	Number of Regional Areas (n=8)
Strategic information systems planning	5
IT performance measurement	1
Portfolio management	2
Charge back arrangements	1
Project governance methodologies	3
IT budget control and reporting	3

Table 7.   IT governance process practices used in the regional areas

Table 8 shows the usage of IT governance relational mechanism practices. These practices are the most often used IT governance practices, and dominated by informal meetings. We suggest that

starting with relational mechanism practices in the implementation of voluntary inter-organizational IT governance is probably a useful strategy since is supports the building of trust and social ties. Trust and social ties are needed to establish IT governance process and structure practices.

IT Governance Relational Mechanism Practices Used	Number of Regional Areas (n=12)
Co-location	1
Knowledge management	4
Informal meetings	10
Communication	2

Table 8.   *IT governance- relationship mechanism practices used in the regional areas*

5.   Discussion and Conclusions

Our study analysed secondary data, 17/20 municipal regional area reports, and two prior studies to investigate, what perceived benefits Finnish municipalities receive and/or could receive from inter-municipal ICT cooperation and what inter-organizational IT governance practices they use to achieve such potential benefits. The other purpose of our research was to examine, whether the TCE and RBV theories, together with IT governance implementation practice research and Granovetter's social network theory, are a solid theoretical basis to use to investigate these issues. Data analysis revealed that the majority of investigated Finnish municipalities run their ICT independently without organized inter-municipal ICT cooperation and hence also without systematic inter-organizational IT governance arrangements. The Constitution of Finland stipulates that municipalities are independent, self-governed legal entities, and thus they have the legal right to do so. On the other hand, inter-municipal ICT cooperation between near-by municipalities was perceived as providing significant economic and other benefits in terms of cost savings and increased value.

The TCE and RBV research suggests dozens of concrete items for the measurement of cost savings and value increase potentials. The few discovered examples of systematic, well organized, inter-organizational IT governance arrangements showed that these arrangements strongly relate to the achievement of concrete measurable benefits. Similar to intra-organizational, inter-organizational IT governance arrangements are also implemented through structure, process, and relational mechanism practices as the IT governance practice research does propose. Trust building and other social ties between municipalities are prerequisites for inter-municipal ICT cooperation and IT governance. Granovetter's social network theory addresses these issues. Our conclusion is that the lines of research and the theories we used in our research constitute a solid basis for the present and similar future research. Furthermore, our findings are consistent with these theories and the findings of the prior research and indeed extend the IT governance research from intra-organizational contexts to challenging inter-organizational networks. The extension of the theoretical basis for IT governance research thus becomes the major scientific contribution of our research.

Data analysis showed that the investigated municipalities considered inter-municipal ICT cooperation potentially beneficial with several identified concrete benefits. Yet, their IT personnel were fully tied to the operations of existing ICT services and had done little or nothing to realise inter-municipal ICT cooperation benefits. A municipality's IT resources are too small when compared to ICT investment and ICT services development and production needs. The ICT resources of small and medium size municipalities are especially limited. Expectations that can increase the deployment of ICT in municipal services – e-Government - will in our opinion be severely hampered unless inter-municipal ICT cooperation with systematically organized IT governance arrangements are established. The perceptions of the benefits of inter-municipal ICT cooperation are both economic and non-economic. The most common perceived benefits are related to resource sharing and joint purchases. Transaction cost economics and the resource based view theories, together with IT governance practice research, describes these perceived benefits well. This answers the first research question of this study.

Organized inter-municipal ICT cooperation between these investigated municipalities was limited. Hence, the use of IT governance practices was also rare. We did discover that four regional areas used structure, eight process and twelve relational mechanism IT governance practices. On the basis of these findings, we suggest that relational mechanism practices could be used to build trust and social ties. Trust and social ties are needed to implement inter-organizational IT governance using the three types of IT governance practices. We discovered that the investigated municipalities used cumulatively close to 20 different IT governance practices, most in just a few regional areas. Used IT governance practices were similar to those reported in prior studies. We also learned that well-organized, inter-organizational IT governance increased the benefits of ICT cooperation as well as actual ICT cooperation and IT governance performance, thus answering the second research question.

The constructs of Granovetter's social network theory proved useful in understanding those factors that promote or prevent inter-municipal ICT cooperation and IT governance. Strong ties often created wide inter-organizational networks and reduced the power of weak ties between the ICT personnel of the municipalities. The resulting non-existence of social ties, however, hampered inter-municipal ICT cooperation. All of the time of a municipality's ICT professionals was often needed to serve the diverse internal user groups of that municipality. There simply was no time and energy left for cooperation. We also discovered that although it is possible to use trusted third parties to create social ties (fill structural holes), only one regional area had actually applied this opportunity. IT governance arrangements were, however, detected to support the creation of trust and social ties between municipalities. This is our answer to the third research question.

Our study was conducted in one country and caution regarding these results is thus necessary. The empirical data contained only a few municipal areas with well-organized inter-municipal ICT cooperation and IT governance, indeed another limitation. Empirical evidence to compare the impacts of well-organized and disorganized inter-organizational IT governance on the actual achievement of ICT cooperation was thus limited. These methodology- related limitations reflect the investigated reality and can hopefully be removed in future studies by conducting similar studies in other countries and other inter-organizational ICT cooperation and IT governance contexts. In addition to the theories used here, there are other theories that describe cooperation benefits and social ties. Choices that reflected the theoretical basis of this study are its main theoretical limitations. Despite these limitations, however, we believe that the theoretical basis used here and the secondary data analysis will be useful in future studies.

Our findings suggest propositions that are amenable to future research. Inter-organizational ICT cooperation and IT governance often starts gradually. Longitudinal studies, including continued data collection on the investigated 20 regional areas and additional cases, appear to be a lucrative venue for future studies. Another venue is to investigate the research problem and questions of this study in those hierarchical networks that are characterized by one principal and several subcontractors. Deeper understanding of the role and impacts of social ties within IT governance implementations is also a welcome opportunity. Our advice to researchers, therefore, is to consider social ties especially in new inter-organizational IT governance studies.

The regional area reports we read showed clearly that cost consciousness and resource optimization are deeply rooted in the minds of Finnish municipal executives. Financial pressures drive them to increase efficiency to save costs. ICT is often seen as a solution to both challenges. Municipal executives apparently do not know how to deploy ICT cooperation to achieve such objectives. Our advice to practitioners is to identify concrete cost savings and value increase opportunities. The empirical TCE and RBV research (e.g. Geyskens et al., 2006; Park et al., 2004) offer several well-established and robust benefit measures. We end this article with our final reference to the H.C Andersen's fable. The emperor will remain naked, i.e., will not receive cooperation benefits unless inter-municipal ICT cooperation and IT governance are established and executed systematically.

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