IT Governance Implementation in a Public Organization: A Case Study of a Swedish Municipality

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Abstract

Information Technology (IT) is a part of the business strategy and plays a very important role in private organizations, but has a lot to offer to public organizations as well. In fact, public organizations can benefit by using IT to achieve their organizational strategies and improve their services. Moreover, to have a better return on IT investments an organization needs to have an effective IT governance (ITG) implementation in place. A municipality unlike a private organization has a large diversity of operations, including healthcare, school, laws and regulations and monopoly. Therefore, effective IT governance implementation is of great importance for a municipality. In this perspective, the study looks to answer the following research question: How is IT governance implemented in a Swedish municipality? The research strategy used was case study research and the data was collected through interviews and internal documents from Södertälje municipality. The purpose of this research was to identify the IT governance practices: structures, processes and relational mechanisms, and the IT decision authority at Södertälje. The case study has shown the complexity of the organizational structure, the controlled processes and the weak existing relational mechanisms that are a barrier for achieving effective ITG. This study has identified a big problem that this municipality has faced, being locked in the hands of the IT service providers. This thesis contributes to research area of IT Governance with a focus on Swedish municipalities.

Keywords

IT Governance, public organizations, Swedish municipality, structures, processes, relational mechanisms, governance arrangements matrix
I would like to sincerely thank and express my gratitude to my supervisor of this thesis, Owen Eriksson for his valuable advice, assistance and guidance throughout this project. I would also like to extend my gratitude towards Södertälje municipality and their employees for their kindness and willingness to participate in my interviews. Lastly, an honorable gratitude goes out to my family for the support and encouragement throughout the duration of this thesis.
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1. Introduction

In this chapter, a background on the subject of the research study will be presented as well as the research problem, purpose, characterization of knowledge and scope of this study.

1.1 Background

Information Technology (IT) has become omnipresent in the changing private and public business environments. Even though the delegation of IT decisions was possible in the past, currently the IT dependency is inevitable and naturally omnipresent in most sectors and industries (Van Grembergen & De Haes, 2009, pp.1) Information Technology Governance (ITG) is a concept derived from governance, which emerged in the early 90s. ITG is mentioned by Henderson & Venkatraman (1993, pp.476) in their Strategic Alignment Model, where the authors state the importance and need for “strategic integration” between the business strategy and IT strategy. More specifically the IT Strategy presented in the Strategic Alignment Model of Henderson & Venkatraman (1993, pp.476) includes ITG. More recently, Van Grembergen & De Haes, (2009, pp.2) have defined ITG as: “Enterprise Governance of IT is an integral part of corporate governance and addresses the definition and implementation of processes, structures and relational mechanisms in the organization that enable both business and IT people to execute their responsibilities in support of business/IT alignment and the creation of business value from IT-enabled business investments.”

Furthermore, it is essential for organizations to ensure that the implementation of ITG is effective in order to generate value from IT investments. According to Weill & Ross (2004, p.3) “Top-performing enterprises succeed in obtaining value from IT where others fail, in part, by implementing effective IT governance to support their strategies and institutionalize good practices”. Following the development of ITG in the private sector, the public sector has incorporated the implementation of ITG in their business environments. In fact, public organizations use IT in order to achieve their organizational strategies and improve their services. The implementation of ITG in the public sector demonstrated differences, limitations and constraints compare to the implementation of ITG in the private sector. Campbell et al. (2009, pp. 9) state that the public sector faces multiple “mostly intangible and conflicting goals” that are driven by government priorities and limited by policies. Therefore, the limitations that arise in public organizations make this research area more interesting to investigate how IT governance is implemented in a public organization. Furthermore, the type of public organizations selected as case study is a Swedish municipality, due to limited research on ITG implementation in Swedish municipalities (Appendix A) and due to previous experiences in research with Swedish municipalities (Rusu & Jensen, 2015).
1.2 Problem

Research on ITG shows that an effective ITG implementation supports business IT alignment and creates business value (Van Grembergen & De Haes, 2009, pp.2). Furthermore, organizations can benefit from higher return on assets, business performance and be better prepared to face competitive threats from an effective implementation of an ITG framework (Gartner, 2011).

According to Campbell et al. (2009, pp. 9) public organizations face multiple limitations by government priorities, by policies, political influences and are largely affected by economic possibilities. A municipality unlike a private organization has large diversity of operations, including healthcare, schools, laws and regulations and monopoly. Moreover, municipalities also face difficulties to get people with IT Governance competences. Public organizations, and more specifically municipalities, get funded through taxes and are thus under greater pressure to use their economic resources more efficiently. Municipalities have a set budget and a set amount of economic resources that is available for them to use. Furthermore, the procurement in Sweden is set by the law called LOU (2007:1091 om offentlig upphandling), which regulates the purchase procedure for government owned organizations. Therefore, an effective IT governance implementation is of great importance for public organizations and municipalities. Sundsvall municipality, state on their website the importance of IT governance in their operations and how IT governance is becoming more important for municipalities. Sundsvall municipality’s method of using IT governance is by setting focus on governance models for IT (Koponen, 2014).

The review of the academic research literature in IT Governance (ITG) in public organizations has revealed that there are few academic research studies around the world and there are no published studies particularly about Swedish municipalities. Therefore, it can be said that there is a lack of knowledge about how IT governance is implemented in Swedish municipalities. Furthermore, this thesis will investigate how IT governance is implemented in a Swedish municipality by addressing the following research question: How is IT governance implemented in a Swedish municipality?

1.3 Purpose

The purpose of this is study is to investigate how IT Governance is implemented in Swedish municipalities. The research aims to bring forth the importance of effective IT Governance implementation in public organizations and particularly Swedish municipalities. The study could contribute to the research regarding effective implementation of IT Governance in public organizations. Additionally, it could help municipalities to understand how to generate value from IT by improving their ITG practices to achieve organization’s strategies and have in place an effective ITG implementation.
1.4 Characterization of Knowledge

In this thesis, the characterization of knowledge will be done in order to understand and define IT Governance and effective IT Governance implementation. The goal is to be able to bring forth the importance of effective IT Governance implementation, in order for it to be applied in a case study.

Categorical knowledge: This thesis will develop categorical knowledge to describe the complex terms and concepts of IT governance implementation in public organizations. This will be used in order to understand these complex concepts.

Descriptive knowledge: This thesis will use descriptive knowledge in order to have a good description of the subject and area of study. It is vital that the description presented in this thesis is clear to understand.

Understanding knowledge: This thesis will provide an understanding of the complex problems that are IT Governance, IT Governance implementation and IT Governance in public organizations, in order to have sufficient information to grasp and understand the subject area. It is vital to get an in-depth understanding of how IT governance is implemented in Swedish Municipalities, due to their diversified operations.

Value of Knowledge: This thesis will aim to determine how IT Governance is implemented in a Swedish municipality, and therefore show how the implementation of IT Governance measures in regard to the framework provided in the literature.

1.5 Scope

The scope of this study is to investigate how IT Governance is implemented in Swedish municipalities. The literature review (Appendix A) performed has shown that there is limited academic research on IT Governance in Swedish municipalities. Furthermore, due to the importance of the study, it will be interesting to perform a case study research on how IT Governance is implemented in a Swedish municipality.
2. Research Methodology

This chapter provides an understanding of the research method that is being used for this thesis. The chapter will also include a motivation for the selection of research method.

2.1 Research Strategy

The thesis falls in the field of social science research because it studies the IT governance of public organizations, which is a social phenomenon. Furthermore, this section presents the choice of research methodology used in this thesis.

2.1.1 Case Study

The choice of research strategy for this thesis is case study. A case study can be defined as a focusing on one instance of the scope that is being investigated (Oates, 2006). The instance is therefore studied in depth and can use a large amount of data generation methods. The aim of a case study is to get an in-depth understanding of complex phenomenon (Oates, 2006). The research aims to bring forth the importance of effective IT Governance implementation in Swedish municipalities. In order to get in-depth understanding of this complex phenomenon, the case study approach was a perfect fit. According to Oates (2006) a case study is characterized by: 1) Focus on depth not breadth - trying to understand as much as possible about one instance, 2) Natural setting - the instance is being analyzed in its natural setting and not under other conditions such as a laboratory, 3) Holistic study - the focus is on the complexity and connections between the processes and relationships, 4) Multiple sources and methods - the use of a large amount of data sources (Oates, 2006). The type of case study that this paper will use is an exploratory study, which will help to understand the research problem (Oates, 2006). The reason for using exploratory study is because there is little academic research literature and this method is based on the investigation of a real-life instance (Oates, 2006). The case study approach for this paper is to study only a single case and examine a short-term/contemporary study period, which means that it studies what is currently occurring in the case (Oates, 2006). Since there is just one instance that is being studied, it is important to choose the right type of instance (Oates, 2006). For this study the type instance is based on convenience, as the terms of time and resources are negotiated for the best and optimal convenient time for both parties (Oates, 2006). The case study research has advantages such: it can build on and test the theory and achieve important results by getting a wide variety of contextual data (Bhattacherjee, 2012). It is essential for this study to obtain an in-depth understanding of how IT Governance is implemented in Swedish municipalities, and therefore the case study strategy is a perfect match for this study.
2.2 Data collection methods

2.2.1 Interviews
The main data collection method that this paper will use is interviews. According to Oates (2006), an interview is a distinct type of conversation between people, meaning that the discussion is planned and does not occur by chance. Furthermore, one of the persons involved wants to gain information from the other person on a topic of interest (Oates, 2006). Interviews are suitable data generation methods in order to gain detailed information, ask complex questions, explore emotions and investigate sensitive issues (Oates, 2006). The advantage with interviews is that important and relevant data is being obtained from persons of interest (Myers, 2008). However, there can be issues with the interview process such as lack of time and trust or ambiguity in the language used (Myers, 2008). There are three types of interviews: structured interviews, semi-structured, and unstructured interviews. This study will use semi-structured interviews because the researcher has a theme of questions to cover, but is flexible to change depending on the flow of the discussion (Oates, 2006). The semi-structured interviews allow the interviewer to add new questions, which might come up from the discussion. This method is perfectly suited for this research because it allows the interviewees to discuss freely their thoughts and allows the interviewers to emphasize on the interested topics.

2.2.2 Documents
The second data collection method that this paper will use is documents. Documents are a type of data generation method, which are more than just written materials (Oates, 2006). A document can be seen as a typical representation, which can be recorded and saved for analysis (Oates, 2006). In the case of this paper, the documents that will be used are going to be provided by the public organization that is being studied and should be relevant and can provide useful data. The method of obtaining access to the documents is through negotiating consent and online research (Oates, 2006). This data generation method is being used in order to complement the interviews and to obtain more relevant data.

2.3 Data analysis
The data analysis type that will be used in this paper is a qualitative data analysis. Qualitative data is all the non-numeric data and is the main type of data generated from case studies (Oates, 2006). In this paper, the collected data is qualitative data from semi-structured interviews and documents. Furthermore, the study will use qualitative data analysis. Qualitative data analysis does not have any particular set of rules that are used to analyze the data and it can be criticized for this missing feature. The selected data analysis technique for this study is theme analysis, which focuses on identifying key themes in the data. The idea of this technique is to find existing segments and units of data in the data that can make up a category or a sub-category.
2.4 Application of method

This section presents how the data gathering methods and the data analysis techniques were applied.

2.4.1 Data gathering method

The data gathering method was performed with the use of interviews and documents from a municipality. Therefore, three municipalities located in Sweden, were contacted through e-mail, and telephone and informed about the subject that is being studied and were asked for their involvement in the study through interviews. Out of the three municipalities contacted, one agreed to participate in the interview. The municipality is located in the Stockholm region, and does not wish to keep its participation confidential, so they have not asked to be kept anonymous. In order to obtain relevant and meaningful results, it is essential that the interviewees have a role that is high up in the ranks and have a good understanding of IT Governance. Therefore, board committee members, managers, Chief Executive Officer (CEO), Chief Information Officer (CIO) have been considered for the interviews. As the criteria were met, the interviewees received the questions in advance in order to have a grasp of the subject that is being studied and later on the interview was scheduled. The total number of interviews was three and the interviews were conducted in the form of face-to-face interviews. All the interviews were recorded with a mobile phone after negotiating consent with the interviewees. This allowed the interviewer to focus on the answers provided by the interviewee and be able to look back on the responses in order to eliminate ambiguities. The interviews were performed in a mix of English and Swedish languages. The reason for this was that the interviewees felt less comfortable talking English and therefore preferred Swedish, meanwhile the questions were prepared in English.

Since the interviews are semi-structured, this means that there were a pre-set of questions, which are available in Appendix B and are based on the ITG framework of Van Grembergen & De Haes (2008, pp. 25) and the Governance Arrangements Matrix of Weill & Ross (2004, pp.10-11). These frameworks are described even further in chapter 3 of this thesis. Van Grembergen & De Haes (2008) provides an ITG framework in terms of structure, process and relational mechanisms. In other words, it shows the necessary elements of an IT governance framework. Van Grembergen & De Haes (2008) provides a holistic approach of the IT governance, which recognizes its complexity and changing nature. Therefore, the authors have identified a mix of three interdependent subsystems: structure, process and relational mechanisms as essential to implement an effective ITG (Van Grembergen & De Haes, 2008). Moreover, Weill & Ross (2004, pp.10-11) has identified five key IT decisions domains: IT principles, IT architecture, IT infrastructure, Business application needs and IT investment and prioritization, which are listed in the Governance arrangements matrix.

2.4.2 Data analysis technique

The data gathered from the interviews is in the form of audio recordings and notes taken from the interviews. The audio recordings have been transcribed and presented in Appendix C. In order to perform theme analysis, the data was carefully read and the categories by Van
Grembergen & De Haes (2008) and Weill & Ross (2004) were identified. Moreover, in order to identify the categories/themes, a six-phase process proposed by Braun & Clarke (2006) was applied. The six-phase processes used was the following: 1) Phase one - the data gathered is read, 2) Phase two – the generated data is put in to categories and subcategories, 3) Phase three – the identified subcategories are checked and reviewed 4) Phase four – the categories are reviewed and checked 5) Phase five – the decision makers are identified 6) Phase six - the analysis report is formed.
3. Extended Background

This chapter presents a literature review of: IT governance, IT governance in public organizations and IT governance frameworks.

3.1 IT Governance

The term IT Governance is a fairly new concept that emerged in the early 1990’s, first mentioned by Henderson & Venkatraman (1993, pp.476), which stated the importance of “strategic integration”, where IT Governance is a part of the IT strategy. As the concept has developed even further, the IT Governance has been multiply defined from different points of view.

In the past, business executives could avoid IT decisions without major implications, however now the large IT dependency makes it impossible to do so as this is too costly for the organization (Van Grembergen & De Haes, 2009, pp.1). According to Van Grembergen & De Haes (2009, pp 2), the capabilities of IT in organizations are not only to support existing business strategies, but also to shape new strategies. IT allows the organizations to get competitive advantage and separate themselves from competitors. Van Grembergen & De Haes, (2009, pp.2) have defined ITG as: “Enterprise Governance of IT is an integral part of corporate governance and addresses the definition and implementation of processes, structures and relational mechanisms in the organization that enable both business and IT people to execute their responsibilities in support of business/IT alignment and the creation of business value from IT-enabled business investments.”

Weill (2004, pp.2) argues that the importance of IT Governance is due to the influence it has on the return on IT investments received. Furthermore, Weill (2004, pp.2) states that organizations can get up to 40% higher return on the same IT investments. Top performing organizations rely on IT Governance when determining who makes each decision, who has an input and how those people are held responsible for their role (Weill, 2004, pp.3). Therefore, effective IT Governance is essential for organizations and Weill & Woodham (2002, pp. 2) mention how this can be achieved: “effective IT governance requires a careful analysis about who makes decisions and how decisions are made”. Liang et al (2011, pp.4) mention that a fundamental goal of IT Governance is to achieve strategic alignment between business and IT, and making sure that the IT delivers value for the organization. Furthermore, the strategic alignment is essential because it will lead to better business performance (Liang et al, 2011, pp.4). Moreover, the importance of ITG is motivated by the ITG focus. According to Peterson (2006, pp.9), IT Governance focuses on the circumstances of IT control and where IT decisions making authority is assigned in the organization. Therefore, this shows that ITG is important for making the right IT decisions in an organization.
3.1.1 IT Governance in public organizations

Public organizations are administrative and economic institutions that provide goods and services on the behalf of the government (Campbell et al. 2009, pp.7). These types of organizations are dependent on governmental budget funding and in Sweden; the law of procurement LOU regulates the method in which public organizations can procure (2007:1091 om offentlig upphandling). According to Campbell et al. (2009) due to the limitations that public organizations face, the development of the implementation of IT governance in public sector is falling behind the developments in the private sector. However, Campbell argues that no matter the sector IT Governance can be implemented using a mix of structures, processes and relational mechanisms. According to Hoch & Payan (2008, pp.1), establishing a well-functioning IT governance in the public sector is essential because of the complexity of the IT projects due to their economic and political objectives. Furthermore, Hoch & Payan (2008, pp. 2) state that well-functioning IT governance in the public sector involves five value-driven dimensions:

1. Leadership mandate - the authority accorded to the IT leader (CIO, director of IT) the scope of his role in the organization. This can range from bringing forth IT demand to match the demand to the IT supply seen in Figure 1.
2. Organizational structure - the structural factors of the IT organization, which should provide a balance for the IT advantages. These include usability and project success.
3. Decision-making process - this describes the method of which IT demands are identified, prioritized and met by the IT supply. It even prescribes the interaction process of IT services.
4. Mindsets and skills - the capabilities and skills needed to carry out the IT management tasks.
5. Performance metrics and incentives - measurements are needed to be defined in order to allow performance to be assessed and rewarded.

3.2 IT Governance frameworks

After performing a literature review (Appendix A) of the existing IT governance frameworks, the best suited frameworks for this study have been chosen. The first framework chosen is the Governance Arrangement Matrix of Weill & Ross (2004) where the authors provide a detailed guide of the implementation of governance mechanisms. The reason for choosing this governance arrangement matrix provided by Weill & Ross (2004) is because it is used to find out which governance archetypes are used to make different decisions. The second chosen framework is the framework provided by Van Grembergen & De Haes (2008). The reason for choosing this framework is because it has a holistic approach of IT governance and provides a good understanding of the mechanisms, structure and processes of IT governance.

3.2.1 Governance Arrangement Matrix (Weill and Ross, 2004)

Weill & Ross (2004, pp 10) provide a Governance Arrangements Matrix seen in Table. 1, which aims to answer to two key questions regarding IT Governance: What decisions should
be made and who should make the decisions? Furthermore Weill & Ross (2004, pp 10-11) are presenting five types of key IT decisions:

1. IT principles - High-level statements about how IT is used in the business
2. IT architecture - Defining technical standardization and integration
3. IT infrastructure - Determining shared and enabling IT services that provide the foundation for the organization’s IT capability
4. Business application needs - Determining the business needs for purchased or internally developed IT applications
5. IT investments and prioritization - Decisions about how much and where to invest in IT (projects, etc.).

Table 1 Governance Arrangements Matrix (Weill & Ross, 2004, pp. 11)

<table>
<thead>
<tr>
<th>Decision Archetypes</th>
<th>IT Principles</th>
<th>IT Architecture</th>
<th>IT Infrastructure strategies</th>
<th>Business application needs</th>
<th>IT Investment and prioritization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business monarchy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IT monarchy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feudal</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Federal</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IT Duopoly</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anarchy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Don’t know</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In the first column in Table 1 there is a list of archetypes in which most managers or directors identify themselves with and is further explained in Figure. 1. Weill & Ross (2004, pp. 11) argue that the five key IT decisions are related and connected in order to achieve effective governance and the IT principles initiate the IT architecture, which contributes to the IT infrastructure. Moreover, the IT infrastructure potential allows applications to be built according to the business needs and finally the IT investments are being driven by the IT principles, IT architecture, IT infrastructure and business application needs (Weill & Ross, 2004, pp. 11). Furthermore IT Governance concerns also in defining who takes the decisions.
Each of the archetypes presented in Figure 1 can have decisions rights or have an input rights on each of the IT decisions presented in Table 1 (Weill, 2004, pp.5). Therefore, each of the six archetypes will be explained even further.

**Business Monarchy** - The senior business executives make the IT decisions for the whole organization. This is usually a group of executives including the CIO with equal rights. A group of executives usually receive the input on the IT decisions from various sources (Weill, 2004, pp.6).

**IT Monarchy** - The IT senior managers form an IT Governance committee, which makes the IT decisions in the organization. This committee can be set up in different ways, however IT managers from various business units are involved in order to make sure the decisions and inputs make sense for all parts of the organization (Weill, 2004, pp.6).

**Feudal** - The feudal model is basically that each business unit focuses on their own decisions to enhance their needs (Weill, 2004, pp.6).

**Federal** - The federal model is made up of a federal group which is a coordinated decision making group which involves (at least two business hierarchies) a center and a business unit (Weill, 2004, pp.6).

**IT Duopoly** - This model involves a mix of two groups: an IT executives group and a business executives group working together to make the decisions. The duopoly model is popular amongst organizations as it involves two different decision making groups (Weill, 2004, pp.6).
Anarchy - A small group of individuals or only one individual make the decisions based often on their own needs (Weill, 2004, pp.6)

3.2.2 IT Governance framework (Van Grembergen & De Haes, 2008)

A holistic approach to IT Governance is presented in the IT governance framework of Van Grembergen & De Haes (2008, pp. 25) that shows the complexity and its changing nature and is made up of a set of interconnected subsystems, like structures, processes and relational mechanisms. To understand the necessary elements of IT Governance at all the levels of the organization the IT governance framework uses these three necessary practices: structures, processes and relational mechanisms as are presented in Figure 2 (Van Grembergen & De Haes, 2008, pp. 24).

![Figure 2 The necessary practices of an IT Governance framework (Van Grembergen & De Haes, 2008, pp. 25)](image)

**Structures** - contain the organization, an IT or business committee, the location of the IT function and the clearly established roles and responsibilities. It is very essential for an effective IT governance framework that there is no ambiguity regarding the roles and responsibilities of the persons involved. Effective IT Governance is also affected by the organization of the IT function and the how the IT decision making authority is distributed. IT governance should be an indispensable part of the corporate governance and the duties can be carried out through an IT strategy committee (Van Grembergen & De Haes, 2008, pp. 25-34).

**Processes** - contains the strategic decision making, strategic information system planning (SISP), monitoring, control and process frameworks. One of the processes that can be used for achieving business IT alignment is SISP which helps align IT with business goals, use IT for competitive advantage and manage more effective and efficiently the IT resources.
Balance scorecard is a tool used to evaluate the performance measurement of IT, which is key to strategic alignment. The measurement should also include customer satisfaction, internal processes and ability to innovate as opposed to a traditional evaluation. Service Level Agreements (SLAs) are used to determine the levels of service accepted by the user, which are also obtainable by the service provider. The SLAs are used for monitoring and reporting on services. COBIT is a framework for control and security of IT with a good understanding of the risks of IT at all levels of organization. ITIL is an IT Governance standard or guidance, which has the goal to provide to a vendor an independent method for service management (Van Grembergen & De Haes, 2008, pp. 25-49).

*Relational Mechanisms* - they are predominant for obtaining and sustaining business IT alignment even when the structures and processes are present. It is possible that an organization has the IT governance structures and processes set up and still not work out because of the ambiguity between the IT and business sides. Therefore, in order to achieve effective IT Governance, good communication and an active participation/collaboration relationship between the business side and the IT side is crucial.

### 3.2.3 Framework connection

The IT governance frameworks by Weill & Ross (2004) and Van Grembergen & De Haes (2008) are interconnected and through their use one can determine how effective an organization has implemented IT governance. The interconnection between the two frameworks is seen as the framework by Weill & Ross (2004) enables us to find more in-depth information about the structure of the organization. Therefore, this can be considered to be a part of structures in the framework by Van Grembergen & De Haes (2008). Furthermore, using both frameworks enables us to find more information about the structures of the organization and cannot be considered redundant as it seeks different types of information and therefore complements the framework by Van Grembergen & De Haes (2008).
4. Results & Analysis

This chapter will present and analyze the results received from the case study performed in one municipality. The information collected is based on the interviews performed and documents received from the municipality. This chapter has discusses the following: case study, the IT vision and strategy, infrastructural and business applications, the structures, processes, relational mechanisms, governance arrangement matrix. Furthermore, the ITG implementation at Södertälje is discussed.

4.1 Case study - Södertälje Municipality

Södertälje Municipality is a Swedish Municipality located in the Stockholm County, which has a population of around 91000 people. The municipality has a great diversity and this is one of their greatest strengths. The inhabitants of Södertälje originate from 40 different countries and speak 80 different languages. Södertälje can be reached from Stockholm in around one hour. Documents were collected and three interviews were performed on three employers of the Södertälje municipality. The interviews were performed with the municipality’s: ICT strategist, IT chief, and IT strategist. All interviews were performed on the same day, the 7th of May, 2015. The data collected has been read thoroughly and the data from the interviews has been transcribed and presented in Appendix C. The data gathered has been analyzed using the frameworks provided by Weill & Ross (2004) and Van Grembergen & De Haes (2008).

4.1.1 IT vision and strategy

Södertälje municipality’s IT vision consists of what the municipality can achieve with the help of IT. Södertälje should be a safe, unique meeting place with a perfect living environment, meaningful development possibilities for young people and an innovative municipal business (Johansson, 2004). Furthermore, the ICT strategist also states that: “When it comes to IT our vision is to create an e-Södertälje and through this create unique meeting places for our citizens.” The IT chief discusses the mission and vision by saying that: “the mission and vision is to enable the use of technology for the businesses so that they have an effective organization and satisfied customers, but again we are the enablers.” The IT strategist states that: “The role of the municipality is to meet the citizens needs when it comes to services, and what comes into that is how can we use the technology and the resources we have available to give the support and service that the citizens need.” Both the IT strategist and the IT chief discuss the ICT strategic plan that the municipality has and the IT strategist states that: “There is an ICT strategic plan from 2004 which is still relevant and it is not totally implemented. However, because of such rapid developments and changes are continuously happening the we don’t feel the need to change the strategic plan, because by the time it takes to change it the technology will change further.” Furthermore, the IT chief continues to discuss the ICT strategic plan by saying: “ICT is not fully implemented, but it is
the whole reconstruction from a paper based municipality to a digitized municipality which takes longer than 10 years."

Södertälje municipality wants to meet the needs of the citizens and this is an ongoing process, which has split the IT strategy into three categories: goal areas, goal groups, and enablers (Johansson, 2004).

**Goal areas** - e-democracy, e-processes and e-service (Johansson, 2004)
- E-democracy allows the citizens to use IT for the democratic processes (decision making processes).
- E-processes enable the municipality to use IT to effectively develop working process in the business.
- E-services allow the citizens to accesses, through the municipality’s website, all the services digitally as well as communication and information.

**Goal groups** - IT solutions should be concentrated on a few goal groups where IT solutions would benefit the most. The types of groups are internal users, such as employees and external users, such as citizens (Johansson, 2004).

**Enablers** - E-functions, Collective IT infrastructure, Organization for IT
- E-functions - an e-function is an IT solution that is aligned with the IT vision and strategy and helps to achieve the municipality’s vision.
- Collective IT infrastructure - the IT infrastructure is the collective platform where all the IT solutions in the administration begin. The IT infrastructure should enable the goal areas and with focus on the goal groups.
- Organization for IT - in Södertälje this is an enabler for the IT vision and the organization indicates who has the responsibilities and authorization to create solutions that follow the vision and strategy (Johansson, 2004)

The strategic objectives of IT are dependent on the municipalities strategy, and the IT strategist states that: “The strategic objectives from an IT perspective is to be available to meet the needs of the citizens from a perspective that one has from outside of the municipality, and that’s an adaptation which has been ongoing and the municipality has been good at it and put in its own routines and processes in the organization.”

### 4.1.2 Infrastructural services and business applications

The core services of Södertälje municipality according to the IT strategist are: “The most important service is very complicated, in a municipality there are so many services that if you ask several people they all might give you different answers. But one of the big challenges that we have is in the welfare sector...”. Furthermore, the IT chief discusses that the main IT core services are: “The most important/core services are data communication (wireless, internet), supply the central systems for authorization, integration, federating and security and so on, the ones that don’t buy systems as a service as a cloud, they should have the
possibility to put their data in our systems and therefore we buy the systems as a service, the working area pc and print, the telephony all the telephony exchange services and the call centers, the career services and the devices, furthermore we have the service desk if the citizens have any technical problem.”

The biggest sector within the municipality is the school sector and this about 40% of the organization. Therefore, within the Educational department at Södertälje the municipality has an ICT strategist, which is in charge of all the school's ICT systems. Södertälje has a diversity of business applications that they use in each sector and the IT chief states them by saying: “The critical business applications that we use are the business systems, such as the welfare system where you have all them who have the right to have home care, all the people who get maintenance support, all the elderly, and taking care of kids and so on. These are the main systems, email and office system are good for us administratively. Then there is further the ping pong system that Magnus has told you about. The welfare system, the teachers platform, the environment system, the board committee's administrative system, social structure systems with all the maps and all the pipelines and so on are much more important than the office programs. Then there is also the library system which is also very important.”

Lastly, the IT chief states how critical the IT is for Södertälje municipality by saying: “When you look at the main business sectors in the municipality that are the school sector and welfare sector, which make up 75% of the municipality, we can say that the school sector would not survive without IT, then there is also the question about being attractive compared to other municipalities (politically like offering PCs to students) so therefore IT is necessary to have, especially for preschools.” and the IT strategist follows up by adding that: “IT is becoming more critical in the organization. Currently IT is at the stage between not so critical to critical and soon it will become more critical compared to before.”

4.1.3 Structure

The overall organizational structure of Södertälje municipality is presented in this subchapter. The organizational structure is essential for the understanding of IT governance. Furthermore, it is important to have a very clear and good understanding of the complex structure that Södertälje municipality has in order to understand how this affects the implementation of IT governance.
Figure 3 Organizational structure of Södertälje Municipality

The organizational structure of Södertälje municipality is led by the Municipal Council, which is a group of politicians elected democratically every four years, together with the parliament elections. Further down in the hierarchy ranks is the Board of executives, which is made up of 11 politicians and 11 other politicians, which can replace the existing ones, if necessary. The Board of Executives leads, governs and is responsible for the planning of the municipality. The Board of executives also takes care of the development and financial decisions. Both the Municipal council and the Board of Executives are formed only of politicians, which are elected democratically.
Further down in the hierarchy begins the business level of the municipality, which is below the Board of Executives. This is called the City Directorate, and is made up of all the chiefs or directors of each department (office), the city director and the IT strategist. The City Directorate is a type of IT steering committee where the strategic decisions within the municipality are made. The IT strategist has a strategic responsibility for the municipality's use of IT and business development with the support of IT. Furthermore, the IT strategist focuses on the coordination and development of the information, which is an important part of the business and can contribute to the development and higher values. Amongst the areas that the IT strategist is responsible for are: the information and cyber security, sourcing strategies, procurement strategy, integration with various SaaS and cloud services, all with a focus on business benefits and efficiency.

Continuing in the hierarchy are the departments/offices. The Administration department is the department where all the administrative processes are managed. This department manages the administration of economics, personnel, and the IT unit. The head of this department is called the chief for the department of administration and investigations.

The IT unit is a part of the Administration department and is in charge of the technical administration, management and support for the whole organization. The IT chief is the head of the IT unit, which is formed of around 30 IT people, including system administrators and IT support personnel. The IT chief has technical, operational and leading role in the IT unit. Furthermore, the IT personnel have other technical roles, such as IT support, system administrative, management of systems, but no IT developing roles as this is being outsourced externally. Even though the municipality is dependent of IT, Södertälje municipality outsources all of its IT development and part of its management of systems. The IT services management and IT development is being outsourced to Tieto. However, since the municipality has such great diversity, even though most of the maintenance and management of systems is outsourced, some systems are partly being maintained and managed internally.

One of the other offices in the municipality is the Education office, which has as head the education office director; other employees include the school ICT strategist. The school sector is the largest sector in the organization and therefore needs a school ICT strategist. The school ICT strategist coordinates ICT activities in the municipal kindergartens, primary schools and secondary schools, driving the basis of documents, overall goals, action plans and pre-schools and school's needs on behalf of the office's steering group for ICT. The ICT-strategist stipulates the requirements of shared services, IT equipment and infrastructure to external providers, the IT unit and the IT strategist. ICT strategist takes annually up / revising
education office's action plan for the central ICT developments. Furthermore, some of the ICT strategist’s responsibilities are: convert the action plan into reality within the allocated resources and budget, manage strategic ICT development by pursuing and participating in development projects in the office, coordinate joint agreements, coordinate and provide support in ICT issues, communicate changes, development and status in the ICT business and manage some common IT services.

According to the IT chief, Södertälje municipality’s organizational structure is: “The IT organization is partly centralized and partly decentralized. The infrastructure is centralized, school IT decentralized, business systems decentralized.” The organization has according to the IT strategist an “…IT budget is around 3% of the municipality's total budget. The organization has around 6700 employees in the municipality and in the IT unit there are 5 people plus me, so 6 IT people. However, there are system administrators and IT support personnel which are in total 30 IT people.” The IT chief states that: “… I am responsible for how the technology works, not how it is being used, that's the organization's and the IT strategists job.” Furthermore the IT chief continues by saying that: “We have a dedicated IT unit but in the school sector we still take care of the customers, with the networks but not devices. We don't have so much control. I report to the chief for the department of administration and investigations, and this department is directly below the city's director.” The IT strategist has states that: “I am responsible for the use of IT, business development with the use of IT, IT support, IT development, IT security and my position is directly below the director of the city and my role is the highest ranked IT position in the municipality.”

The ITG structures at Södertälje municipality using the framework by Van Grembergen & De Haes (2008) are presented in Table 2. Moreover, each of the structures are explained even further below the table.

| ITG structures in Södertälje Municipality using ITG framework of Van Grembergen & De Haes (2008) | ITG used in Södertälje Municipality |
| ITG practices categories |  |
| Structures |  |
| IT steering committee/s (management level) | IT steering committee exists and takes care of strategic decisions. The head of this department is the city director. The IT Strategist is the IT representative in the committee. The IT strategist has the highest ranked IT position and is responsible for how IT is used. |
## Roles and responsibilities

<table>
<thead>
<tr>
<th>Roles and responsibilities</th>
<th>The roles and responsibilities are clearly defined. There is a dedicated IT unit and the head of the unit is the IT chief.</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIO/Director of IT on the Board</td>
<td>The IT strategist is not a part of the Board of executives, it is only formed of elected politicians.</td>
</tr>
</tbody>
</table>

**IT steering committee** - The IT steering committee at Södertälje municipality is the City Directorate, which is made up of department directors, the IT strategist and the city director. All the information received from interviewees and the received documents have identified the existence of such an IT steering committee.

Roles and responsibilities - From the vision mission and strategy, one can see that the roles and responsibilities are clear and unambiguously defined. Furthermore, the IT vision and strategy (Johansson, 2004) indicates that in Södertälje, organization for IT is an enabler for the IT vision and the organization indicates who has the responsibilities and authorization to create solutions that follow the vision and strategy. According to Van Grembergen & De Haes (2008) this a very essential and indispensable structure that is needed for the implementation of effective IT Governance. It shows that the IT unit does not have such high authority over the decisions made, because of not having an CIO or IT strategist to represent them on the Board of Executives. However, the roles and responsibilities of the IT strategist and IT unit are clear.

**CIO/Director of IT on the Board** - The Board of executives at Södertälje municipality is formed only of politicians. They are a group 11 politicians and 11 replacement politicians. There is no CIO at Södertälje municipality. However, the closest position to a CIO is the IT strategist, who is not a part of the board. This is negative factor because the IT unit is not represented in the board and cannot have a great influence over the executive management decisions. Furthermore, Van Grembergen & De Haes (2008, pp. 59) identified that CIO should be a part of the board in order to achieve Operational Excellence. The role of the IT strategist does not give him/her high authority on the decision making made in the organization. This shows that the organization does not consider IT an indispensable part of the organization, but rather a cost that must be invested in.

### 4.1.4 Processes

The IT chief also discusses the IT policies and procedures available at Södertälje municipality by saying: "We have IT policies and procedures, we have our own documents which govern and rule the users and the people who want systems. Then we have policies when we negotiate
a procurement, we have policies such as following ITIL, there should be documentation and so on.”

The fact that most of the business application development/maintenance and ITS/service management is outsourced and that Södertälje municipality is a great user of Cloud services the procurement process is extremely important.

The procurement process at Södertälje municipality controlled by LOU and the IT chief explains the process by saying: “Procurement is done by negotiating the contracts followed by LOU and we have a procurement enterprise which is called TelgeInköp and they help us. We have to check what is needed and make concrete requirements and then make it public and then can any company bid on it and then we evaluate the offer and sign a contract. If you are a private organization, it becomes a question of what we want. For us, who are run by a law (LOU) that says when the contract is done you need to do a procurement negotiation again which doesn't give us many options. Then the whole procurement negotiation process starts over again.” The IT strategist discusses the management and maintenance by stating: “The management and maintenance is done partly from the IT unit but mostly of the systems we have bought recently have been service functions which means that it's up to the service provider to take care of the maintenance.”

Table 3 ITG processes at Södertälje Municipality using ITG framework of Van Grembergen & De Haes (2008)

<table>
<thead>
<tr>
<th>2. Processes</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Service level agreement/s (SLAs)</td>
<td>The organization uses SLAs for supply and delivery of services.</td>
</tr>
<tr>
<td>(IT) Balanced scorecard (BSC)</td>
<td>Not being used in the organization.</td>
</tr>
<tr>
<td>IT alignment/governance maturity models</td>
<td>The organization does not have any measurements.</td>
</tr>
<tr>
<td>Information economics and portfolio management</td>
<td>The return on IT investments is discussed in the organization.</td>
</tr>
<tr>
<td>COBIT and/or related IT governance frameworks such as ITIL If different from COBIT, Please mention:</td>
<td>ITIL framework is used for having control over the IT services in the municipality.</td>
</tr>
</tbody>
</table>

SLAs - The service level agreements are being used for the control of supply and delivery of services. The role of these agreements is to make sure of the quality received and is thus very
important for municipalities to have, as their budgets are limited and cannot afford and risk investing in something that may not deliver the quality needed.

*IT BSC* - One out of the three interviewees have identified the existence of IT BSC, however both other interviewees have denied the existence of this process. The documents received have not identified its existence either.

*IT alignment/governance maturity models* - Even though one of the interviewees mentioned that they have some sort of such measurements, the documents received as well as the other interviewees did not confirm of the existence of such measurements. Therefore, it is difficult to acknowledge that the municipality has such maturity models.

*Information economics and portfolio management* - The organization discusses the returns on IT investments, however it is difficult to say on what level as the interviewees could not elaborate more on this issue. The issue that could arise here is that because of the IT strategist being on the board, the information is not discussed with him.

*ITIL* - ITIL is also being used for the establishment of requirements together with the procurement process. ITIL is the framework mostly used for having control over the IT services in the organization. ITIL promotes that the IT services are aligned to the business needs of the municipality and supports the core processes. It gives advice on how the municipality should use IT in order to facilitate business growth.

4.1.5 Relational Mechanisms

Relational mechanisms have not been discussed much during the interviewees and have not come up in the documents received. The municipality has not given relational mechanisms much focus and this is observed in Table 4. It is a clear sign that Södertälje municipality must give more importance to its relationships, through cross-training, partnership rewards and other such methods in order to achieve a more effective IT governance. This ITG practice is essential to effective IT governance and the lack of strong relational mechanisms has been clearly observed at Södertälje municipality. The ICT strategist stated that: “We have not succeeded with the implementation completely but we are on the right way. I think we have had some success in two projects, one system and the teachers platform, and we worked with external providers, Tieto, and so on.” The only factor that has been observed from the interviews and identified by the interviewees is listed in Table 4.
Table 4 ITG relational mechanisms at Södertälje Municipality using ITG framework of Van Grembergen & De Haes (2008)

<table>
<thead>
<tr>
<th>ITG practices categories</th>
<th>ITG used in Södertälje Municipality</th>
</tr>
</thead>
<tbody>
<tr>
<td>3. Relational Mechanisms</td>
<td></td>
</tr>
<tr>
<td>Active participation and collaboration between principal stakeholders</td>
<td>All three interviewees have identified that Södertälje uses this relational mechanism.</td>
</tr>
</tbody>
</table>

Active participation and collaboration between principal stakeholders - The interviewees have identified this relational mechanism due to their ongoing relation with some of their service providers. They work close together and have a good relationship with some of their existing service providers, which have been ongoing for several years. This is something that every organization strives for and the optimal relationship with the service providers is vital for IT governance. Even though there is a good relationship with the main stakeholders there is very little focus in the organization on the relational mechanisms and this clearly affects the municipality’s IT governance.

4.1.6 Governance Arrangements matrix

Based on the information gathered from the interviews and from the documents the Governance Arrangements matrix of Weill & Ross (2004) has been applied to Södertälje municipality. Table 5 illustrates the decision making power and the input for each of the IT decisions. Furthermore, Table 6 shows and explains the abbreviations used in Table 5.

Table 5 Archetypes using Governance Arrangements Matrix of Weill & Ross (2004)

<table>
<thead>
<tr>
<th>Decisions Archetypes</th>
<th>IT Principles</th>
<th>IT Infrastructure</th>
<th>IT Architecture</th>
<th>Business Applications</th>
<th>Prioritization &amp; Investment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Input Decision</td>
<td>Input Decision</td>
<td>Input Decision</td>
<td>Input Decision</td>
<td>Input Decision</td>
</tr>
<tr>
<td>Business Monarchy</td>
<td>BoE</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IT Monarchy</td>
<td></td>
<td>ITU</td>
<td>ITU</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feudal</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Federal</td>
<td></td>
<td>Budget Req</td>
<td>ITU CD</td>
<td>SLA LOU Budget Req</td>
<td>ITU CD</td>
</tr>
</tbody>
</table>
In Table 5, we can observe who has the IT decision authority and who has input to the decisions at Södertälje municipality. Firstly, one can observe that the decision authority over the IT principles is being done by the Board of Executives, which is formed only of elected politicians and with no IT representative nor any business representatives. Secondly, the IT infrastructure and IT architecture decision authority lies in the hands of the IT unit. Thirdly, the business applications have input on the decision making from the budget allocated and the requirements that are defined for the system. Furthermore, the decision making authority is combined between the IT unit and the City directorate. Lastly, the prioritization and investment decisions have input from the SLA for the supply and delivery of services agreements, LOU, which is the law that controls the procurement process and the allocated Budget. Moreover, the decision authority is also combined between the IT unit and the City Directorate.

During the interviews the effectiveness of IT governance has been discussed and the three interviewees have stated different things about how long they have been using IT Governance. However they all agreed that IT Governance has not been implemented completely. The ICT strategist states that: “We have not succeeded with the implementation completely but we are on the right way. I think we have had some success in two projects, one system and the teachers platform, and we worked with external providers, Tieto, and so on.” Furthermore, the IT manager adds on the subject by saying: “I would say that we have succeeded 3/4 in the implementation of IT Governance which is okay. Even if the school sector has been successful but there is a lot left to do. I would rate it 3/5. The school sector needs to be better and the welfare needs to start. We have administrative systems which work great but school and welfare need improvement. The IT of the welfare sector which is new and to put in full effect the IT of the school sector.” The effectiveness of the IT governance is
noticeable after applying the ITG framework of Van Grembergen & De Haes (2008) and the Governance Arrangements matrix of Weill & Ross (2004). One can understand that not all ITG practices are in place and it is not clear for all who makes the decisions at Södertälje municipality, which means that they are not effective.

4.2 Evaluation of IT Governance Implementation in Södertälje Municipality

4.2.1 Governance arrangement matrix
Through the case study performed in the Swedish municipality of Södertälje, the IT decision authority at Södertälje municipality is divided in the following way (Table 5): IT principles - Board of Executives, IT architecture - IT Unit, IT infrastructure - IT Unit, Business application needs - IT Unit and City Directorate, and IT investments and prioritization - IT Unit and City directorate. Weill & Woodham (2002, pp. 2) mentioned how effective ITG can be achieved: “effective IT governance requires a careful analysis about who makes decisions and how decisions are made”. The IT chief of the IT unit at Södertälje municipality is not a part of the City Directorate or the Board of Executives. However, the IT strategist is in the City Directorate, but he does not belong to the IT unit. The IT strategist supports the IT decisions, but he is not a part of the IT organization and the implementation of IT, which makes it uncertain if he is the best suited person to represent the IT organization. Therefore, Södertälje municipality should have the IT chief, who is a part of the implementation of IT on the Board or the City Directorate, so that the IT decisions are supported by the IT organization.

4.2.2 ITG practices
The case study performed in the Swedish municipality of Södertälje has also revealed the following IT governance practices: IT steering committee, Roles and responsibilities, SLAs, Information economics and portfolio management, ITIL, Active participation and collaboration between principal stakeholders (Figure 4).
In the left box of Figure 4 are the structures identified by the interviewees and the documents received as existing in Södertälje municipality. Furthermore, the right box in Figure 4 are the processes identified by the interviewees and the documents received as existing in Södertälje municipality. Finally the lower box in Figure 4 shows the relational mechanisms identified by the interviewees and the documents received as existing in Södertälje municipality.

4.2.3 Structure

The structure of the IT organization at Södertälje municipality is very complicated, with an IT unit that has an administrative, managing and IT support role, and no IT development role. All the IT development of Södertälje municipality has been outsourced to its service providers. However, the IT unit has some IT decision-making authority over the IT infrastructure and IT architecture. The problem for this municipality is that if there is a need for IT change because the business requirements have changed, then the municipality is locked in the hands of the service providers, which is a great problem. Eriksson and Goldkuhl (2013) identified this problem as well, as the proprietary licenses used by IT service providers was a hinder for development. Furthermore, the problem can arise even if there is a good collaboration amongst the two sides, as this is a problem of flexibility and control over the municipality’s own systems. The business requirements can often change and IT should aligned to these ongoing changes, and any incapability to do so will result in not having an
well established and effective IT Governance. IT alignment is essential for IT governance and therefore, Södertälje municipality needs to have better control over their own IT development. Another issue that has been observed is that often the person who stipulates the requirements are not the most qualified to do so. In the case of Södertälje municipality the ICT strategist has the role of stipulating the requirements for his department, because his role is both a business and IT role. However, ideally the stipulation of requirements should be done by the business person in that department, who knows the needs, together with a person from the IT unit.

4.2.4 Processes
The processes of Södertälje municipality include SLAs, ITIL and Information economics and portfolio management. The use of SLAs in organizations is very common and it’s in order to protect them from receiving low quality services. Furthermore, Södertälje municipality uses SLAs in their procurement process, which like all municipalities in Sweden is controlled by LOU. There is not much the municipalities can do about LOU as the law controls and regulates the contracts. The negotiation process must be done over again when a contract ends, which does not allow municipalities to continue and resign a new contract with the same service providers. The fact that the negotiation process must be handled again, can be seen as positive because the organization must redefine its business requirements again, something that might not be dealt with otherwise.

4.2.5 Relational mechanisms
The handling of relational mechanisms that are present at Södertälje municipality is not good, and this is essential for IT governance. Since the municipality outsources its IT services, good relationships are crucial. Sethibe et al (2007, pp.840) argue that when IT is outsourced, IT governance should “…accommodate formal and informal relationships between the outsourcing organization and the service provider – a task that is often overlooked.” This shows that Södertälje must improve its relational mechanisms in order to have an effective IT governance. According to Van Grembergen & De Haes, (2008, pp. 50-53), the relational mechanisms are extremely important for IT governance even though the ITG structures and processes are established. Even though an active participation and collaboration between principal stakeholders has been identified, nothing else has been acknowledged, which promotes good working relationships in the organization. Moreover, Chong & Tan (2012, pp. 34) mention that relational mechanisms promote better mutual understanding which leads to a improved coordination of IT activities.
4.2.6 Conclusion of the evaluation

Bowen et al (2007, pp. 197) have stated that the formulation and communication of IT strategies and policies are critical to the success of ITG structures and processes. Through having more clear communication of the IT strategies and policies this could help Södertälje improve their ITG structures and processes. Södertälje should have the IT chief, who is a part of the implementation of IT on the City directorate, in order to have the IT decisions supported by the IT organization and the ITG practices, such as structures and processes need to be improved, especially, the relational mechanisms which are weak and essential to IT Governance. All this is proof that the IT Governance at Södertälje is not effective and that putting in place the remaining ITG practices should improve their effectiveness.
5. Discussion

This chapter discusses the results of this research thesis, its originality, significance, research quality, limitations, the ethical and societal consequences, and the future research.

5.1 Conclusion

The purpose of this study was to investigate how IT Governance is implemented in Swedish municipalities and to bring forth the importance of effective IT Governance implementation in public organizations, particularly Swedish municipalities. According to Campbell et al. (2009, pp. 9), public organizations face multiple limitations by government priorities, by policies, political influences and are largely affected by economic possibilities. Furthermore, a municipality unlike a private organization has large diversity of operations, which makes this study more interesting. A literature review (Appendix A) was performed and IT governance framework of Van Grembergen & De Haes (2008) has been utilized and also the Governance Arrangements Matrix of Weill & Ross (2004), showing who has the IT decision authority in the organization has also been used. The purpose of the research was to apply both of the IT Governance frameworks on Swedish municipality of Södertälje and see what ITG practices they use, who has the IT decision authority and how effective the ITG implementation has been.

This study provides useful insights on how IT governance is implemented in a Swedish municipality. The case study shows the complexity of the organizational structure of Södertälje municipality, the controlled processes and the very few and weak existing relational mechanisms. Winkler (2013, pp. 838) discusses that the ITG practices are naturally correlated and that successful IT governance is determined by a mix of the ITG practices. Therefore, all the existing ITG practices at Södertälje municipality must be improved in order to have effective IT Governance. Furthermore, because a municipality has a political management at the very top, this provides a strong influence for the citizens as they elect the members of the municipal council and the board. This shows a major difference between public and private organization where external factors such as citizens can influence heavily the top management of municipalities. Moreover, LOU the law on procurement also regulates the process of purchase, which is also only specific to municipalities. Furthermore, this study shows that a big problem which municipalities face with IT governance is that they are locked in the hands of the service providers. Eriksson and Goldkuhl (2013) confirm these results and identify proprietary licensing by the IT service providers as the hinder for this. Lastly, the theory used does not take into account the above mentioned exceptions and difficulties which
municipalities are faced with, and might need complimentary considerations in order to fully establish how effective IT governance is implemented in municipalities.

To conclude, the results gathered from the case study of Södertälje municipality have identified the following ITG practices: IT steering committee, Roles and responsibilities, SLAs, Information economics and portfolio management, ITIL, Active participation and collaboration between principal stakeholders. Furthermore, the IT decision authority at Södertälje is divided in the following way: IT principles - Board of Executives, IT architecture - IT Unit, IT infrastructure -IT Unit, Business application needs - IT Unit and City directorate, and IT investments and prioritization - IT Unit and City directorate. Moreover, Södertälje municipality does not have effective IT governance, due to the fact that the IT chief is not a part of the City directorate. This means that the IT decisions are not supported by the IT organization and further ITG practices such as structures and processes and especially the relational mechanisms need to be put in place as they are weak and essential to IT governance.

The ethical consequences of the study are limited. In conducting this research there were no ethical consequences as the IT Governance is private and internal to the studied organization.

5.2 Originality, significance, research quality, limitations and future research

The thesis extends existing research on the subject of IT Governance by studying the IT Governance implementation in a Swedish municipality. The contribution of this study is unique as there are no other academic research studies performed on IT Governance implementation in a Swedish municipality (see Appendix A). The study has focused on one case study and analyze in-depth the results concerning IT Governance implementation in a Swedish municipality and how effective is, in relation to the literature reviewed.

The thesis contributes to research in the area of IT Governance and the area of IT Governance implementation in Swedish municipalities in two ways: Firstly the study has identified which ITG practices are being used in a Swedish municipality. Secondly the study has identified who makes the IT decisions in a Swedish municipality. These results can contribute further to research in the implementation of IT Governance in public organizations and could help municipalities to understand how to improve their ITG practices in order to achieve organization’s strategies, generate value from IT investments and have in place an effective ITG implementation. Furthermore, my contribution to the area of IT governance
implementation brings forth the complexity and diversity of Swedish municipalities and how IT is seen as a cost rather than an integral part of the organization.

The findings of this research thesis have generated societal consequences as it has been observed that some of the ITG practices that are not present can affect the quality of services provided and supported by IT, even more when the municipality is aiming to use IT in providing e-services and become an e-municipality.

In order to increase validity of data, a large variety of data sources have been used: documents, interviews and notes. Furthermore, this also has increased the credibility as the results and conclusion have been based on all the data sources used. The case study performed has had three different opinions and the interviewees had three different positions, which has enabled them to provide detailed information about IT governance.

One limitation is that it is a single case study, and therefore it can entail as a problem of generalization. But the research can be replicated in other case studies. The limitation has been due to the low number of interviews amongst the persons responsible with IT governance in the municipality. In order to enhance the knowledge about IT governance implementation this requires much more time to gather in depth information from the municipality. Furthermore, the busy schedules of municipality’s employees have limited the amount of interviews and opinions from different stakeholders involved in IT governance.

In a future research, additional municipalities in Sweden can be studied in order to possibly find other ITG practices and provide a better understanding of how effective IT governance is implemented in Swedish municipalities.
References


Appendix A

Literature review plan

1. Literature review - goals

The goals of the literature review

- What literature is published in the field of IT Governance (ITG)?
- What literature is published on ITG in the public sector?
- What ITG frameworks exist and which are relevant?
- Is there any literature on ITG in Swedish public organizations?

The main goal of the search is to identify relevant ITG literature, ITG frameworks and other ITG literature in the public sector.

2. Searching strategy

2.1 Search word

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<tr>
<th>Search word</th>
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<td>IT Governance</td>
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<td>Effective IT governance</td>
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<td>Business IT alignment</td>
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<td>Information technology governance</td>
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<td>IT governance in Swedish public organizations</td>
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2.2 Databases searched
Google Scholar
UU library database
SUB library database
Web of Science
ACM digital library
AIS elibrary

3. Choosing criteria
The criteria for choosing which articles are going to be part of the literature review are the following:

- The chosen literature was limited to the year 1993 when the term IT governance was established.
- The IT governance definitions which focus on business value, business IT alignment have been chosen in order to relate to the purpose of this paper.
- The effective implementation of IT Governance has been chosen in because this leads to creating business value and business IT alignment because it is in alignment with the purpose of the paper.
- A contextual comparison of the private and public sector of IT Governance has been regarded in order to identify the differences and find out the differences and which sector is less researched.
- A focus on the Swedish on municipalities has been chosen of the previous experiences and dealings with them.

4. Reason for choosing the literature

   This book has been chosen because it provides in detail the IT Governance framework in terms of structure, process and relational mechanisms. In other words it shows the necessary elements of an IT governance framework. This book provides a holistic approach to IT governances and that is the main reason for choosing the IT Governance framework provided in this book.

   This book has been chosen because it provides a detailed guide to the implementation of governance mechanisms. The book proves that IT business value results directly from effective IT governance, which is in alignment with the research problem of this paper. The main reason for choosing this book is because it provides a governance arrangement matrix, which is in perfect linking with effective governance. This matrix will be used to find out which governance archetypes are used for different types of decisions.


   The article chosen is written by one of the authors of the previous book. In this article the author applies the matrix to a few case studies. Therefore the reason for using this article is because the IT governance archetypes are applied to certain case studies and therefore provide a practical application of theory presented in the book.


   The reason for choosing this article which is written by the two authors of the first book is that it provides an exploratory study on ITG implementations and provides the linking between effective IT governance and business IT alignment. The article analyses the relationship between ITG implementation and business IT alignment. Furthermore, the authors provide a list of ITG practices for the Belgian financial services sector and determine the top 10 most important IT governance practices. The finding of this article is that by applying a mix of IT governance practices this will result in a higher business IT alignment maturity.


   The reason for choosing this paper is that it provides a contextual difference between the IT governance issues in the private and public sector. This article has been chosen in order to observe the differences between IT governance between the two sectors.
This makes possible to understand how IT Governance is applied in the two different sectors and most importantly in the public sector.


The reason for choosing this article is that it provides a literature review on how effective IT governance leads to business value. Therefore it aims to find out if IT governance contributes to improved business value. This article is relevant for understanding how IT governance provides business value, and this article backs up the claim that effective IT governance improves business value.
Appendix B

Interview Questions

1. **General information:**
   a. What is your name?
   b. What department do you work in and what is your position? IT role or Management role?

2. **Organizational settings:**
   a. What are the vision and mission that guide your organization?
   b. What are your organization's strategic objectives?
   c. What are your organization’s strategic goals?
   d. What are your organization’s core services?
   e. What is the size of your organization? Number of business units? Overall staff? IT staff?
   f. What is the main role of IT (IT principles) in your organization?
   g. What is the most applicable business applications implemented in your organization? Office(excel, word)? E-mail? Office intranet? Municipality website?
   h. What other business applications are implemented in your organization?
   i. Do you have a dedicated IT Unit, department or directorate? Where is it reporting?
   j. How has the organization done new procurement (nyanskaffning)? How does the municipality manage its IT development and acquisition of systems? Management and administration (drift och förvaltning)?
   k. Do you have a budget line for IT? If yes, what is its percentage of the overall municipality’s budget?
   l. Is the ICT strategic plan in place? If yes to what extent is it implemented?
   m. Are the IT policies and procedures in place? If yes to what extent are they implemented?

3. **Current status of IT governance practices in your in your municipality:**

1. Key IT governance mechanisms in practice. Please indicate the existing IT Governance related structures
ITG related structures (Formal positions, Roles, committees and councils)

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2. How is IT organization instituted in your organization? Centralized? Decentralized? Federal? (a combination of both centralized and decentralized)

3. Who has decision or input rights on the key IT decision domains (IT principles [1], IT architecture[2], IT Infrastructure[3], Business applications needs[4], and IT investment & prioritization[5])?

[1] High-level statements about how IT is used in the business
[3] Determining shared and enabling IT services that provide the foundation for the organization’s IT capability
[4] Specifying the business needs for purchased or internally developed IT applications
[5] Decisions about how much and where to invest in IT (projects, etc)

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<th>IT Investment and prioritization</th>
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6. Why and how are above selected IT governance mechanisms (structures, processes and relational mechanisms) implemented?

4. Effective IT Governance

1. How long has the municipality used IT Governance?

2. How has the municipality succeeded with the implementation of IT Governance?

3. With the help of IT Governance has the municipality succeeded to get any strategic use and effect? If yes please specify.

4. What problems still exist that IT Governance could not help?

5. Could you provide any organizational documents? Such as: organizations beskrivningar, system karter, strategiska dokument or others?
Appendix C

The interviews

Interview with the IT strategist

Johan Wahlström, IT strategist - I am responsible for the use of IT, business development with the use of IT, IT support, IT development, IT security and my position is directly below the director of the city and my role is the highest ranked IT position in the municipality.

The role of the municipality is to meet the citizen’s needs when it comes to services, and what comes into that is how can we use the technology and the resources we have available to give the support and service that the citizen’s need.

The strategic objectives from an IT perspective is to be available to meet the needs of the citizens from a perspective that one has from outside of the municipality, and that’s an adaptation which has been ongoing and the municipality has been good at it and put in its own routines and processes in the organization. What we are working with now is to make people conscious of and later put it in practice. Availability for the citizens is something that we strive for.

The goals are to be the best in Sweden is easy to say, but we want to be a municipality that offers good services, cost efficient and which meets the citizen’s needs.

The most important service is very complicated, in a municipality there are so many services that if you ask several people they all might give you different answers. But one of the big challenges that we have is in the welfare sector as people live longer, you live at home longer, you can get more diseases, this makes it more difficult to give the services one needs to live by yourself as long as possible. Because people live longer now, people the statistics show that the amount of people over 85 will increase with 40% and if they will have same amount of service and support they have today, the costs for home care will rise with maybe around 10% of municipality's budget. Here is important to use IT in order to deliver better service and the service the citizens need.
The IT budget is around 3% of the municipality's total budget. The organization has around 6700 employees in the municipality and in the IT unit there are 5 people plus me, so 6 IT people. However, there are system administrators and IT support personnel which are in total 30 IT people. Its a ordering organization part because we have outsourced all our IT services to Tieto, which take care of our IT. The IT chef position is below the chancellery chief.

IT has until now recently, in 2010 IT has had an administrative role in the organization. Its changing fast now, the schools are using digitalization for daily activities, the home care is using digitalization in their daily activities, one can look at the phone for the calendar and other core processes. IT is becoming very fast a big part of the core processes of the organization. If the systems were down a few years ago it was not a big deal, at least for a few hours, however now if the system is down for a bit people can sometimes not be able to do their jobs. IT is becoming more critical in the organization. Currently IT is at the stage between not so critical to critical and soon it will become more critical compared to before.

The business applications that we use are not general for the whole municipality except for office package, email, intranet and municipality website. In the school sector they have ping pong, pro capita, public 360, GIS system. Each sector needs specific systems, which are all important, then there are other important systems like the salary systems and invoice systems which are also important.

We have a procurement enterprise Telgekoncernen which takes care of all of our procurement for everything we need. The systems have a 5-7 years contract and when there is 1 year left the plan to negotiate a new procurement for evaluation and maybe change if needed. If there's a new need for a new system then we need to make a new requirements specification showing what we need and this will require a new procurement and this takes around 4 months. The management and maintenance is done partly from the IT unit but mostly of the systems we have bought recently have been service functions which means that it's up to the service provider to take care of the maintenance.

There is an ICT strategic plan from 2004 which is still relevant and it is not totally implemented. However, because of such rapid developments and changes are continuously happening the we don't feel the need to change the strategic plan, because by the time it takes to change it the technology will change further.

We have IT policies and procedures in a wide spread, there are procurement IT policies, IT security policies.
Organization is relatively decentralized but also centralized so there is a mix, depending on the business unit.

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and an organization group of a process to computerize (Duopoly)

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Cross-functional business/IT training and rotation

Partnership rewards and incentives

Cross-functional business/IT training

Business/IT co-location

We have decided to select the IT governance mechanisms, because it worked and it has been like this before, when it comes to budgets costs it's like other municipalities, there are no specific methods in how we choose these.

Effective IT Governance

We have been using IT governance for the last 10-15 years, I have been working here for 1 and a half year so I am not quite sure. I think we have succeeded with implementation and I personally think it works well, due to the limited amount of people have available in the IT unit. However I don't think we have gotten so much strategic use of IT governance, in some sectors we have gotten great use, in the school it's been good, in the welfare getting better so overall I would say not so good, it can be better, but we are trying to improve this by understanding the needs of the citizens better. This is a great development area for us I believe. There have been problems with the IT administration before but this has been solved, it is the digitized infrastructure, which has been a bit complicated but we are improving.
Interview with the IT chief

Jonas Knutsson IT chief and that means that I am responsible for how the technology works, not how it is being used, that's the organization's and the IT strategists job.

The mission and vision is to enable the use of technology for the businesses so that they have an effective organization and satisfied customers, but again we are the enablers. We make sure it's possible to do, but then the organization might not always succeed to carry it out. We buy IT services in a high demand and we don't develop anything in-house, we try to understand the business needs and try to get into contracts and follow through with them. LOU is just a framework which we have to govern our purchase, but we have chosen to outsource our IT services and products.

To have the availability on the IT infrastructure, whether it is geographical availability in the location one works in and the availability over time, 24/7 and so that bad things don't happen from a IT security perspective. We have a requirement on the costs and the effectiveness and sometimes the procurement forces us to decide for the less costly option than the more available one.

The most important/core services are data communication (wireless, internet), supply the central systems for authorization, integration, federating and security and so on, the ones that don't buy systems as a service as a cloud, they should have the possibility to put their data in our systems and therefore we buy the systems as a service, the working area pc and print, the telephony all the telephony exchange services and the call centers, the career services and the devices, furthermore we have the service desk if the citizens have any technical problem. The service providers that we have depend on which can provide us with the best option in the negotiation for procurement. We have 5 main service providers: TelgeNät, Tieto, Atia, TLC.

The organization has around 7000 employees and the IT organization has 5 people, and you can notice we cannot help all the other employees and that's why we have chosen to outsource our IT services.

The most important role of IT in our organization is to be an enabler. Enabler in a secure and effective way.
The critical business applications that we use are the business systems, such as the welfare system where you have all them who have the right to have home care, all the people who get maintenance support, all the elderly, and taking care of kids and so on. These are the main systems, email and office system are good for us administratively. Then there is further the ping pong system that Magnus has told you about. The welfare system, the teachers platform, the environment system, the board committee's administrative system, social structure systems with all the maps and all the pipelines and so on are much more important than the office programs. Then there is also the library system which is also very important.

We have a dedicated IT unit but in the school sector we still take care of the customers, with the networks but not devices. We don't have so much control. I report to the chief for the department of administration and investigations, and this department is directly below the city's director.

Procurement is done by negotiating the contracts followed by LOU and we have a procurement enterprise which is called TelgeInköp and they help us. We have to check what is needed and make concrete requirements and then make it public and then can any company bid on it and then we evaluate the offer and sign a contract.

If you are a private organization, it becomes a question of what we want. For us, who are run by a law (LOU) that says when the contract is done you need to do a procurement negotiation again which doesn't give us many options. Then the whole procurement negotiation process starts over again. However, we try to avoid to have a procurement negotiations if we can like in the case of home care, where we do not have a contract, because we want to give the support to the elderly, where we go to their houses and try to put sensors and wireless network. This is a new area and is more similar to the private sector because we do it because it is useful and we want it, because otherwise we would need to go to the elderly's house.

The IT budget is about 2 % percent of the whole municipality's budget which is around 45 million. We have a ICT strategic plan from 2004 and it’s still relevant but it needs some updates, however not any big changes have happened since then, it’s an IT vision and strategy. ICT is not fully implemented, but it’s the whole reconstruction from a paper based municipality to a digitized municipality which takes longer than 10 years. We have IT policies and procedures, we have our own documents which govern and rule the users and the people who want systems. Then we have policies when we negotiate a procurement, we have policies such as following ITIL, and should be documentation and so on.
When you look at the main business sectors in the municipality are the school sector and welfare sector which make up 75% of the municipality we can say that the school sector would not survive without IT, then there is also the question about being attractive compared to other municipalities (politically like offering PCs to students) so therefore IT is necessary to have, especially for preschools. If you look at the welfare sector, there are parts where is only paper-based information so would be too expensive to use it, but what we see in the future that IT will be decisive to manage to meet our effectivity requirements and that we need to digitalize our core business sectors. It’s becoming more critical; however it’s not very critical right now.

The IT organization is partly centralized and partly decentralized. The infrastructure is centralized, school IT decentralized, business systems decentralized.

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We have thought it out and this works for us, it's a strategy, its empirics as well, it's important for the organization to be fun and this means the soft side in order to get more value, more than the arranged value.

Effective IT Governance

Since 2002 we have used IT Governance. I would say that we have succeeded 3/4 in the implementation of IT Governance which is okay. Even if the school sector has been successful but there is a lot left to do. I would rate it 3/5. The school sector needs to be better and the welfare needs to start. We have administrative systems which work great but school and welfare need improvement. In the IT system of the welfare sector, which is new we need to put in full effect the IT and also in the school sector.
Interview with the ICT strategist

Magnus Bergkvist, ICT strategist at the Education department. When it comes to IT our vision is to create an e-Södertälje and through this create unique meeting places for our citizens. The strategic objectives is IT strategy that we have and for the education department this is to get improve the results of the students. We have different focus areas, our ICT strategy follows Södertäljes vision and then we have divided it up in focus area, and now we are talking about ICT and IT only. Then we have 3 focus area: IKT a device for students and kids, IKT a device for educational variation and innovation, IKT as a device for documentation and communication internally and externally. (Utbildning är viktigaste tjänsterna).

There are 2000 teachers, 1200 students, 12 preschools area (10 preschool in one area). The municipality I do not know exactly how many there are working. The IT department has IT pedagogues and IT technicians I think there are around 30 people. The IT role is two folded first administrational and communication the ICT.

We have business applications implemented, office, email, intranet and municipality website. Administrational we have office, email, intranet and our website, and the salary system, teacher systems and the journal management systems. In the school sector we have a teacher platform, called ping pong.

We have a dedicated IT unit which gives service to all the departments and they report to the city's director and other directors. That is Jonas Knutsson's area. I am a sort of interpreter between the city's director and the IT engineers.

We are controlled by LOU when it comes to procurement and we have the support of TelgeInköp and if we need to procure a new system they take care of the administrative things and start the procurement process and we just have the specialist knowledge. We also have Atia which is our contract provider.

The IT budget is hard to say but we have around 40% out of the whole budget, I am not really sure, but this is an estimate. Check with Johan he knows better.

Its like this we are leaning more towards cloud services and because we are buying cloud services like the teachers platform, the management of the services is not done by us but the
administration is done here in our offices. Then we have the traditional division with one system owner, and system administrator.

We have an ICT plan and it's totally implemented. The schools and all the education needs to make goals every year from their needs and present them.

We have IT policies and procedures absolutely and they are not completely implemented. We are currently implementing a policy on how the students can use their phones during the break. We don't have a central IT policy for this for the whole municipality yet.

It’s hard to say, our goals are soft so it’s hard to say, but IT is a big part of our organization and it should be integrated. We are on the right way. The organization is decentralized.

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I don't know how we have chosen these IT governance mechanisms. It's above my level and pay grade.

Effective IT Governance

We have used IT governance since the middle of the 90s I would say. We have not succeeded with the implementation completely but we are on the right way. I think we have had some success in a two projects, one system and the teachers’ platform, and we worked with external providers, Tieto, and so on.