UNIVERSITY OF GOTHENBURG
SCHOOL OF BUSINESS, ECONOMICS AND LAW

A new perspective on public sector innovation

Identifying significant drivers and barriers for IT innovation

Patrick Kullberg and Jacky Lam

Abstract: There have been a lot of studies focusing on innovation in the public sector but there are few studies that has touched on innovation from a local perspective such as municipalities. Hence, this study aimed to contribute to the innovation literature by focusing on IT innovation in public sector organisations governed by municipalities. The study began by identifying factors regarded as either drivers or barriers that influence IT innovation to analyse whether or not they were applicable on a local level. A comparative study was conducted with qualitative interviews where all interviewees worked at public sector organisations governed by the municipality of Gothenburg. The result of this study indicated that managers, culture and political context are significant factors as either drivers or barriers for IT innovation. Furthermore, the existing literature seems to focus on too many factors which is why this study have developed a new model focusing on three factors regarding drivers and barriers: the political context, managers and culture.

Acknowledgements

Table of Contents

1. Introduction

1.1 Innovation and the public sector

Innovate or die (Gummer, 2001; Kruger & Fuyuno, 2002; Jagersma, 2003; Hodock & Adamo, 2010; Anonymous, 2011). This is a popular phrase used in articles and many argue that it is the reality which all companies face due to the uncertainty of economics and politics of the world we live in (Anonymous, 2011). So, a question arises; is the same need to innovate felt in organisations in the public sector whose main goal necessarily is not to maximize monetary gains?

Studies have shown that organisations in the public sector do innovate to a larger extent. Studies conducted in Europe (Arundel and Hollanders, 2011; Bugge, Mortensen & Bloch, 2011) as well as in Australia (Arundel & Huber 2013), show that 80% of managers in the public sector that were interviewed reported that in the last two years there had been at least one instance of an innovation being implemented. This seems like a high number, but in a survey conducted by the European commission (2010) with a sample size of 3699 public organisations the percentage was confirmed. On the other hand, there exists some scepticism among scholars, for instance, Arundel et al. (2013) questions whether or not the managers of the public organisations understand the concept of innovation. In their opinion, a more realistic number should be around 60%.

So, there seems to be a lot of innovation going on in the public sector. However, Hartley (2005) states that for innovations in public services to be justified there must be an increase in public value regarding aspects of quality, efficiency, or fitness for purpose of governance or services. They are in a sense restricted in how they can innovate. Further contributing to this restraint is the fact that unlike privately run companies, organisations within the public sector do not have the maximization of monetary gains as their primary goal, but rather to maximize public value and welfare for their citizens. Organisations in the public sector must also follow certain laws which the private sector do not, in Sweden where this study was conducted, organisations in the public sector all must follow the *law of public procurement* (here on after referred to as LOU, the abbreviation for the Swedish name of the law "*lag om offentlig upphandling*") (SFS 2016:1145). The purpose of LOU, among others, is to guarantee that all actors that put forward an offer are treated equally, not discriminated and that all interested in

participating in the bidding for a contract provided by an organisation in the public sector are given the same chance. It does however, limit the options for organisations within the public sector when acquiring new goods, services, systems etc.

Much has been written on the aspects of innovation within the public sector, where most of the focus has been about process innovations regarding administrative aspects (De Vries, Bekkers & Tummers, 2016). Process innovations are the innovations which are concerned with how a service is provided, this includes both organizational as well as technological aspects of an organization coupled with inter-organisational relationships (Walker, 2013). Several antecedents, or rather drivers and barriers, to innovation in the public sector has been identified (Walker, 2014; Agolla & Van Lill, 2016; De Vries et al., 2016) all of which affect the conceptualization, implementation and adoption of an innovation. However, previous studies on the subject of drivers and barriers to innovation in the public sector have focused mostly on a national and often governmental level. It seems that not much focus has been given to more local organisations, who also are affected by drivers and barriers to innovation within the public sector, e.g. organisations connected to municipalities.

1.2 IT and the public sector

In this day and age, everything is IT (information technology). Most things are done, or are at least available, through digital means, for instance how we communicate, how we order food, how meetings are booked and how businesses are delivering their services and products to customers. In a report by the WIPO (2016) it was found that computer technology, which is a component of IT (Odintsova, Kenesova & Sarsekeyeva, 2013), was the technological field that was most frequently featured in published patent applications worldwide. This can be seen as evidence that the IT industry is very innovative, because patent frequency has and is used as a measurement for innovation performance (Rao, 2010).

The importance of IT has not gone unnoticed by the public sector. For example, public services were previously only accessible at physical locations but are becoming increasingly digitally available thanks to innovations and the popularity of e-government solutions, a concept which is defined as the digital interactions between a public authority and individual citizens, businesses, or non-governmental organisations (Reitz, 2006). The importance of IT

has been recognised by the Swedish government who has a yearly budget of 45 billion SEK for IT in the public sector (Regeringskansliet, 2016). Furthermore, the municipality of Gothenburg, has what it calls a "digital agenda" which is an initiative aimed at coordinating actions to promote digitalization of the public sector within the municipality. This includes for example all governing bodies, libraries, publicly owned companies etc. The initiative does not only exist on a local level, there is also initiatives on a national as well as on a European level (Västra Götalandsregionen, 2018).

1.3 Aim of the study

The aim of this study was to first through an extensive literature review identify and evaluate possible drivers and barriers to innovation within the public sector. Then, research which of these are significant and how they affect IT innovation within the public sector by conducting several qualitative interviews with IT decision makers in organisations governed by the municipality of Gothenburg.

1.4 Purpose and research question

The purpose of this study was to contribute to the field of research on innovation in the public sector by focusing on internal IT innovation in municipality governed organisations.

What are the significant drivers and barriers to innovation and how are they affecting IT innovation in the public sector?

1.5 Delimitations

This study did not aim to identify drivers and barriers to innovation in the public sector but rather through an extensive literature review, identify and use already identified drivers and barriers to innovation in the public sector and then research which of these were significant for internal IT innovation in the public sector. The study only focused on internal IT innovation within organisations in the public sector and was also geographically limited to the city of Gothenburg.

2. Theoretical framework

In this section of the study the theoretical framework which the analysis will be based on is presented. It follows the structure of a funnel, starting with an introduction to digitalization, moving forward to defining the concept of innovation, then introducing IT innovation, then moving on to a discussion on the "why", "what" and "how" of public sector innovation, and lastly ending with a section identifying what the drivers and barriers to innovation in the public sector are.

2.1 Introduction to digitalization and technological evolution

In this section the concept of digitalization is explored to give a foundation and understanding of how the world and the societies people live in are evolving in regard to digitalization.

The era of IT has brought forth a huge revolution for the entire world. New inventions such as digital telecommunications, internet and electricity networks have had an enormous impact on societies and companies across all industries (Perez, 2010). The rapid adoption of new technologies has been termed as digitalization. To get a clear understanding of the term, Gartner (Digitalization, 2017) provides a definition of the concept from a business perspective; *"The use of digital technologies to change business model and provide new revenue and value-producing opportunities; it is the process of moving to a digital business"*. A more technical definition was provided by BusinessDictionary (Digitalization, n.a): *"Integration of digital technologies into everyday life by the digitization of everything that can be digitized"*.

The application of digital technologies has allowed companies to change the way they conduct their businesses, everything ranging from products, sales channels to supply chains (Matt, Hess & Benlian, 2015). Furthermore, the information provided by the digitalization has enabled companies to find new ways to create value for customers which have led to markets becoming increasingly customer focused instead of focusing on mass-producing products (Simons, 2005). Changes have also been prevalent in many other aspects of business operations, for example, some research development and global value chains strategies have segregated into various markets, making it easier to focus on customers (Mudambi, 2008).

Perez (2010) defined three primary areas of development in a technological revolution; cost structure, spaces for innovation and organisational criteria and principles. The nature of a cost structure in a technological revolution is that it is getting cheaper. In the revolution of IT, the reason why prices dropped for microprocessors and telecommunication equipment, which were the main technologies for the information and telecommunication revolution, was rising operational volumes and the increase of market reach, enabling companies to utilise economies of scale. A technological revolution will naturally open up new opportunities as markets change which can be seen in the investment for new innovation rising for the new technology. Lastly, organisational models shift in the sense that organisational practice change because the technology transform operations.

As previously mentioned, the technological changes open up a lot of possibilities and opportunities but from another perspective, it forces companies to adopt to the new environment in order to survive and prosper. For example, due to connectivity, customers have moved towards smart phones, internet, tablets etc. and can therefore stay informed and easily research about products or services which forces companies to adopt and utilise the same technology as the customers in order to reach out to them (Berman, 2012).

2.2 Defining the concept of innovation

In this section the definition of the concept of innovation will be discussed in order to reach a clear distinction of what is and is not an innovation, this definition was used during the data collection and when the empirical findings of this study were analysed.

Defining the concept of innovation is difficult due to its complexity, subjective nature and tendency to change over time. Nonetheless, the most widely used and accepted definition is the one phrased in the so-called Oslo Manual (OECD/Eurostat 2005), which is a manual or "guideline" developed by the *Organisation for Economic Co-operation and development*, or as they are usually known "OECD", for the collection and use of data on innovation activities. The definition is as follows:

> *"An innovation is the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organizational method in business practices, workplace organization or external relations."* (OECD/Eurostat, 2005. Para. 46).

In regard to the public sector there are however some problems which some scholars have noted, the major being that the public sector is not included in the definition (Gallouj & Zanfei, 2013). Mulgan (2007) defines the concept of public sector innovation in the following way:

> *The simplest definition is that public sector innovation is about new ideas that work at creating public value. The ideas have to be at least in part new (rather than improvements); they have to be taken up (rather than just being good ideas); and they have to be useful. By this definition, innovation overlaps with, but is different from, creativity and entrepreneurship.* (Mulgan, 2007 p. 175)

This definition by Mulgan (2007) is in the same line of reasoning as Hartley (2005) who states that for innovations in public services to be justified there must be an increase in public value regarding aspects of quality, efficiency, or fitness for the purpose of governance or services for the public. It has to be *useful.* As can be seen, the OECD's (2005) definition and the one phrased by Mulgan (2007) are quite similar. They both emphasize newness of the idea and that it has to be more than just that, an idea. According to Hartley (2013), it must also be implemented and lead to *significant* improvements. Which makes it important to differentiate between an innovation and continuous improvements, where the first is concerned with doing things differently and the latter is more concerned with increased efficiency. Hartley (2013) emphasises the importance of this distinction by stating that there otherwise might arise confusion in organisations leading to all improvements being seen as innovations.

2.3 IT innovation

This part of the theoretical framework describes factors influencing IT innovation from a broader perspective in organisations.

During the last few years, the importance of IT has been established. Today, it is regarded as a central part of an organisation as it helps increase its competitiveness and productivity. It has therefore been crucial to find factors influencing the adoption of new IT. Many theories have thus been developed regarding the adoption of IT and one such theory, called the TOE (Technology, organisation and environmental) framework was developed by Tornatzky and Fleischer in 1990 (Oliveira & Martins, 2011).

The framework consists of three parts which influence the adoption and implementation of IT in an organisation; technological context, organisational context and environmental context as illustrated in figure 1.
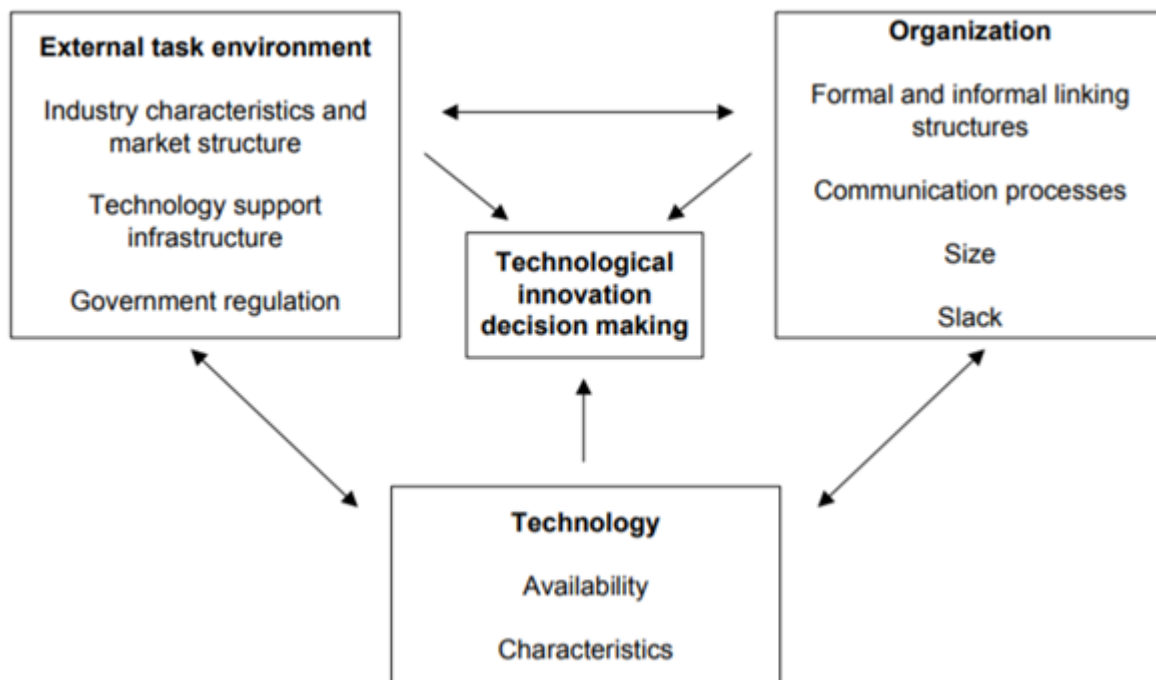
Figure 1. *Technology, organisation and environmental framework*. Adapted from "Literature review of information technology adoption models at firm level" by Oliveira, T., & Martins, M. F. (2011). *The electronic journal information systems evaluation, 14(1)*, 110-121.

The technological context refers to the internal and external technologies which are relevant to an organisation. It also encapsulates the available technologies outside an organisation (Thompson, 1967). The organisational context refers to the characteristics of an organisation such as the size and structure of the organisation. The last part of the framework, the environmental context refers to the environment in which the organisation is active within. For instance, the type of industry, political context, and competitors can be environmental factors which influences an organisations' adoption and implementation of IT innovation (Tornatzky et al., 1990).

2.4 Innovation in the public sector

In this section, the "why", "what" and "how" of public sector innovation is explored in order to differentiate from private sector innovation.

As was established in the introduction of this thesis, organisations in the public sector innovate to a large extent. In several studies and reports it was found that 80% of the questioned managers in the public sector stated that there had been an instance of an innovation being implemented in the last two years in their organisation (European commission, 2010; Arundel et al., 2011; Bugge et al., 2011; Arundel et al., 2013). There has however been some dispute of whether this number is correct or not, Arundel et al., (2013) believe that a more realistic number should be around 60%, because the questioned managers might not have had a clear understanding of what an innovation is.

So, why does the public sector innovate? In a literature review by De Vries et al. (2016) it was found that the main goals for public organisations were as seen in the table below.

Table 1. *Public sector innovation goals*

Goal	Number
Increasing effectiveness	47 (18%)
Increasing efficiency	41 (15%)
Tackling societal problems	28 (10%)
Increasing customer satisfaction	19 (7%)
Involving citizens	15 (6%)
Involving private partners	6 (2%)
Other	19 (7%)
No goal mentioned	92 (35%)

(De Vries et al., 2016, p. 154)

What was most striking was that 35% did not have a goal in mind when innovating within the organisation. So, perhaps one should rather ask the question: *what* is making the public sector innovate? Borins (2000) has in a study identified five prominent reasons for why managers in the public sector innovates. The prominent reasons are; (1) Because of a politically driven initiative, (2) change in leadership, (3) an action following a crisis, (4) due to inter-organisational problems and (5) that new opportunities have emerged thanks to technological evolution or other reasons (Borins, 2000). What can be derived by the prominent reasons is that the innovations undertaken were *reactive* rather than *proactive*. None of the prominent reasons for engaging in innovative activities is of an explorative or actively searching nature. It can rather be described as episodic and driven by accidents, which in turn does not allow

public organisations to innovate with a lasting capacity (Eggers & Singh, 2009; Sørensen & Torfing, 2011). These findings can shed some light as to why so many innovate without a goal in the public sector, it has hard to have a sustainable goal when only innovating reactively. This is in line with what other scholars have concluded, that more systematic approaches to innovation in the public sector are needed (Bloch & Bugge, 2013).

Now that a *why* and *what* has been established, one must look at *how* organisations in the public sector innovate. Stewart-Weeks and Kastelle (2015) states that the public sector innovates in the same way as the private sector with the aim to generate value but since they are public organisations the value which they create is not necessarily economical, instead, their aim is most often to maximize public value. Continuing in this line of reasoning Stewart-Weeks and Kastelle (2015) state that the five ways of innovating developed by Schumpeter (1912/1934) can be done in the public sector. Below are the five ways of innovating and how they translate to organisations in the public sector:

1. *Introducing either new or improved goods and services*: This can manifest in the form of programs, small as well as large ones, such as public healthcare or digitalization of the municipal library.
2. *Altering the process of which things are done*: Examples can be new ways of financing large projects in infrastructure or smaller things such as introducing a new queuing system at a public service establishment.
3. *Identifying and penetrating a new market*: This is the hardest for the public sector to apply, but one could view new international trade agreements or finding new ways for helping the socially excluded within the country as examples.
4. *New source of supply*: Promoting innovation among local pre-existing companies as well as start-ups can be seen an example of new sources of supply, because it will allow for more companies to be part of the public bidding process when public organisations for example needs new technological solutions.

5. *Innovating the business model / Organizing in a new way*: Examples of this can be e-government solutions such as allowing for filing of taxes online or smaller thing such as allowing for booking appointments online instead of having drop-in times for public services.

(Schumpeter, 1912/1934; Stewart-Weeks et al., 2015)

Now that it has been established *why,* for *what* reason and *how* organisations in the public sector innovate we must, with the research question of this thesis in mind, look at what is driving innovation in the public sector and also what the barriers to innovation are.

2.5 Drivers and barriers of innovation adoption in the public sector

In this section drivers and barriers to innovation will be explored, which was done to develop further understanding of how and why organisations in public sector innovates in a certain way. In order to gain a structure between the various drivers and barriers, this paper used De Vries et al. (2016) categories: the environmental level and the organisational level, and although the classification will mostly be subjective, the purpose is to provide a structured approach when handling the drivers and barriers during the interviews and later in the analysis.

2.5.1 Environmental level

The environmental level consists of the environment in which the organisation operates in. These external factors are something that is outside the boundaries of the organisation such as the social, political and economic landscape which change and can demand how a public organisation operates. For instance, different politicians can change the way a public organisation operates, create legislations and distribute resources as they want. Public organisations might face external pressure from citizens or users, making them take those opinions in consideration when making decisions. For example, if a local government wants to build a new statue they must take the publics' opinion into consideration as they are judge a lot harsher compared to private organisations. Social factors can also take the form of

scandals, for example, if the CEO of a public organisation have been using money for private use, the organisation might be reorganised by the politicians as a mean to make an impression on society. Hence, the affected organisation or organisations might become more restricted and controlled. Naturally, these factors may also affect private organisations but will affect public organisations more since they are owned by the state or local government. (Walker, 2006)

Two main environmental factors were identified. The first identified factor was something which distinguish public organisations from private organisations, policy makers. It is the politicians who set the policy direction and if they intend to encourage more innovation, they must not only understand the public organisations but also how the environment around the public organisations will react to changes in the policies (Walker, 2006).

The second variable identified was competition. The more competition an organisation feels, the more willing is it to adopt to innovative technologies (Walker, 2006). For instance, privatisation and liberalisation of services which have traditionally only been provided by public organisations have created competition between public organisations and private companies (Windrum & Koch, 2008). Public organisations are also increasingly competing against each other. Benchmarking and performance measurements of public services enabled a comparison between public organisations. One example of a performance measurement is the waiting time for operations in hospitals located in different regions in a country where regions with lower waiting time might become more attractive compared to cities with longer waiting time (Dorsch & Yasin, 1998). Moreover, competition also exists in the form of regions or cities and not just specific organisations. Some regions or cities might distinguish themselves as an attractive place to work or live, making more people move to these regions (Sørensen et al., 2011; Walker, 2006). Public organisations are also more prone to adopt change if there exists a public pressure, for instance, from media or citizens (Hartley, 2005).

When comparing the two factors, competition was strongly associated with technological innovation while policies did not affect the adoption of new technological innovation as much. Citizens or other users demanded improvements in the IT area as technological innovation most often provides services and because they could compare it with private organisations, users demanded the same standard of services and consequently, demanded the same technology (Walker, 2006).

2.5.2 Organisational level

The organisational level encompasses everything within the organisation itself. This section will contain the individual level as well du to the difficulty of distinguishing between the factors of the organisational level and the individual level.

The first identified factor was the managers' role in the development of new innovations. It is their ability to understand the external environment, organisation and other factors which may drive different types of innovations. There also exists some controversies on whether a manager aids the adoption of innovations. Some evidence points to that long-standing managers who understand the needs of the service bring forth new innovative processes and ideas. Other evidence show that new managers bring in new ideas, especially if the new managers have previous experiences working in other organisations, they tend to implement new ideas into the organisation. (Walker, 2006)

Legal culture plays a big role in adoption of innovation and can act as a constraint in a public organisation (Kickert, 2007). In an extensive study by Damanpour (1991), it was found that standardisation, formalisation and centralisation had a negative impact on innovation while specialisation, managerial attitude towards change, professionalism and technical knowledge resources had positive impacts on innovation in a public organisation. The factors which had a negative effect on innovation was associated with routines and procedures. If organisations grow accustomed to them, it could create path dependencies, making new innovations face resistance to change (Pierson, 2000; Hofstede, 1984). There is some evidence indicating that innovation and other resources in public organisations which affects cross-jurisdictions are facing challenges in adoption due to legal jurisdiction between government agencies (Matthews, Lewis & Cook, 2009).

As an organisation age it also tends to grow in size and innovation capabilities seem to diminish as a result of an increase in procedures. However, shallow innovation capabilities can be countered with systematic procedures focusing on innovation or improvements (Bernier & Hafsi, 2007). However, studies have also been made which did not find any evidence pointing that larger organisations do not innovate as much as smaller ones. In contrast, they claimed larger organisations have more employees and knowledge, creating greater opportunities to find innovative solutions (Walker, 2006; Damanpour, 1991).

Salge and Vera (2012) showed that public organisations which were customer oriented and valued learning, strongly correlated with adopting to new technologies and innovations. These organisations also tended to develop new types of services and engaging in activities to improve processes. Learning were therefore one critical factor to engaging in innovation within a public organisation as it enabled them to try new ideas.

When discussing learning one must also look at the concept of organisational learning, and most relevant for this study are the concepts of single-loop and double-loop learning regarding team learning developed by Argyris and Schön (1978). Single-loop learning occurs when a mismatch between experience and some sort of reference point is detected without question or alteration, the end goal is accepted. In contrast, double-loop learning pertains to question and alteration of the process because of what was observed, that how something is defined and solved can be the source of the mismatch. These two ways of learning are depicted in the figures below.

Figure 2. *Single-loop learning*   **Figure 3.** *Double-loop learning*
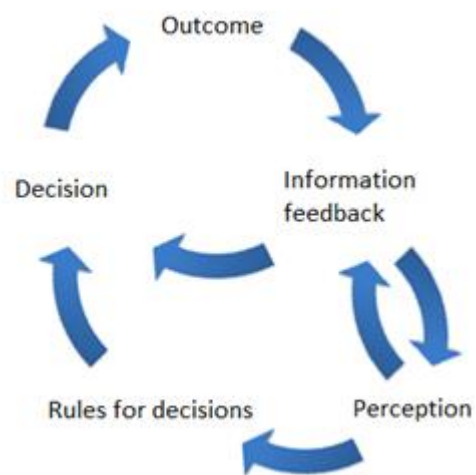
Von Zedtwitz (2002) states that the focus of post-project reviews should be on double-loop learning, and that when a project team has completed a project should be required to step-back and review the cause-and-effect relationships of what happened during a project. Simply due to the fact that immediately after a project they are in the best position to do so, he however, notes that organisations seldom do post-project reviews.

Public organisations with a high customer orientation and valued learning provided higher quality services and products. In contrast, organisations who have a low customer orientation and did not value learning, generally, did not benefit from innovative activities. To enhance learning in a group, a high cultural diversity can be beneficial which is why cultural diversity relates to the adoption of innovation in a public organisation. It helps to provide multiple aspects and perspectives, creating more ideas and opportunities for an organisation (Foldy, 2004).

A study by Lewis, Considine and Alexander (2011) found that an informal network was one of the major factors for innovation within a public organisation. People who works well outside formal structures tends to accomplish more at work which can be explained by having access to more information compared to others in the same organisation. On the other hand, other studies have shown that leadership played a larger role for the adoption of innovation compared to external networking which had little or no correlation with innovation. Although, in theory, it should be better to have a higher understanding of ones' surroundings (Lewis, Ricard & Klijn, 2017).

One major factor associated with the adoption of innovation is innovation champions as they can influence opinions and lead the project successfully. It is also important for organisations to reward the type of behaviour which is characteristic of an innovation champion (enthusiastic, engaging etc.). Codification of the knowledge gained from a new innovation can help to bring forth more value and convince more people of its value. (Greenhalgh, Robert, Macfarlane, Bate & Kyriakidou, 2004).

The last identified factor was isomorphism which, in this context, is a term used to describe the phenomenon that organisations in the same sector tend to work and behave the same. This is described as having isomorphic tendencies which also applies for the adoption of innovations. Most organisations working in the same sector usually ends up working in similar ways and thus tend to adopt similar types of technologies and innovations (DiMaggio & Powell, 2000).

Table 2 shows a summary of all factors relevant for this study and as can be seen, all factors have been categorised and divided into the environmental level and organisational level. Furthermore, each category column of factors was structured in a way where the higher the

position of the factor, the stronger the researchers believed that factor influenced IT innovation for public organisations. For instance, the researchers believed that the legal culture more strongly affected IT innovation compared to the size of the organisation.

Table 2. *Drivers and barriers to innovation in the public sector*

Environmental level	Organisational level
Competition	Managers/Leadership
Political landscape/Policy makers	Legal culture
Social landscape	Innovation champions
	Isomorphism
	Learning
	Size
	Customer oriented
	Lessons learned
	Informal networks
	Age

3. Methodology

In this section the methodological framework of the study is presented.

3.1 Research strategy

With the purpose of the research question in mind, this study aimed to understand what the drivers and barriers to innovation in the public sector are and how these factors are affecting IT innovation, by looking at how the organisations innovate their internal IT systems. Due to the complexity of the subject, several extensive analyses were required from multiple public organisation to gain a convincing result. A detailed observation and analysis in the given context were thus necessary to conduct the study. Several IT-managers and IT-strategists from various public organisations in Gothenburg were therefore required to be interviewed, making observations based on the participants subjective opinion important, consequently, making the generated data be in the form of words. Therefore, the chosen research strategy was to conduct a qualitative study. One of the qualities which Bryman and Bell (2015) describes a qualitative study has, is the understanding of the social world and the interpretation of this world by its participants which fits well with what this study aimed to achieve.

The study can also be said to be exploratory in its nature as it evolved over time because the outcome was unclear beforehand. For instance, the researchers could adapt the interviews if they noticed relevant themes, other than the expected themes, emerge from the previous interviews. This means that the interviews at the beginning of the study contained a different dialogue and subjects compared to the interviews at the later stages of the study. Furthermore, an explorative study allowed for additional flexibility in the data gathering process, making it easier to gain a deeper understanding of the context. With its dynamic nature, an explorative approach was appropriated to understand the social world. It also enabled a greater freedom to the researchers, making an explorative approach plausible to conduct.

The approach of this study was to theory-test already existing research. Hence, before the first interviews were conducted, several factors influencing IT innovation were already

determined (see table 2). This created focus areas during the interviews which helped the researchers to structure the format of the interviews (Bryman & Bell, 2015). The explorative approach was also encapsulated in the theory-testing as the researcher were open for answers which differed from the already identified factors.

Although a qualitative study was deemed to be most appropriate for this study, it was not without disadvantages. For example, one disadvantage was the risk for the involvement of subjective opinion from both the researchers and interviewees, but this was unavoidable. However, the risk for subjective opinions influencing the course of the project was considered mitigated with an extensive transcription of the interviews.

3.2 Research design

A research design decides how the collection of data and the analysis of it will be performed and there are several ways a research can be conducted. This study aimed to obtain data about IT innovation from organisations in the public sector through qualitative interviews, by looking at how the organisations innovate their internal IT systems and how factors influencing innovation affects them. Therefore, a comparative study was conducted as it allowed for an extensive analysis and deeper understanding for a defined context (Bryman & Bell, 2015). In addition, a comparative study allows one to analyse and compare the features of several cases which fits well into what this paper strived to achieve. Moreover, the complexity and the dynamic nature of the study further drove the choice of using a comparative study as it allows for theoretical discussions to emerge. Compared to a single-case study, this was considered to be more effective and made both the analysis and conclusion to be more relevant by using several cases instead of a single case as background. Moreover, a comparative case study, improves the validity of both theory-building and theory-testing because the theory will test more circumstances (Yin, 1984). This implies that a positivistic approach was conducted and by analysing and comparing several cases, the extracted variables were considered to be more relevant (Bryman & Bell, 2015).

After the interviews were conducted, a detailed transcription was done within two days and were based upon the recordings. As the language used in the interviews were Swedish, each

interview was translated to English after first being transcribed in Swedish. Thereafter, each transcription was categorised and separated into the predetermined themes which was based upon table 2. This enabled the researchers to break down and perform an in-depth analysis of the interviews to investigate what findings could be drawn from them (Bryman & Bell, 2015).

3.3 Secondary data collection

To gain a deeper understanding and to fully grasp what the significant drivers and barriers to innovation are and how they affect IT innovation in the public sector, an extensive literature review was conducted. The literature review also worked as the basis for the interview guide (see appendix 8.1). The primary source of secondary data collection was academic literature, such as articles, books and journals that were considered relevant to the study's field of research. The main sources of the collected secondary data were through the electronic databases Google Scholar and Gothenburg University library's database search engine "supersök". The used keywords were: *Digitalization*, *IT innovation, IT innovation literature review, public IT innovation* and *public innovation*. To reach a satisfactory quality of the literature review, criteria's such as citation frequency and peer-review were taken into account in addition to relevancy when collecting the secondary data. Especially the criteria of being peer-reviewed was regarded as extremely crucial due to the researchers limited knowledge and short experience within the area. However, publication date and being peer-reviewed were the most important factor for the literature reviews, to ensure both academic and temporal relevancy. Moreover, references of apparent relevance used by the authors of the identified texts were also reviewed and when deemed relevant used in the literature review of this thesis.

In addition to the data collection for the literature review, relevant data was needed to understand the organisations of the interviewees of this study. Information regarding the different companies which the interviewees of this study were working for was retrieved as well as information regarding the public sector in Sweden. The data was gathered from the company's homepage, newspapers, press releases from public organisations, public statistics and other outlets which were considered to reach a satisfactory quality were utilized.

3.4 Primary data collection

Due to the nature of the study, the choice for gathering primary data was to use interviews. According to Bryman and Bell (2015), there are three structures for conducting interviews: unstructured interviews, structured interviews and semi-structured interviews.

It was necessary to discuss specific topics in order to engage in theoretical reflections, however, because the study was explorative, it was also essential for the interviews to contain flexible attributes which would enable the researchers to ask follow-up questions and freely choose what questions to ask and which was important for the flow of the interviews and the understanding of the context. Semi-structured interviews were thus deemed to be most appropriate for this study so valuable data could be extracted. Comparisons between the different cases was also simplified compared to unstructured interviews as specific topics were always discussed.

The disadvantages with semi-structured interviews could be that they have a tendency to be hard to replicate as the flow of the interviews are dependent on human factors such as the interviewees and researchers. However, this is inevitable for almost all qualitative studies and must therefore be accepted. Another disadvantage was that the generated answers could be different for the interviewees. For instance, if one interviewee gives a certain answer for one topic, another interviewee might respond completely different. This factor was mitigated by the extensive literature review and the explorative approach which enabled the researchers to ask relevant follow-up questions to guide the interviewee so that it became easier to compare the results. Moreover, as there were predetermined topics to be brought up in each interview, there was a risk for the interviewees to instinctively agree that each factor was important for their IT innovation. This risk was mitigated by the researchers through the use of topics rather than direct question, for instance, the researchers let the interviewees reflect upon the topics rather than letting them answer the question directly.

3.5 Sampling

The interviewees were selected through what Bryman and Bell (2015) called convenience sampling which means that the researchers selected the interviewees based on availability and knowledge on the subject. The obvious drawbacks with convenience sampling was the capability of the interviewees to represent the larger picture, however, this risk was mitigated through the use of snowball sampling which is a part of convenience sampling. Snowball sampling means to utilise one interviewee in order to find another suitable interviewee (Bryman & Bell, 2015). Practically, this was implemented by firstly, searching for public organisations on Google and then contact relevant employees by email. The determinant factor for choosing relevant employees was based upon their titles, that they were IT decision makers. Later, these employees were asked to refer to other people who possessed relevant knowledge for our study. To gain as many insights as possible no consideration for what business the organisations were in were taken. One possible drawback to this could be that the answers differed depending on the business which the organisations belonged to, but the value in getting as many different inputs and insights as possible were valued higher by the researchers of this study. All the organisations which the interviewees work at are wholly owned by the municipality of Gothenburg. Below is a list of the companies which the interviewees work at.

Table 3. *Summary of interview information*

Organisation	Description of organisation	Interviewee position	Interview location	Length of interview
Framtiden	Mother company for the municipality of Gothenburg's housing companies.	IT-strategist	Face-to-face in a café.	40 minutes
Bostadsbolaget	Housing company owned by the municipality.	IT-strategist	Face-to-face in a private room.	30 minutes

Älvstranden	Operates mainly in land development for certain areas in Gothenburg.	IT-management	Face-to-face in a private room.	45 minutes
Göteborgs Lokaler	Manages commercial facilities for stores, offices, and municipal activities.	IT-strategist	Face-to-face in a private room.	70 minutes
Göteborg & CO	Markets and participates in the development of Gothenburg as a city for tourism, meetings, and events.	IT-management	Face-to-face in a private room.	60 minutes
Gothenburg University	University with eight faculties that offers courses and programmes in many subjects.	IT-management	Face-to-face in a private room.	39 minutes
Business Region Göteborg	Works with helping and promoting the business community in the city of Gothenburg.	Responsible for Information and communication technology	Face-to-face in a café.	25 minutes

3.6 Trustworthiness and authenticity

As qualitative studies are hard to judge with reliability and validity, hence, this study have decided to use Lincoln and Guba's (1985) criteria to evaluate the quality of the study. Lincoln et al. (1985) uses two primary criteria: trustworthiness and authenticity.

Trustworthiness consists of 4 different criteria: credibility, transferability, dependability and confirmability. Credibility refers to how well researchers' observations align with the theoretical ideas. In this study, credibility was regarded to be high as it is one of the strengths of a qualitative study, namely, the observation of social world. Transferability refers to the degree of generalisation in social settings a study has and as with all qualitative studies, this was regarded as a weakness for this study. This study tried to reduce the weakness by conducting a comparative case-study with multiple organisations so that the theory could be tested in various settings. However, transferability was still regarded as a weakness because of the small sample and focus of a given context, namely, Gothenburg City. Dependability refers to the reliability of the study which means the consistency of the study. Like transferability, this was also deemed to be a weakness for this study due the nature of a qualitative study. Confirmability refers to the objectivity of the study and in this study, it was considered to be weak. The researchers did not have prior relationships with the interviewees which could strengthen the objectivity and furthermore, coding of interviews also helped raise the objectivity of the study. However, as with social settings, some people connect more with some people and less with other people which could be reflected in how well the questions were answered. Moreover, the researchers also had to interpret the interviews, and which further raised the subjectivity of the study. (Bryman & Bell, 2015)

Authenticity consists of 5 different criteria: fairness, ontological authenticity, educative authenticity, catalytic authenticity and tactical authenticity. Fairness refers to the representation among the interviewees and if they considered to fairly represent various viewpoints. Depending the perspective, this study could possess a strength in the fairness aspects as it interviewed various IT-managers and IT-strategist from different public organisations. In contrast, it could also be viewed as a weakness because the study only focused around IT-managers and IT-strategist as IT innovation typically is not solely dependent and used by them. Ontological authenticity refers to the whether a study

contributes to understand the social context. This study has deemed the ontological authenticity to be one of its strengths as it has contributed to understand the social context of IT innovation in the public sector which there have been studies about. Educative authenticity refers to whether a study helps other members of the social setting to understand the perspective of the targeted members' perspective in a study. Similar to the ontological authenticity, the educative authenticity was regarded as a strength for this study as it had a clear target group, IT-managers and IT-strategist. In addition, this study provided a clear understanding and insight on how IT related managers in public organisations think about IT innovation, making it easier for other people to understand how they perceive IT innovation. Catalytic authenticity refers to whether the researchers have acted as a catalyst for other members to take action to change and this study have deemed it to be neither low nor high as results of the research provided with ideas but no concrete methodology for creating an organisation with a high IT innovation. Tactical authenticity refers to whether the researchers have provided necessary tools for members to take action which has been a weakness for this study because it did not provide tool or methodologies in how to have a higher IT innovation. (Bryman & Bell, 2015)

4. Empirical findings

In this section of the study the collected data is presented. First, tables showing the innovation process is presented. Then, using the overarching categories developed by De Vries et al. (2016) the factors of the environmental level will be presented and structured after table 2, using the factors which were rated after the perceived significance by the researchers of this study will be presented with the factors of the highest significance being presented first. Lastly, the findings of the organisational level will be presented and will follow the same structure as the environmental level.

4.1 Innovation process

Each interviewee was asked to describe their innovation process, if they had a systematic approach, how it was organised and if there were some room for spontaneity.

Table 4. *Summary of the interviewee's organisations innovation processes*

Organisation	Systematic	Spontaneous
Framtiden	Yes, works in many councils with the subsidiaries.	Not much room for spontaneity.
Bostadsbolaget	Yes, works in councils with other subsidiaries which has made them more systematic compared to when they did not.	Yes, but even small projects have to be approved by the concerned council.

Göteborg & CO	Yes, works 3-year action plans. They are completely integrated in the city of Gothenburg's platform, so they must follow the changes there.	Yes, however limited due to LOU and other regulations.
Göteborgs lokaler	Yes	Not much room for spontaneity.
Älvstranden	Yes, has an IT council which involves subsidiary bodies as well.	Yes, "sometimes it just pops up. It can stem from sudden needs, regulations, changes in the policy etc."
Gothenburg University	Yes, is part of an IT council.	Yes, to some extent.
Business Region Göteborg	"We are such a small organisation, it is not relevant"	"We are such a small organisation, it is not relevant"

Besides the answers to these questions some other aspects were brought forward by some of the interviewees. The interviewee at Bostadsbolaget said they follow trends and that ideas do come from within the organisations, but mostly comes from the outside when they have contact with other types of organisations and their services. Within the IT council that they work with, the interviewee said that one organisation in the council can for example be appointed to try out an idea and another organisation appointed to try out another one, and then they share the experiences and the knowledge gained with each other.

The interviewee at Gothenburg University was not entirely pleased with how they acquired new systems, stating that there was lack of continuity. That new systems were added and

piled on each other without considering the sustainability of it. Their accumulated system heritage could be due to the unsustainable systematic approach and IT councils.

4.2 Drivers and barriers of innovation on the environmental level

4.2.1 Competition

There was consensus among the interviewees that competition was beneficial for driving innovation forward. However, even though there were room for competition for some of the interviewed organisations, they did not utilize it.

The interviewee at Bostadsbolaget said that they used to compete with the private actors and the other subsidiaries belonging to the same mother company, but due to the housing shortage in Sweden the context has changed.

> *"There is a housing shortage, so we rent everything we have. Now, we try to cooperate and work more efficiently. Even within our internal system we cooperate more with each other."*

The interviewee at Framtiden claimed that there was some implicit competition between other organisations within the same industry, but that it was more concerning not being the worst in the class regarding for example their homepage. You do not want to have the worst looking and functioning one. The interviewee continued with that they benchmarked such things against other organisations.

The interviewee at Business Region Göteborg stated that due to the nature of their business, they have no competitors. The interviewee at Gothenburg University also stated that their competition is more implicit, and since the competition is implicit, it does not really act as a driver to any larger extent.

"In my position, we are not competing, but we do have an informal competition that acts like a driver, for instance we have rankings, but it not like we are saying we have to become better than Uppsala."

The interviewee at Göteborg & CO stated that they do not view other cities or tourist destinations in Sweden as competitors, instead they encouraged to work together and learn from each other. The interviewee also claimed that it can be beneficial for all tourist organisations in Scandinavia when tourists visits some of the other Scandinavian cities other than their own and that they sometimes cooperate with Oslo and Copenhagen. The interviewee also mentioned that there are tourism conferences and conventions all around Europe where tourism representatives from all around meet and share experiences and ideas with each other. The interviewee also brought up the aspect of having too many tourists, where the local inhabitants of some European cities are complaining because there are too many tourists and that it was something important to learn from.

The interviewee at Göteborgs Lokaler said that they have no competitors, but that they used to have. The interviewee also felt that competition is very important for innovation.

"Yes, of course I would like us to have competitors. It acts as a driver. There is no market which developed further than a free market, compared to a closed market. At least in my opinion"

The interviewee at Älvstranden also felt strongly that competition is beneficial for driving innovation forward claiming that he would actually like for them to have competitors, if they could. The interviewee also stated that a lack of competitors forced them to think in different ways.

"We don't have a so called natural competitors which is not good. It is hard to not have a competitor. So, instead, we must turn it around and ask ourselves, why does this organisation exist?"

4.2.2 Political landscape/Policy makers

All the interviewed organisations are wholly owned by the municipality of Gothenburg and therefore all organisations had to follow the rules and regulations related to be an organisation in the public sector. All interviewees stated that laws, regulations, and policies which comes from the government, local political initiatives etc. was affecting their innovation work to a large extent. There were however some differences among the organisation due to the differing nature of their business. The main law which every interviewee brought up and that all of them must follow was the law that regulates acquisitions, LOU.

The interviewee at Bostadsbolaget viewed policies and regulations as barriers to innovations and sometimes as contributors to inefficiencies, where the main argument being that the municipality wants all the organisation to use the same systems for certain things, the interviewee said the following;

> *"There are different types of public organisation who do different things and we as a housing organisation have different prospects and to say that all of us should use the same system is not an optimal solution. It is expensive and complex so for me, policies and regulations are damping innovation. Naturally, it can be positive too, but I am a bit more negative towards it"*

The interviewee at Älvstranden began by stating that it can be beneficial for innovations to some extent, using better structure between different organisations as an argument. The interviewee then continued by saying that it however can lead to confusions because decisions are made at such a high level and discussed similar things as the interviewee at Bostadsbolaget, that all organisations does not necessarily fit with the system that the policy makers wants the organisations to use. The interviewee also put forward the fact that keeping track of policies and regulations has forced them to be a bigger organisation and thus more inefficient, because more people needs to be involved in decisions, comparing with experiences from the private sector where things went faster according to the interviewee. The interviewee summarised the effects of policies and regulations to innovative work with this statement:

> *"There are more changes rather than improvements and it is not perceived as something positive in the organisation because you become forced to it. For instance, GDPR (a new law which regulates how sensitive information about private persons are stored), everyone hates it but everyone thinks it is good to have for the citizens, but nobody wants to work with it"*

The interviewee at Framtiden stated that there are many regulations they must follow, for example that there are certain rules to how their subsidiaries rent out apartments, which can be limiting but the interviewee did not feel that it was too limiting. The interviewee stated that there are things that they wished they could do but cannot because of policies and regulations. The interviewee did also state that some regulations are a bit vague but did not elaborate on what effect the vagueness of regulations can have on work with internal innovation work. The interviewee also stated that acquisitions take more time than necessary because of LOU which can be viewed as a barrier, but the interviewee also stated that it gives them time to think and viewed that factor as something that can be beneficial for the organisation.

The interviewee at Göteborgs Lokaler stated that for them, policies and regulations was not a barrier for the most part. One barrier the interviewee did mention was that they might be forced to change from a system such as Dropbox due to regulations regarding where certain information is stored, but they might not get the funding for educating their employees in the substitute system. The interviewee also stated the following regarding the impact on strategies by policies and regulations:

> *"We are very strict with following policies. But it is hard to discuss a strategy. For instance, imagine a strategy covering 5 years; a lot of things can happen in 5 years, especially within IT. Instead, it is better to use action plans, but we must follow the policies."*

The interviewee at Gothenburg University viewed policies and regulations both as a driver and as a barrier to innovation, stating that because of the regulations of LOU they have to look at other systems and that it is something to be considered good. However, the interviewee stated that there were improvements that could be made to the way which they acquire new systems. The interviewee described something called "competition characterized

dialogue" where instead of putting out a traditional requirement ad which companies can bid on, they tell companies what they think/imagine they want, then there is a qualification round followed by in-depth discussions. That way, the interviewee continued, they can see if they as an organisation forgot something or did not think about something in a certain way. This can help with both the day-to-day work and with innovation work, the interviewee stated the following:

> "The evaluation and requirement specification become easier by working with the supplier, else you have to do a lot of work yourself to create a specification yourself. There will also be a risk of engaging in a contract where there will be a lot of interpretations and discussions if we ourselves created the requirement specifications. We don't know what we want, that's the problem and we don't know what opportunities there are."

The interviewee also emphasised the importance for policy makers and legislators to have knowledge about the organisations which they are creating policies and regulations for, otherwise problems and frustrations can arise. The interviewee described it in the following way:

> "For instance, let's say the state decided that we are required to have a webpage-director and we give that responsibility to one institution who might have too few people or does not have the required knowledge. Then, they will become angry."

Göteborg & CO used to be 50% owned by the municipality and 50% by actors in the private sector but is now wholly owned by the municipality. The interviewee was employed during the transition and said that now after the transition, there are more policies and regulations that they have to follow. The interviewee said that this was not all bad, but that it does not really promote innovation. However, the interviewee shared the view that other interviewees have, that policies and regulations can be seen as both a driver and a barrier, where the aspects of being a barrier mostly lied in the fact that things take more time. The interviewee described it in the following way:

> *"Decisions and visions from politicians for digitalization is driving it forward, for instance, e-services, e-orders etc. but the organisation is so large it becomes slow. Sometimes we might make a decision, but it takes several years before we have a finished product and at that point, the product might already be old."*

The interviewee at Business Region Göteborg also shared the view that policies and regulations are both drivers and barriers to innovation, mostly emphasising the effect which LOU has on the organisations. The interviewee also used the new GDPR law as an example on how the competence within organisations in the public-sector have an effect on how they handle change due to new regulations.

> *"Some haven't realised that it is a problem, some have understood and are working on it and some have already solved it. It was not a big difference between PUL and GDPR, only higher fines. The big difference is one's right to be forgotten. You can ask to be forgotten from a company."*

4.2.3 Social

Not many of the interviewees discussed social aspects directly to any larger extent, however some aspect could be extrapolated. One aspect that was discussed by some interviewees was the effect that scandals can have on organisations in the public sector, and not only scandals within the interviewed organisation but also scandals occurring in the public sector in general.

Bostadsbolaget said that a scandal in Malmö made them change the way which they work with information regarding tenants.

> *"Something that MKB did (the city of Malmö's municipality owned housing company) which became news headlines affected us. They wrote bad things about tenants in their internal journal systems, so we had to build a system to mark bad words to make sure it didn't happen to us."*

This, the interviewee claimed, also made them more prepared for when the law GDPR comes in to effect, since they had already overhauled how they handle personal information.

The interviewee at Älvstranden brought up the fact that for a period of time there were many scandals regarding corruption coming forward in Gothenburg, granting the city the nickname "Muteborg", which roughly translates to "Bribeburg", with emphasis on the word "bribe".

> *"Muteborg affected everyone negatively in the city. Everyone became scared so now people are anxious when making decisions. General decision but also investment decisions."*

The interviewee also stated their organisation used to some degree be implicitly exempt from certain policies, but that after "Muteborg" they had to be stricter with following the policies, rules and regulations.

The interviewee at Framtiden said that since they are an organisation within the public sector they must follow certain social policies regarding for example accessibility which the private sector does not have to do, unless they choose to.

The interviewee at Göteborg & CO stated that they had had a scandal, where a event ended up costing 50 million Swedish kronor more than intended, but this did however not affect the organisation to any larger extent in regards to making decisions or working with innovations according to the interviewee.

4.3 Drivers and barriers of innovation on the organisational level

4.3.1 Managers / Leadership

All interviewees stated that an involved and interested manager is important for the innovative work that takes place within their organisations. The interviewee from

Älvstranden stated the following:

> *"If you want something done, it has to come from the boss".*

Almost none of the interviewees dwelled on the question for long, only stating that it was important and that not having an interested and involved manager would be detrimental for the innovative work within the organisation. Even though there were consensus among the interviewees on the importance of leadership, only one interviewee said that there were someone responsible for leading innovations within the company. The interviewee at Göteborg & CO were the only one who stated that even though they do not have a chief innovation officer they do however have an employee with responsibilities regarding innovation work within the organisation.

When asked about the situation within their own organisation all interviewees answered that it varied to a large extent. One interviewee even gave a percentage estimate regarding the interest among the managers at the organisation, stating the following:

> *"We have some who are very interested and some who are not at all interested. I would say that roughly 60% are interested."*

4.3.2 Legal culture

All interviewees stated that the strictness of being a public organisation is a barrier to innovation. That aspects of formalisation such as having to journalize certain things in order to live up to policies and regulations or that there are certain channels which ideas must go through were holding innovative work back. The interviewee at Bostadsbolaget emphasised this by stating the following:

> *"We are part of a group of organisations, so our freedom is much more limited compared to before. Instead, we have an IT-strategic council on a group level. That's where you give suggestions you want to implement and where we get permission to test new ideas"*

The interviewee at Framtiden however found one positive aspect of it and stated the following on how it affected innovative work:

"It becomes a longer process, but you also get more time to reflect over it"

Even though all saw it as a barrier to innovation most of them also saw no problems with it, viewing it as a part of life for organisations in public sector. However, even though all the interviewees said that innovative work has to go through certain channels and be handled in a certain way due to the nature of being a public organisation, some stated that there were room for spontaneity and trying out new ideas nonetheless.

4.3.3 Innovation champions

All interviewees found that a person who is extra interested and driven in projects was of importance for driving innovation forward. However, only two of the interviewed organisations outspokenly worked with innovation champions of some kind as a concept, they were Älvstranden and Göteborgs Lokaler. The interviewee at Älvstranden noted that it can be both a driver and a barrier and stated the following:

"We have innovation champions; some people are a lot more driven and they are very good as they are pulling everyone else. However, sometimes they can pull a bit too much in different directions that we originally didn't plan for. So, as a chief, I have to keep them in shackles sometimes. But they are very good."

It was only the interviewee at Älvstranden, illustrated with the quote above, who noted that the utilization of innovation champions can be considered somewhat of a barrier to innovation.

The interviewees as Gothenburg University and Bostadsbolaget both said that there are certain people who are more driven in their organisations but that that they did not work with innovation champions either formally or informally. The interviewees did however say that even though it's nothing that they work with formally, they are aware of the people who are extra driven and that such aspects are taken into account when doing projects. The

interviewee at Framtiden emphasised the importance of managers in the aspects of innovation champions.

4.3.4 Isomorphism

Isomorphism was not specifically discussed as a concept, since it in the form of a phenomenon, so none of the interviewees stated whether it was a driver or a barrier. However, it was discussed to what extent they look at other organisations within their industry and if they change if they are inspired or change when they notice something beneficial for them. So, when asked about it, all interviewees viewed looking at what others are doing as a driver to innovation. The interviewee at Framtiden stated the following when discussing the subject of doing as other do:

"You don't want to be the worst of all organisations working in the same area. For instance, if another company have a very nice webpage, we ourselves do not want to have a bad one"

The interviewee at Bostadsbolaget emphasised the importance of learning from other organisations and keeping an eye out what others in the same industry are doing. The interviewee also brought up the aspects of scandals.

"Something that MKB did (the city of Malmö's municipality owned housing company) which became news headlines affected us. They wrote bad things about tenants in their internal journal systems, so we had to build a system to mark bad words to make sure it didn't happen to us."

According to the interviewee, this helped to make Bostadsbolaget more prepared for the introduction of the GDPR law, so the scandal for MKB had a positive effect for the innovation work within Bostadsbolaget.

The interviewee at Gothenburg University stated that they work with doing as others do in a formal manner, the interviewee stated that they for example have regular meetings with 36 people from other similar organisations.

The interviewee at Göteborg & CO stated that they had contact with many cities in Europe and that it was very common to look at what the others are doing. That the different cities and tourism organisations within the different cities also helped each other a lot, that there are conferences where they meet and learn from each other.

As was brought up in the section on informal networks, the interviewee at Göteborgs Lokaler stated that they had developed a certain way of working with their internal IT system and were helping others within the municipality to work in the same manner, if they want to. The interviewee also discussed the aspect that they could charge for this service but chose no to, the reason being that one must help each other and that favours comes back around. For example, if another organisation is working in a certain manner which they would find interesting, they can just ask for help.

Älvstranden noted that due to the nature of their business it is hard for them to benchmark and do like others do, especially for internal system and when looking at organisations outside of Sweden.

4.3.5 Learning

All interviewees regarded learning as a driver for innovation, especially teaching and sharing information among one another in the organisation. Keeping track and being curious about what was happening in the world of their industry was also seen as a success factor. However, the extent to which it happened and if it was a formal, semi-formal or informal learning among the employees varied to a large degree.

The interviewee at Göteborg & CO stated that they had no formal way of learning, except for some internal education, but there was however informal learning taking place to a larger extent. The interviewee said the following:

> *"We are going to seminars, spreading information, sharing articles which we find interesting. We also have our own internal education. We have an unwritten rule that we share information from seminars, this can be in the form of sharing presentation slides or writing a short summary, trying to convey interesting information."*

This sort of informal way of learning from each other was also shared by Älvstranden, although the interviewee referred to it as a semi-structured form of learning. The interviewee stated that there existed a network within the organisation that meets every month where someone for example holds a presentation about a program or system and share what they have learned about it. The interviewee considered learning from each other within an organisation as very important for innovation and tried to encourage it among the employees.

Göteborgs lokaler also has no formal way of learning from each other, the interviewee said that they do not do in an informal either to a larger extent but that they try to encourage it since they believe it to be very beneficial for innovation. The same was said by the interviewee at Bostadsbolaget. The interviewee at Framtiden were new in the position so the interviewee was not certain about how and to what extent the employees learned from each other.

The interviewee at Gothenburg University stated that they have plenty of both formal and informal ways of how they learn from each other in the organisation. All of which the interviewee stated helps to drive innovation forward. They have a digital forum where employees can share information with each other, the interviewee however stated that it does not reach everyone within the organisation. The interviewee also said that they have a monthly meeting for what they called the strategic IT forum where representatives from the different faculties meet to present changes, prioritize things related to it, discuss ideas and so on. The interviewee also stated that learning from each other is very important for driving innovation forward, that that is why they have both formal and informal ways of doing it.

4.3.6 Size

On the aspect of size, the interviewees were very divided. Some viewed it as purely negative, some were in the middle and some saw positive aspects of it, but none viewed it as entirely positive. Those who were negative claimed that size added to the bureaucracy and slowness of innovation work, and that even though there were more people, there were not more innovative ideas. The interviewee at Gothenburg University viewed size as a barrier but also stated that how an organisation is structured matters by stating the following:

"Every change affects more people; more people have to take part of it. I mean, we have many institutes, we have art, medical institutes etc. so there are a lot of various logics behind them. It is easier for Chalmers who has only one faculty to work more efficiently since they have similar needs within the faculty"

The interviewee at the organisation Älvstranden viewed size both as a driver and a barrier in the sense that it depended on the culture within the organisation, stating the following:

"The more people there are, the longer it takes to make decisions. But there can also be a motivation and a culture within the organisation that you are pro-changes and improvements and I think we have that kind of culture"

The interviewee at Göteborgs lokaler stated that size can be barrier and pointed to the same aspects as other interviewees, that more people are involved, which leads to slower decisions etc. but, claimed that it had not been an issue for them. For the reason that it depended on how the innovation work was structured and how you utilize the size, mentioning success factors such as interactive involvement with the employees, conducting pre-studies, working with IT councils and doing rigorous preparations of the organisation before the implementation.

4.3.7 Customer oriented

Due to the research question and purpose of this study and the focus of IT systems regarding internal processes almost none of the interviewees could see being customer oriented as being either a driver or a barrier. When pointed out by the researcher conducting the interview that the external communication, through for example social media, could be considered a internal tool for assessing customer satisfaction some did agree that it could have affect. The interviewee from Framtiden said the following:

"For instance, we can set up a communication tool for tenants to see if someone wants to walk their dogs together but not everyone is friendly, and we are responsible for it. According to GDPR, it is not allowed to write personal information and there might be someone saying "my neighbour is stupid" which is not allowed. And if we are the ones responsible for the community, we have the responsibility for those comments so in that aspect, there exists some challenges and barriers"

4.3.8 Lessons learned

How the organisations learn after a completed project varies to a large degree. The interviewee at Bostadsbolaget stated that they write a report after a project was completed, how it went and how it could have been improved. How this information later was used was unclear to the interviewee.

The interviewee at Framtiden had not worked there for a long time and was thus uncertain if and how knowledge and lessons from prior projects were carried over to the next.

The interviewee at Gothenburg University stated they do not really do lessons learned seminars and thought there could be important knowledge to be extracted from the right persons. However, it is not something that they currently do.

For internal projects, lessons learned were part of the project evaluation according to the interviewee at Göteborg & CO. The same was said by the interviewee at Älvstranden who stated that lessons learned is part of the project model and is something that they work with.

The interviewee at Göteborgs Lokaler states that lessons learned does occur but not as much as it should and when asked if it was a problem, the interviewee stated that it is not a problem, rather it is a challenge which they can overcome. The interviewee reflected on the subject and said that it probably has to do with the attitude and willingness of the employees in an organisation if it is done or not.

4.3.9 Informal networks

All interviewees viewed informal networks as important, some even calling them extremely important, for their internal innovation work. None of the interviewees could see how informal networks could be seen as a barrier. Even though all interviewees fund informal networks to be of importance for innovation there were variations in how and even if they had and utilized them,

Göteborg & CO described informal networks as extremely important due to the industry which they are active in, the interviewee said that informal networks are important for many aspects of their work. They might for example have to convince politicians that a odd event can be good for the city's tourism, or in other cases they might want to do something but cannot due to restrictions in either regulations or the budget. But then instead they could use their informal networks to do it. The aspects the interviewee mentioned were mostly related to external activities of the organisations, but the interviewee also stated that the external activities affect their internal activities.

The interviewee at Göteborgs Lokaler also described informal contacts as extremely important and emphasised the importance of favours.

> *"Informal networks are extremely important. I for example work a lot with LinkedIn, with give and take. We have a lot of informal networks, with for example Intraservice, Liseberg etc. For instance, Liseberg came to us and asked how we operate our SharePoint and we were more than happy to help, because we will probably receive help from them in the future."*

The interviewee at Älvstranden stated that they did have some informal networks within the private sector but said that they mostly have informal networks with organisations within the public sector because private companies are too different from their own organisation. The interviewee at Gothenburg University also stated that informal networks are important, but that they almost exclusively had internal informal networks.

4.3.10 Age

In regard to the aspect of the age of the organisations the opinions of the interviewees varied somewhat, their answers depended a lot on the nature of the organisation. The interviewee at Göteborg & CO said that age did not really matter to them since they are working in the tourism industry which is very dependent on new technology and that they must follow demands from visitors of the city, which affects their innovation work with internal IT systems as well.

The interviewee at Gothenburg University who were involved in education said that due to their extensive system heritage they are not able to innovate the way they would want to but can instead only do incremental innovations by acquiring new systems. The reason being that they handle a lot of important information such as grades, degrees, research data and so on. The interviewee also stated that there is a desire to overhaul the systems, but that it at this point would be too expensive. But on the other hand, the interviewee at the organisation Bostadsbolaget, which was founded in 1945, claims that despite the age of the organisation they have no problem with system heritage. The interviewee attested this to the fact that they historically have been early with new technology and have a structured way of working with change.

> "We were rather early with computers, we built systems in house and we even sold system and administration services to others, but not anymore. A lot of that thinking is present in the organisation to this day. Now we have changed the internal IT system two times, but the structure and approach is still present."

The interviewee at Älvstranden did not only reflect on the aspects of system heritage and path dependencies due to age but also brought up factors such as re-organisations, change in management and scandals which can alter the attitude of an organisations and how it behaves in regard to innovation. That scandals for example, which did not necessarily happen at their organisation, can for example make people more careful when acquiring new systems or develop new ideas. The reason that scandals that happens at other organisations in the public sector could affect them is because everyone must follow the same laws when it comes to things like acquisitions.

The interviewee at Göteborgs Lokaler reflected on the aspects of culture when discussing the aspect of age, stating that it is typical in Gothenburg and Sweden as a whole to add new systems instead of making major changes. The interviewee also stated that it usually is the governing bodies which are to blame for possible path dependencies. The interviewee also joked that it usually is the age of the employees not the organisation that is blamed for lack of innovation.

The interviewee at Framtiden stated that not necessarily their organisation but their subsidiaries, some of which had existed for over half a century, have employees who have worked there for a long time that could be considered barriers to innovation,

5. Analysis

In this section of the study the analysis of the collected data is presented. As the structure of the empirics, the overarching categories, the environmental level and organisation level constructed by De Vries et al. (2016) will be used and structured after table 2, using the factors which were rated after the perceived significance by the researchers of this study will be presented with the factors of the highest significance being presented first. Lastly, the analysis of the organisational level will be presented and will follow the same structure as the environmental level.

5.1 Drivers and barriers of innovation on the environmental level

5.1.1 Competition

Competition was identified as a factor which was strongly correlated with innovation and adoption of technological innovation (Walker, 2006). From the literature review, three different types of innovations were found. The first one was the competition between private organisations (Windrum et al., 2008). The second type of competition was between other public organisations and generally, it was in the form of benchmarking (Dorsch et al., 1998). The last identified type of competition was competition between regions and cities (Sørensen et al., 2011).

Among the interviewees, there was a consensus that competition was a factor which drove innovation forward. However, there was a varying degree of competition which the organisations felt. For instance, Bostadsbolaget used to compete with other organisations but due to the current context of an existing housing shortage, they are now cooperating rather than competing. There was also some implicit competition, for instance Framtiden felt an implicit competition between other organisations in the same industry and Gothenburg University also felt some implicit competition between other universities in Sweden.

In general, the organisations who felt a direct competition, generally innovated more, however, some organisations who lacked competitors still considered themselves to be innovative. For instance, Göteborgs Lokaler and Älvstranden stated they did not have competitors but still regarded themselves to be an innovative organisation.

Therefore, it seems that a lack of competition can somewhat be compensated with knowledge and engagement of managers and a culture which promote innovation. For instance, Älvstranden, stated that instead of asking what their competitors were doing, they instead asked themselves why they existed.

5.1.2 Political landscape

All the organisations which the interviewees work at are wholly owned by the municipality of Gothenburg, which means that they must follow all the laws and regulations which all organisations in the public sector must follow but also the directives which comes from the political rule in the municipality of Gothenburg. This will most certainly influence the organisations, considering that every four years there is an election and if there is new leadership or the scale tips there might also be change in direction, which was noted by some of the interviewees and aligns with what Walker (2006) found in his study. When a new rule has come to power, then, depending on the competence and will of the ruling party can make an impact on the innovative evolution of the city. For better or worse. Of course, not all decisions are taken at the top but larger strategic ones are and sometimes smaller ones as well.

All interviewees stated that they are affected by political aspects, and state that they both can be barriers and drivers. However, some noted that decisions made "higher up" might not always be anchored in reality. The interviewee at Bostadsbolaget stated that the decision which came from the top in the municipality that all organisations should use the same systems even though not all organisations fit with the system was an example when it acts as a barrier. One could even say that it in a sense sabotages since a organisation is forced to use something that does not fit and that it makes working there worse in some sense and could contribute to inefficiencies in the organisation.

Since this study's focus was on internal IT related processes, the organisations must not take the public's opinions in to consideration when acquiring or developing new systems, as they otherwise might have been forced to have done if the innovation was something more public as stated by Walker (2006).

The interviewee at Framtiden brought up the point that things taking longer time due to more regulations, policies etc. might not necessarily be all bad. There's no arguing that things take longer time in the public sector, but when you get more time to think through a decision perhaps the better the decision can be. There is a sort of trade-off, they can almost never be first on the ball with innovations, but they do however get time to think through their decisions more in-depth due to built-in mechanisms in the process, which differs from the private sector where fast decisions might rather be forced on organisations which can lead to devastating consequences if the wrong decision is made.

One aspect which was brought up several times was the regulations regarding acquisitions, that there is a certain framework that must be followed when something is acquired, LOU. When an organisation in the public sector wants to acquire a new internal IT system they must specify more or less exactly what they want, the interviewee at Gothenburg University saw big problems with this since you might not always know from the start what you want and the people who build the system or other people might have good ideas on how to structure it. The interviewee also discussed aspects of LOU, saying that a acquisition might take so long time that when the system finally is delivered, it might already be dated. The fact that the organisations might not get what they want and that what they finally get is outdated can be seen as a barrier to innovation.

The positive aspects of policies and policy makers that was brought up by several of the interviewee was that they can be a driving force as well, that when a decision that benefits innovation is made it can be a very efficient driving force since everyone affected literally are forced to do it.

5.1.3 Social landscape

From the interviews, it could be concluded that the main way public organisations were affected by the social landscape was through scandals. Depending on the severity of the

scandal, it could affect everything from an individual to the whole public sector. In case of scandals affecting one individual, one example could be that an individual have to leave due to mismanagement of money. The case of "Muteborg" where several similar scandals were reported and thus affected the whole public sector in Gothenburg. The reports showed several cases of mismanaged money which consequently created a culture in public organisations where everyone became afraid of taking responsibility. In that case, the social opinion became so strong that it changed the way politicians decided that organisations ought to operate. This is also well aligned with how Walker (2006) described how the social landscape could affect how public organisations operate.

Naturally, scandals are outside the control of organisations unless they themselves are involved in them, so little can be done on how to mitigate risks of being affected by it.

Social factors could also be in the form of following social policies. Framtiden had to follow certain social policies which private companies were not required to follow. For instance, Framtiden had to ensure their webpage was viewable for all sorts of demographics and therefore had to implement reading tools for disabled customers. To encapsulate all different demographics thus required public organisations to have higher costs for their services compared to their private counterparts. This is a trade-off public organisations have to do as they operate for public good rather than for pure profits.

5.2 Drivers and barriers of innovation on the organisational level

5.2.1 Managers and leadership

All interviewees stated that an engaged and interested manager was important for innovation. However, there does not seem to be a relation between long standing and newer managers. They were more viewed as a mean to implement an innovation rather a person who initiate new innovations. This is backed by the fact that only one of the interviewed organisations had someone responsible for innovation. However, in contrast to the literature which showed

controversies, all interviewees of this study highlighted the importance of managers when asked about managers' role for the innovative work within public organisations. Together with the fact that managers do not seem to bring new innovations and the importance of a manager, one can conclude they are important for the processes of implementing innovations but not important for creating them (Walker, 2006).

From the perspective of managers, a manager's ability to understand the external environment, organisation and other factors seems to be important for innovation within a public organisation. For instance, all the interviewed managers do some sort of external analysis to see what other organisations have done or plan to do as they do not want to lose out to their competitors or counterparts in other regions. The results from the interviews indicated that there is a possibility that managers do not necessarily need to understand the organisation itself (although basic knowledge is required) or other factors because the municipality have introduced a common project model and are in charge of a lot larger implementation projects and new innovation in the public organisations. Especially major decisions stem from either Gothenburg City or any of its cluster councils, creating a centralised decisions-making process and therefore limits the value of managers' knowledge. In return, Gothenburg City or its cluster councils gains more power which was the results from the case of "Muteborg".

5.2.2 Legal culture

The findings of the legal culture were well aligned with the literature as all interviewees regarded the strictness as a barrier to innovation (Kickert, 2007; Damanpour, 1991). This was especially true in the context of IT innovation with its fast market development. Consequently, a long decision-making process could lead to technologies going out of date. One tactic which public organisations adopted to counteract the fast-changing market of technology was to use action plans with guidelines rather than detailed descriptions on organisations had to do.

Although the legal culture of a public organisation clearly hindered the adoption of innovation, all except for one interviewee did not see it as a problem. Rather, they accepted it as the nature of public organisations and one interviewee even stated it was necessary for the

democracy for the country. The one interviewee who had a more negative view towards strict procedures was working for an organisation which focused on events and public spaces. This limited their operation in providing a high service due to high restrictions on public spaces.

5.2.3 Innovation champions

Two of the interviewees worked with similar concepts as innovation champions and regarded them as important for the implementation of new innovations which aligns well with Greenhalgh's et al. (2004) findings. However, the interviewee from Älvstranden also viewed them as a barrier, if the innovation champions started to go against the vision from the managers and due to their influence, they could affect everyone involved in the project.

However, innovation champions seem to emerge naturally as all interviewees stated they were important for the project implementation. For example, Bostadsbolaget did not actively work with the concept but they did consider them during the planning phase of projects. Overall, innovation champions aligned well with the findings in the theory and were used by all organisations (Greenhalgh et al., 2004).

5.2.4 Isomorphism

Isomorphism was present among all organisations except for one. DiMaggo et al. (2000) explained isomorphism as a result of organisations who work in similar ways tend to end up working the same way and thus end up adopting similar types of technologies and innovation.

Based on the results from this study, isomorphism seems to be the consequence of networks, competition and cooperation. All the interviewees viewed it as a positive effect due to the fact that you could adopt innovations from partners or even competitors. In some sense it certainly helps public organization to share data and experiences, thus saving resources. However, at the same time, innovation might be hindered if public organisations only get inspiration for other public organisations, generating more isomorphism. This is why it will be important to collaborate with both universities and the private sector.

5.2.5 Learning

All interviewees regarded learning as an important driver for innovation and happened mostly through sharing and teaching information among other in the same organisation.

Salge et al. (2012) found that learning correlated well with the adoption of innovative technologies. Public organisations who valued learning tended to develop new types of services and engage in activities to improve processes, consequently, it enabled them to learn more and try out more ideas. Furthermore, organisations who valued learning and were customer oriented correlated strongly with the adoption of new technologies.

Göteborg & Co was a good example of what Salge et al. (2012) proved. The organisation was fast at adopting new technologies and valued learning and was customer oriented. However, the learning was mostly unstructured, the employees had a culture where they shared information, interesting articles and informal rules such as sharing presentations from seminars. The formal kind learning occurs through internal education although it was to a lesser degree compared to the informal learning.

Another interesting finding was that Göteborgs Lokaler regarded themselves to be an innovative organisation even though they did not have either a formal or informal structure for learning although they did encourage it.

Learning itself, might help promote innovation, however, it seems it is not a significant factor when determining how innovative an organisation is as learning was an important concept across all interviewed organisations.

5.2.6 Size

Some interviewees viewed size as a factor which negatively influenced innovation in an organisation. For example, the interviewee from Gothenburg University stated that because of their size changes affect more people in the organisations, creating more processes which makes it harder to implement new innovation. This view aligned well with Bernier et al.'s (2017) research towards how size affected innovation.

Some interviewees also claimed size could promote innovation but also admitted it led to longer procedures. With a larger size, they could cover a wider network and establish cooperation between subsidiaries and other types of organisations. Walker (2006) also claimed that with more employees, an organisation could find greater opportunities to find innovative solutions.

However, rather than the size itself affecting the organisation, it seems that it is more dependent on the structure and culture which affects innovation in a public organisation. Both the interviewee from Älvstranden and Göteborgs Lokaler admitted that size led to longer processes but that it depended on how the size was utilised. Factors which could help innovation was interactions between employees and rigorous preparations for new implementations. The interviewees also indicated that the negative aspects from size could be mitigated by having a culture which promotes innovation. This is also backed up by the fact that the interviewees who viewed size as a negative influence on innovation had a hard time cooperating and coordinating with their employees. For instance, they could have problems with their structure for cooperating with different departments or their employees were not as engaging compared to other organisations.

5.2.7 Customer orientation

Based on the results from the interviews, the organisations who regarded themselves to be innovative also tended to have a higher customer focus in contrast to their counterparts. Göteborg & Co discussed a lot from the perspectives of their customers during the interview and as previously discussed, they tended to be more prone to adopt new technologies or else they would not be able to retain or increase the number of customers. This result aligns well with Salge et al.'s (2012) findings where they showed that public organisations which were customer oriented correlated with the adoption of new technologies.

However, there were also organisations who were customer dependent and customer oriented but still did not innovate as much as Göteborg & Co. For instance, the real-estate organisations were also dependent on their customers but did not innovate as much compared to Göteborg & Co. This can be explained by the nature of their business as well as market competition. Currently, there is a high demand of apartments in Sweden which have created a

market where demand is higher than the supply and due to this market context, competition between public real-estate organisations have diminished. Instead, several real-estate organisations have been working together to bring in new innovative solutions for the market instead of competing against each other. This cooperation was possible to be established solely due to the nature of public organisations which works for public good and not for profit.

Furthermore, strict procedures, legal culture and system heritage were also found to negatively influence innovation. This can be seen in the case of Gothenburg University which have a young customer base (students) who can adapt to a fast-changing technological environment. However, Gothenburg University have not or cannot utilise their customer base due their system heritage and the strict decision-making procedures, making it too expensive to implement completely new systems.

5.2.8 Learning from projects

When looking at the different organisations and how they learn from projects, either through single-loop or double-loop, Älvstranden and Göteborg & CO appears to be the only one who truly utilizes double-loop learning. This is because the concept of lessons learned, a style of double-loop learning, is part of their project model and is something that they stated that they actively work with. This also means that they act as recommended by Von Zedtwitz (2002), that they have the double-loop style learning as part of the project model.

The interviewee at Gothenburg university said that they do after-project seminars, but do not follow them up with lessons learned. This as according to the model by Argyris and Schön (1978) is more single-loop style learning, they do not go back and reconsider what was done. The interviewee however expressed a wish that the organisations did it more, because the interviewee thought that potentially valuable knowledge risk being lost. Bostadsbolaget works in a similar manner, they wrote a report on what had happened and what could have been improved when a project is over, they did not however work with some sort knowledge gathering. This is can be considered single-loop since, as stated by the interviewee, what happens to the report after it has been written or if it is used was unclear.

Double-loop learning did to some extent occur in the form of lessons learned at Göteborgs Lokaler, but not enough according to the interviewee. There appears to be a desire to do it more as the interviewee stated that it is something they should work more with, the interviewee seems to appreciate the value which knowledge from completed projects can give. They appear to the most part utilize single-loop style learning but wish to do more double-loop.

The interviewee at Framtiden stated not having worked there long enough to know how learning from prior projects really works in the organisation yet.

5.2.9 Informal networks

All interviewees viewed informal networks to be important for their internal innovations. Lewis et al. (2011) showed that informal networks played an extremely important factor for innovation with the public sector because it provided more access to more information.

Because all interviewees viewed it as important and did have informal networks, it can be concluded it is somewhat helping public organisations with their IT innovation although it is not a significant factor in driving IT innovation.

Instead, it seems it depends on the type of industry. For instance, Göteborg & Co was active in an industry which required to have a lot of networks, making informal networks important. For instance, the organisation had to convince politicians on certain projects or connect people with each other. It also seems that informal networks promote other types of value in the form of cooperation as evident by Göteborgs Lokaler who used informal networks to share knowledge among others. Hence, depending on the cooperation, informal networks can indirectly affect innovation

5.2.10 Age

When asked about whether the age of the company affected innovation, there were a wide range of answers among the interviewees. For instance, Göteborg & Co did not believe age affected the IT innovation due to the nature of its business, the tourism industry. As an organisation working in the tourism industry, it was very dependent on innovative technology

as many customers (tourists, citizens etc.) have a tendency to adopt to new innovations very fast. One example could be the use of smartphones which gained a lot of users in a relatively brief period of them, hence, they had to adopt.

In contrast, the interviewee from Gothenburg University said due to their extensive system heritage, they now find it very hard to innovate the way it wants to. The organisation has now done many smaller incremental IT changes, making it too expensive to do an overhaul of the systems. Basically, the organisation currently resides in a loop which it cannot resolve due to its path dependencies. The reason for these smaller incremental changes was explained by Göteborgs Lokaler who stated that systems are generally acquired on a need basis, so they tend to pile up on each other since they ensure that the new system can communicate with the old systems. This makes the costs of a big innovation project too high since the project has to handle a lot of systems with different databases, needs etc.

However, Bostadsbolaget, which was founded in 1945 claimed it had no problems with system heritage at all, instead, the interviewee even claimed it was one of their strengths. Its current database contains a lot of valuable information of apartments which they update every month. Furthermore, the interviewee also stated the organisation traditionally had been very early in adopting new innovations and that mindset is still present within the organisation today.

To conclude, age have the potential to become factor which influences IT innovation within a public organisation as evident by comparing Gothenburg University with Bostadsbolaget. However, it depends on the managers' decision on what they implement as well as how much they took future considerations into perspective when deciding to implement a new IT system. This aligns well with the found literature as there where both cases who found that age could both be a driver and barrier for innovation (Walker, 2006; Damanpour, 1991)

6. Conclusion and future research

The purpose of this study was to contribute to the field of research on innovation in the public sector by focusing on internal IT innovation in municipality governed organisations. The research question of this study was: "What are the significant drivers and barriers to innovation and how are they affecting IT innovation in the public sector?" With that question in mind the conclusion will be constructed in such manner that the most significant drivers and barriers to innovation in the public sector and how they affected the interviewed organisations internal it innovation work will be presented and shortly discussed.

6.1 Conclusion

This study has been analysing factors which influence technological innovation within public organisations through 7 semi-structured interviews. The findings indicated that there does not seem to be a definite answer on which factors are important for innovation, but rather, it depends on the context of the organisation. Most of the identified factors could influence innovation to some degree, for instance, environmental factors such as the political landscape and competition and organisational factors such as informal networks and innovation champions.

From what could be derived from the interviews, two environmental factors were identified to be significant. The first one was competition which every interviewee regarded as an important driver for their IT innovation. From the analysis, competition mostly worked as a motivational driver because no one wanted to be the worst among others in the same industry. The competition is rather implicit as they are not competing for market share. However, not every organisation had competitors, but all interviewees emphasized its importance for IT innovation.

Although separate in literature it became apparent that some factors were closely aligned. The political landscape and legal culture intertwined since one affects the other, for example it is the politicians who writes the laws which translates into the policies that the organisations must follow. Hence, depending on the political landscape, the legal culture can change as

well. For instance, some politicians might give more freedom to each respective organisation while other politicians prefer a higher degree of control and thus creates more regulations. This is why the interviewees regarded the political landscape and legal culture as both a significant driver and barrier for IT innovation. To some degree the factors political landscape and management can be seen as intertwined since it is the policy makers who are making the overarching decisions which the organisations must follow, therefore the decisions are dependent on the competence of the person making the decision and also that person's interest in for example IT innovation.

Generally, the social landscape was not considered to be important among the interviewees. However, sometimes the social opinion becomes so forceful that it can create changes in the public sector. One example from the interviewees was scandals, which changed how public organisations were controlled in the municipality of Gothenburg.

All the interviewees viewed managers as both a driver and a barrier depending on the competence and interest of the individual. If the manager is not interested in innovating the internal IT systems, it will not happen. All interviewees viewed managers as a strong factor for innovation thusly being a significant factor for either driving or being a barrier to innovation depending on the characteristics of the individual manager.

Another factor was isomorphism and although the answers varied, it could be concluded that isomorphism existed in the form of a phenomena, rather than a strategy as all interviewees participated in some sort of isomorphism but not explicitly. For instance, all interviewees participated in industry fares where they could compare and benchmark against other organisations. The fares also worked as a place where the managers could create wider informal networks which led to a higher degree of isomorphism as the organisations influenced each other. However, as isomorphism was mostly mentioned implicitly, it was hard to determine whether it was a significant driver or barrier.

The last identified factor was lessons learned which was a bit controversial in the sense that every interviewee regarded it as important but almost none had it practically implemented. In regard to single- and double-loop learning a couple of the interviewed organisations partook in double-loop learning to some extent. Its significance cannot however be determined as

high since even though all interviewees viewed learning as highly important, almost none of them had any systematic and consistent approach to learning in the organisations.

To conclude, our rating of the different factors of drivers and barriers to innovation, see table 2, seemed to align well with the results of the study although one factor stood out which was the effect innovation champions had on innovation. Moreover, it seems to be of significance to have engaging managers and a culture which promotes innovation in order to create an innovative public-sector organisation which promotes IT innovation.

However, the TOE framework, the overarching categorisation by De Vries et al. (2016) (environmental and organisational levels), and also the identified factors from the literature review are not without fault. This study has concluded that the mentioned framework and categorisations put too much emphasis on the categorisation of different factors such as the organisational level, environmental level and subfactors. Furthermore, many of the factors intertwined with each other, making the cause-and-effect relationship unclear. As this study have shown, there are few factors that should be focused on to understand IT innovation in public organisations which can be seen in figure 4. First of all, the figure shows the organisational boundary where it has control. In there, two factors have been identified to significantly affect IT innovation, managers and the organisational culture. This is then encompassed by the political context which the organisation resides in, this context constitutes the policymakers who decides the rules, regulations and policies which the organisation must adhere to. The advantage with this figure is that it allows future research to focus on fewer factors and avoid focusing on factors which barely influences IT innovation.
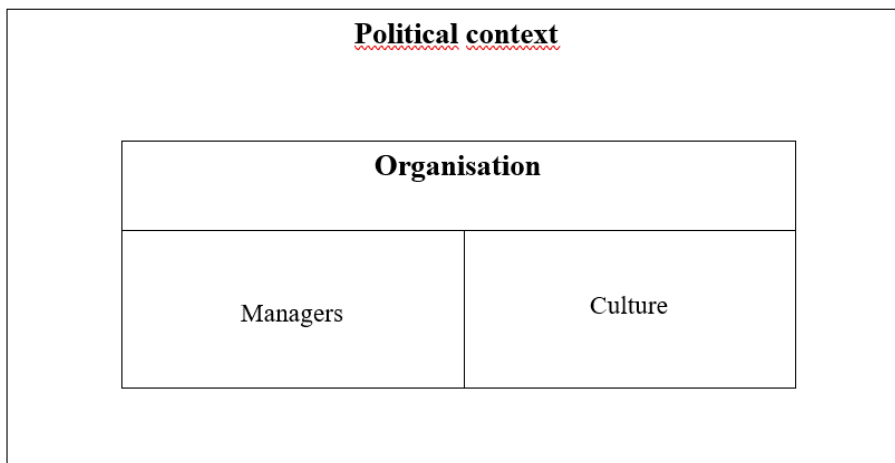

Figure 4. PMC (political, managerial, cultural) framework.

6.2 Future research

Based upon our findings, an elevation of this study could focus on a few things. First of all, it would be interesting to see how and what type of culture positively affects IT innovation and see if it contradicts or aligns with other types of innovation within public organisations. Secondly, research on managers' effect on IT innovation such as what characteristics are beneficial for promoting IT innovation might further help to understand IT innovation in public organisations. Thirdly, research comparing the effect of a centralised governed municipality compared to a decentralised municipality can further provide a better understanding of the political environment. Lastly, research testing the legitimacy of figure 4 is needed in order to establish the validity of the model.

7. Sources

Agolla, J. E., & Van Lill, J. B. (2016). An empirical investigation into innovation drivers and barriers in public sector organisations. *International Journal of Innovation Science*, *8*(4), 404-422.

Anonymous. (2011). Innovate or die: Why innovation is the key to business success in a changing world. *Strategic Direction, 27*(7), 12-14

Argyris, C., & Schön, D. (1978). Organizational learning: A theory of action perspective. Reading, Mass.: Addison-Wesley.

Arundel, A., & Hollanders, H. (2011). A taxonomy of innovation: How do public sector agencies innovate? Results of the 2010 European Innobarometer survey of public agencies.

Arundel, A., & Huber, D. (2013). From too little to too much innovation? Issues in measuring innovation in the public sector. *Structural Change and Economic Dynamics*, *27*, 146-159.

Berman, S. J. (2012). Digital transformation: opportunities to create new business models. Strategy & Leadership, 40(2), 16-24.

Bernier, L., & Hafsi, T. (2007). The changing nature of public entrepreneurship. Public Administration Review, 67(3), 488-503.

Bloch, C., & Bugge, M. M. (2013). Public sector innovation—From theory to measurement. *Structural change and economic dynamics*, *27*, 133-145.

Borins, S. (2000). Loose cannons and rule breakers, or enterprising leaders? Some evidence about innovative public managers. *Public Administration Review*, *60*(6), 498-507.

Bryman, A., & Bell, E. (2015). *Business research methods*. Oxford University Press, USA.

Bugge, M., Mortensen, P. S., & Bloch, C. (2011). Measuring Public Innovation in Nordic Countries. Report on the Nordic Pilot studies-Analyses of methodology and results.

BusinessDictionary (n.a). *Digitalization*. Retrieved 2018-06-03, from
http://www.businessdictionary.com/definition/digitalization.html

Damanpour, F. (1991). Organizational innovation: A meta-analysis of effects of determinants
and moderators. Academy of management journal, 34(3), 555-590.

De Vries, H., Bekkers, V., & Tummers, L. (2016). Innovation in the public sector: A
systematic review and future research agenda. *Public Administration*, *94*(1), 146-166.

DiMaggio, P. J., & Powell, W. W. (2000). The iron cage revisited institutional isomorphism
and collective rationality in organizational fields. In Economics Meets Sociology in Strategic
Management (pp. 143-166). Emerald Group Publishing Limited.

Dorsch, J. J., & Yasin, M. M. (1998). A framework for benchmarking in the public sector:
literature review and directions for future research. International Journal of Public Sector
Management, 11(2/3), 91-115.

Eggers, W. D., & Singh, S. K. (2009). *The Public Innovator's Playbook: Nurturing bold
ideas in government*. Ash Institute, Harvard Kennedy School.

European Commission, 2010. Innobarometer 2010 Analytical Report. European Commission,
Brussels.

Foldy, E. G. (2004). Learning from diversity: A theoretical exploration. Public
Administration Review, 64(5), 529-538.

Gallouj, F., & Zanfei, A. (2013). Innovation in public services: Filling a gap in the literature.
Structural change and economic dynamics, *27*, 89-97.

Gartner (2017). *Digitalization*. Retrieved 2018-02-21, from https://www.gartner.com/it-
glossary/digitalization

Greenhalgh, T., Robert, G., Macfarlane, F., Bate, P., & Kyriakidou, O. (2004). Diffusion of innovations in service organizations: systematic review and recommendations. The Milbank Quarterly, 82(4), 581-629.

Gummer, B. (2001). Innovate or Die. Administration in Social Work, 25(3), 65-84.

Hartley, J. (2005). Innovation in governance and public services: Past and present. Public money and management, 25(1), 27-34.

Hodock, Calvin L., & Adamo, Guy. (2010). Innovate or die. (product innovation). *Marketing Management, 19*(3), 38-43.

Hofstede, G. (1984). Culture's consequences: International differences in work-related values (Vol. 5). sage.

Jagersma, P.K., VU Business School, & Accounting. (2003). Innovate or Die. *The Journal of Business Strategy,* (Winter), 25-28.

Kickert, W. (2007). Public management reforms in countries with a Napoleonic state model: France, Italy and Spain. In New public management in Europe (pp. 26-51). Palgrave Macmillan, London.

Kruger, D., & Fuyuno, I. (2002). Innovate or die. *Far Eastern Economic Review, 165*(16), 28-32.

Lewis, J. M., Considine, M., & Alexander, D. (2011). Innovation inside government: The importance of networks. In Innovation in the Public Sector (pp. 107-133). Palgrave Macmillan, London.

Lewis, J. M., Ricard, L. M., & Klijn, E. H. (2017). How innovation drivers, networking and leadership shape public sector innovation capacity. International Review of Administrative Sciences, 0020852317694085

Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry* (Vol. 75). Sage.

Matt, C., Hess, T., & Benlian, A. (2015). Digital transformation strategies. Business & Information Systems Engineering, 57(5), 339-343.

Matthews, M., Lewis, C., & Cook, G. (2009). Public Sector Innovation: A Review of the Literature, Report on a Project Carried out to Support the Preparation of an ANAO Better Practice Guide on Public Sector Innovation. Final Report.

Mudambi, R. (2008). Location, control and innovation in knowledge-intensive industries. Journal of economic Geography, 8(5), 699-725.

Mulgan, G. (2007). *Ready or not?: taking innovation in the public sector seriously*. Nesta.

Odintsova, S. A., Kenesova, N. T., & Sarsekeyeva, Z. E. (2013). Information technology: Definition, essence and content of the concept. Education and Science Without Borders, 4(7), 107.

OECD/Eurostat. (2005). The Oslo Manual - Guidelines for Collecting and Interpreting Innovation Data, third ed. OECD, Paris, France.

Oliveira, T., & Martins, M. F. (2011). Literature review of information technology adoption models at firm level. The electronic journal information systems evaluation, 14(1), 110-121.

Perez, C. (2010). Technological revolutions and techno-economic paradigms. Cambridge journal of economics, 34(1), 185-202.

Pierson, P. (2000). Increasing returns, path dependence, and the study of politics. American political science review, 94(2), 251-267.

Rao, B. (2010). How to Measure Innovation. Challenge, 53(1), 109–125.

Regeringskansliet. (2016). *Digitalisering av offentlig sektor*. Retrieved 2018-05-15, from https://www.regeringen.se/regeringens-politik/digitaliseringspolitik/digital-forvaltning/

Reitz, J. (2006). E-government. American Journal Of Comparative Law, 54, 733-754.

Salge, T. O., & Vera, A. (2012). Benefiting from public sector innovation: The moderating role of customer and learning orientation. Public Administration Review, 72(4), 550-559.

Schumpeter, J. A. The Theory of Economic Development: An Inquiry into Profits, Capital, Credit, Interest, and the Business Cycle (1912/1934).

SFS 2016:1145. *Lag om offentlig upphandling*. Stockholm: Finansdepartementet OU

Simons, R. (2005). Levers of organization design. Boston: Harvard Business School Publishing.

Stewart- Weeks, M., & Kastelle, T. (2015). Innovation in the Public Sector. *Australian Journal of Public Administration, 74*(1), 63-72.

Sørensen, E., & Torfing, J. (2011). Enhancing collaborative innovation in the public sector. Administration & Society, 43(8), 842-868.

Thompson, J. D. (1967). Organizations in Action. New York: McGraw-Hill.

Tornatzky, L. and Fleischer, M. (1990) The process of technology innovation, Lexington, MA, Lexington Books.

Von Zedtwitz, M. (2002). Organizational learning through post–project reviews in R&D. R&D Management, 32(3), 255-268.

Västra Götalandsregionen. (2018). *Digital agenda Västra Götaland.* Retrieved 2018-05-10, from http://www.vgregion.se/regional-utveckling/verksamhetsomraden/digitalisering/digital-agenda/

Walker, R. M. (2006). Innovation type and diffusion: An empirical analysis of local government. Public administration, 84(2), 311-335.

Walker, R. M. (2014). Internal and External Antecedents of Process Innovation: A review and extension. Public Management Review, 16(1), 21-44.

Windrum, P., & Koch, P. M. (Eds.). (2008). Innovation in public sector services: entrepreneurship, creativity and management. Edward Elgar Publishing.

WIPO. (2016). *World Intellectual Property Indicators 2016*. Geneva: WIPO.

Yin, R. K. (1984). Applied social research methods series Case study research: Design and methods.

8. Appendix

8.1 Interview guide

Please introduce yourself, the company, and your role shortly.

How does your organisation work with innovations?

Is it more systematic or spontaneous?

Do you think innovations is important for your organisation?

Do you think that your type of organisation promotes innovation?

Drivers and barriers:
Each of the following factors are categorised under either the "environmental" or "organisational" level following the same logic as table 2. The factors are not posed as questions due to the fact that they were brought up in the interviews in different manners, sometimes directly other times indirectly and on occasion they were brought up by the interviewees themselves.

Environmental:

Policy and policy makers

Economic landscape

Social landscape

Competition

Organisational:

Managers / Leadership

Legal culture

Size

Age

Customer orientation

Learning

Diversity

Informal networks

Innovation champions

Isomorphism

Projects

Has there been an innovative change in your organisation recently?

Could you tell us about it?

How did you get the idea?
.
When did you start implementing it?

Were there any problems during or after implementation?

Evaluation

Did you evaluate the project?

If so, how?

What did do you measure?

Did you receive the expected value from the project?

If so, how do you know that?
If not, how do you know you didn't?

How long did it take before you started feeling/noticing that it started generating value?

How do you retain the knowledge which accumulates during a project?