# ICT Strategy Process in Small Dutch Municipalities

Exploratory research on the formulation of the ICT strategy and the accompanying effects

Engineering and Policy Analysis Delft University of Technology 05-03-2021 Bastijn Boele

# ICT Strategy Process in Small Dutch Municipalities

Master thesis submitted to Delft University of Technology

in partial fulfilment of the requirements for the degree of

# **MASTER OF SCIENCE**

# in Engineering and Policy Analysis

Faculty of Technology, Policy and Management

by

Bastijn Boele

Student number: 4484835

To be defended in public on March 19 2021

# Graduation committee

Chairperson	: Prof.dr.ir. M.F.W.H.A. (Marijn) Janssen	, Information and Communication Technology
First Supervisor	: Prof.dr.ir. M.F.W.H.A. (Marijn) Janssen	, Information and Communication Technology
Second Supervisor	: Dr. H.G. (Haiko) van der Voort	, Organisation and Governance
External Supervisor	: Drs. J.W.L. (Hans) Reterink MscBA	, Berenschot

# **Management summary**

Small municipalities are facing problems in the field of ICT. The costs of ICT have been rising for several years. Legislation is decentralized to municipalities and this makes ICT more complex for municipalities. In addition, ICT is becoming more and more essential in society and citizens have higher expectations of digital services. However, there is no political legitimacy because municipal councils have no affinity or knowledge of ICT.

In addition, small municipalities have less knowledge to tackle the increasingly complex ICT and lack the resources to recruited specialists. What has been occurring in recent years is that municipalities are collaborating in order to achieve greater efficiency, in the hope that they are able to cope with the ICT changes. However, collaborations seem not to have an unambiguous positive effect.

The situation that has emerged raises to the question of what factors influence the ICT strategy of a small municipalities. However, no research has been conducted in the specific niche of small, political organisations in the Netherlands. Therefore, the following main research questions have been formulated and are central to this research:

- 1. How is ICT strategy in small Dutch municipalities formed?
- 2. How does municipal collaboration affect the ICT strategy process?

The ICT strategy process was analysed using the technology strategy model of Chiesa. This model describes the technology strategy process in a competitive environment, based on four dimensions; context foresight, selection, timing and acquisition, whose interaction forms the strategy process. For this research, the dimension timing was excluded from the framework. The dimension timing is of less significance in the public context. The three dimensions remaining are influenced by various factors. These factors are tangible, which makes the ICT strategy process feasible for research.

By examining four different municipalities, insights have been generated on the ICT strategy process. The research shows that a number of factors mentioned in the literature do not apply to small municipalities and these factors have therefore been removed from the framework. In addition, it was found that there are a number of factors of importance that are not mentioned in the literature and these have been added to Chiesa's framework. This created a new framework that provides insight into the ICT strategy process of small municipalities. The factors influencing the three dimensions are presented in figure A1.



Figure A1. The factors influencing the dimensions of the strategy process.

To answer the second research question, the research examined what effects a collaboration has on the ICT strategy process. In order to answer this research question, the influence of collaboration on the various factors, as presented above, is investigated. The most important considerations for collaboration and the differences between various forms of collaboration were investigated. This leads to insight in the main effects of collaboration affecting the ICT strategy process.

Collaboration is initiated as the result of ICT becoming more complex, part due to legislation, and the increasing costs of ICT. Collaboration should deal with this by bundling resources. Although market developments such as software as a service (SaaS) relieve municipalities of their burden and make ICT less complex for them, recourses remain scarce.

Figure A2 presents how collaboration affects the main factors of interest. Venray does not collaborate, which means it cannot pool resources. This means, for example, that ICT is less cost-efficient and access to knowledge is limited. However, Venray is not dependent on other municipalities as it comes to its ICT strategy process. This means that the municipal council can control the strategy.

In its collaboration with Delft, Rijswijk has chosen to maintain autonomy as much as possible. Rijswijk can largely deviate from the choices made by Delft. Rijswijk has more influence on the strategy of the joint arrangement, since there is only one collaborating partner and thus they remain closer to their own goals and strategy.

Finally, Roosendaal and Medemblik are both in a large partnerships (5+). Many resources can be pooled, which can increase the access to knowledge and reduces the costs through joint purchase. On the other hand, a large collaboration also results in transaction costs and the fact that five municipal councils have to agree on the direction that the partnership takes. This creates administrative struggles, as municipalities do not all share the same ambitions and resources.

The case studies show that the main trade-off for collaboration are costs, access to knowledge and the degree of autonomy. The choice a municipality makes depends on the situation it is in or what it needs.

Figure A2 shows what how the main factors of interest are affected by collaboration.



Figure A2. How municipal collaboration affect the ICT strategy process.

In conclusion, small municipalities have problems with ICT regarding legitimacy, knowledge and costs. With the insights from this research, municipal councils can gain more in-depth knowledge about the ICT strategy process, which will result in a more legitimate strategy. In addition, this research offers municipalities insight into the tradeoffs that can be made for increasing access knowledge or reducing costs. The results of the research questions therefore help to tackle the social problems, by offering additional insight into the ICT strategy process and choices that small municipalities have.

Lastly, based on the insights of the research, two policy recommendations for small Dutch municipalities are given.

- 1. Collaborate with another municipality, preferably multiple.
- 2. Search for municipalities with an equal ambition level in collaboration.

# Preface

#### Dear reader,

This research is my graduation research for the study Engineering & Policy Analysis (EPA) at TU Delft. I have carried out this research at the consultancy agency Berenschot.

This research has taught me why strategy is important and what it has to offer. Besides, it provided insight into the complex situation in which small municipalities find themselves and the considerations they are confronted with. It also taught me to peel off a strategy and break it down into several tangible pieces. This method can be applied to many issues and therefore it enhances my analytical capabilities.

The research of the ICT strategy process in small municipalities is related to the EPA programme. Insight into strategy formation is valuable for municipalities and helps policymakers formulate strategy by enabling more rational decisions regarding ICT strategy. In addition, the research has an analytical character with both a comparison of four cases and a comparison of the literature with the cases. In these cases, several different stakeholders in the ICT strategy process were interviewed, allowing for the analysis of differentiation in perspectives and incentives between actors. All of the above has characteristics of EPA research criteria, making this research relevant for the EPA programme.

Finally, I would like to thank my supervisors from both TU Delft and Berenschot: Marijn Janssen, Haiko van der Voort and Hans Reterink. They all provided me with useful feedback during the process, I could ask questions any given time and they supported me broadly. I would also like to thank my parents and my girlfriend, for reviewing and supporting me during my thesis.

I am happy and proud with the result.

Enjoy the read.

Bastijn

# **Table of Contents**

1.	Intr	roduction 10							
	1.1 1.2 1.3 1.4 1.5 1.6	<ol> <li>Scientific Knowledge Gap</li> <li>Research Question</li> <li>Societal Relevance</li> <li>Research Approach</li> <li>Scope of the Research</li> <li>Research Outline</li> </ol>							
2.	The	eoretica	al Background	15					
	2.1	Key dir	nensions in technology strategy	15					
		2.1.1	Context Foresight	16					
		2.1.2	Selection	16					
		2.1.3	Timing	17					
		2.1.4	Acquisition	18					
		2.1.5	Demarcation of the research	19					
	2.2	Selectio	on and acquisition in the context of small public organisations	19					
		2.2.1	The public context	20					
		2.2.2	The small organisational context	20					
	2.3 2.4	Examining factors20The identified process influences21							
3.	Res	earch r	earch method 23						
	3.1 3.2	Research Approach23Case Study Design23							
		3.2.1	Type of design	23					
		3.2.2	Data collection	25					
		3.2.3	Rationale and direction	25					
		3.2.4	Validity and reliability	26					
		3.2.5	Drawing conclusions from case studies	26					
4.	Ana	lysis		27					
	4.1 4.2	Genera Venray	al analytical frame	27 29					
		4.2.1	Current ICT strategy process	29					
		4.2.2	Factors of interest with regard to the ICT strategy process	29					
		4.2.3	Giving perspective to the factors of interest	32					
	4.3	Rooser	ndaal	35					

		4.3.1	Current ICT strategy process	35						
		4.3.2	Factors of interest with regard to the ICT strategy process	35						
		4.3.3	Giving perspective to the factors of interest	38						
	4.4	Rijswijk		40						
		4.4.1	Current ICT strategy process	40						
		4.4.2	Factors of interest with regard to the ICT strategy process	40						
		4.4.3	Giving perspective to the factors of interest	44						
	4.5	Medem	blik	46						
		4.5.1	Current ICT strategy process	46						
		4.5.2	Factors of interest with regard to the ICT strategy process	46						
		4.5.3	Giving perspective to the factors of interest	50						
5.	Con	nparing	the cases	52						
	5.1	Compa	ison of cases' factors by categorization	52						
	5.2	Compai	ison of cases' factors and literature	54						
		5.2.1	Factors from literature that were not apparent	55						
		5.2.2	Factors appeared in cases that were not in literature	57						
	5.3	Reflecti	on on the adaptation of Chiesa's framework	57						
		5.3.1	Initial adjustment on Chiesa's framework	57						
		5.3.2	The introduced factors	58						
		5.3.3	Implications for the theory	59						
6.	Ноч	w an IC	ſ strategy is formed	60						
	6.1	Propose	ed framework, based on Chiesa's technology strategy process framework	60						
	6.2 6.3	Factors that can and cannot be controlled by the small municipality       6         How does collaboration affect the ICT strategy process?       6								
		6.3.1	How collaboration influenced the controllable factors in the studied cases	63						
		6.3.2	The effect of collaboration on the most important controllable factors	64						
		6.3.3	Why every municipality makes their own, different trade-offs	66						
	6.4	From fa	ctors to the strategy process and formulation: the differences between Chiesa and this							
		researcl	1	67						
7.	Con	clusion	& Discussion	68						
	7.1	Conclus	ion of the research	68						
	7.2	Policy a	dvice	71						
		7.2.1	Collaborate with another municipality, preferably multiple	71						
		7.2.2	Search for equal ambition in collaboration	71						
	7.3	Discuss	ion and limitations of the research	71						
		7.3.1	Researcher Bias	71						

	7.3.2	Selection bias	72				
	7.3.3	.3.3 Lack of validation of results					
	7.3.4	3.4 Interviewees per municipality					
	7.3.5	The definition of small	72				
	7.3.6	Chosen framework	72				
	7.3.7	Covid-19 pandemic	73				
7.4	Further	research	73				
	7.4.1	The organisation and design of effective municipal ICT collaborations	73				
	7.4.2	Application of the Delphi method for proposed framework verification	73				
	7.4.3	What fits a municipal ICT strategy's situation	73				
Referen	ces		74				
Append	ix A: Int	erview questions	79				
Interview							
Interview Nederlands							
Append	ix B: Mu	inicipal ICT strategy	83				
Case 1: Venray Case 2: Roosendaal Case 3: Medemblik							
Case							
Appendix C: Linkage between literature, case and interview							
Appendix D: Interviewees							
Append	pendix E: Linkages between factors of the different dimensions						

# **1. Introduction**

Information and communication technology (ICT) has become increasingly demanding for municipalities over the past years. Firstly, due to legislation that is decentralised, municipalities face more tasks which are more and more complex. An example is the Environment and Planning Act, where the introduction of the act has already caused many difficulties for municipalities, not least in terms of costs (Zuidervaart & Markus, 2020).

In addition, the costs of ICT are rising enormously for municipalities. In the last ten years, the average costs per inhabitant have only been increasing (M&I, 2020), despite the fact that they have to deal with limited resources. Moreover, municipal council members avoid the subject of ICT because of its complexity (Est et al., 2018). Considering the municipal council's task to control the budget of the municipality, it is therefore counterproductive to avoid the subject, especially considering the need for digitization and automation. The latter proves there is problem on legitimacy regarding ICT related decision-making.

Finally, technology develops just as the expectation from citizens on (ICT) service quality. For municipalities it is difficult to keep up with technical development whilst citizens expect the same level of digitization and automatization as private parties offer (Vos, 2017). For these problems, municipalities increasingly tend to collaborate with other municipalities in different kind of forms (Vos, 2017). They learn from each other as well as they join forces to tackle the ICT problems. But regarding these collaborations, not only positive factors are experienced. Regarding e.g. costs, intermunicipal collaboration does not lead to higher efficiency, it even leads to higher costs in many cases (Frere et al., 2013; Allers & De Greef, 2018).

The aforementioned factors present that there are problems regarding legitimacy, capacity and knowledge. The result is that the current ICT of municipalities in the Netherlands – exceptions aside - are currently not at the desired level (M&I, 2016). As research shows, many ICT processes do not find themselves to the desired level of maturity.

The aim of a municipality is to create a better ICT landscape and to create public value with the improved ICT. It would empower lots of other processes within municipalities and with these improved processes public value can

be increased. According to Moore (1995), public value is influenced by operational capabilities and legitimacy and support. Moore created a triangle containing three concepts that put emphasis on what the acts of a civil servant should be (Wesseling et al., 2020):

- Valuable (Public Value): How do I add value for citizens?
- Doable (*Operational Capabilities*): Is it possible within the operational capabilities to achieve the added public value?



• Authorizable (*Legitimacy and Support*): Is the proposed public value and Figure 1.0. Moore, Strategic Triangle. needed operational capacity legitimated by the democratic bodies and legislation?

However, working towards these aims, municipalities face the above-mentioned problems in both capabilities and legitimacy. Regarding operational capabilities, the increasing complexity, developments and tasks are difficult to keep up with, especially when these resources are scarce. The ICT change task arising from the legislation is therefore to the advantage of larger municipalities (Rotmans, 2018). Small municipalities do not have the resources and face extra challenges. Moreover, the legitimacy that should be brought by the council is not there, as knowledge on the specific subject is missing.

The problem mentioned above results in the quest how municipalities will reach for the aimed public value as a result of and in compliance with legislation, market development and an increased number of tasks whilst councils may interfere in the ICT related business operations, although not having the required knowledge (Est et al., 2018). Especially in smaller organizations where resources and knowledge may be more scarce, this leads to the question

of what a municipal ICT strategy is based on, as there are different interests regarding the quality and development of ICT, the costs, and councils that need to create legitimacy.

# 1.1 Scientific Knowledge Gap

ICT strategy has been a subject that has been studied for multiple years. Henderson and Venkatraman (1993) established that information technology should be connected to the organisational infrastructure and processes. As a result, ICT and business strategy would be intertwined and thus alignment was created. From there on, ICT strategy literature focuses on the alignment with business objectives.

The literature mainly describes the development of ICT strategies within private organisations (Chen et al., 2010). Drechler & Weissschädel (2018) find that there is too little attention to the ICT strategy of small and medium-sized enterprises (SMEs). Bradshaw et al (2012) point out that SME companies, for example, rely on external support to manage ICT, rather than develop it within the organisation (Levy et al, 1999).

Literature hardly focuses on the strategy process of public organisations. Lampel et al. (2014) evaluate many different types of organisations and their corresponding implication regarding the strategy process, but on public organisations, only the smallest of side notes is written. If ICT strategy in the public context is considered in literature, it is usually on a national level, that comes along with resources far larger than small municipalities have available (Myoken, 2008).

This comes forward in Byrd et al. (1995), where they have analysed a large public organisation. In this research the aspects of the process related to quality of the IT strategy are analysed, but do not describe the steps within the process itself. Besides, the focus on large public organisations does not fit the smaller organisations. Small companies have less recourses to tackle increasing system complexity at all levels of an organisation (Gudanescu & Nicolay, 2010).

Jakob and Krcmar (2018) describe what comes most close to ICT strategy in small public organisations. They name the obstacles that small municipalities face, e.g., lack of strategy, limited resources, lack of knowledge, lack of collaboration and uncertainty. Although these barriers are suitable to the introduced problems, the approach is limited and has a more abstract scope than this research. Whereas the research of Jakob and Krcmar (2018) propose questions how e.g. outsourcing should be considered, this research aims to get to know what brought municipalities towards their ICT outsourcing strategy. However, Jakob et al. (2015) and Jakob and Krcmar (2018) provide good first insights in the factors that can affect the strategy process in small municipalities, such as federal politics and legislation, financial situation, vision and the current ICT state. These are all of influence, but will be extended along this research. Moreover, this research looks into the consequences of municipal collaboration for the ICT strategy process, as that is what is increasingly apparent in small Dutch municipalities (Vos, 2017).

#### Is the literature applicable to smaller municipalities?

As shown above, there is lack in literature on smaller organisations and if smaller organisations are considered, literature on ICT strategies focuses mainly on private organisations. However, private organisations pursue very different goals than public organisations. Private parties strive to become more competitive by, for example, creating or maintaining a technological lead (Chiesa, 2001).

Much less attention goes to public ICT strategies and very little research has been done in the niche of small, public organisations. Public organisations such as municipalities, strive to increase service levels and reliability. The setting (context), goals and ambition are therefore fundamentally different between private and public organisations.

What makes small municipalities unique is that they have aspects of being small, diversified and politically influenced. Municipalities are diversified because they provide a large number of various services and tasks in different units, while still being one interconnected organisation (Lampel et al., 2014). The three aspects are

discussed separately in literature, sometimes even with two aspects combined. But an analysis on the ICT strategy process that addresses all three aspects – small, diversified and politically influenced – is lacking. This is important because small municipalities have to translate the level strategies of the national government into their own strategy and accompanying actions (Tan et al. 2018), while they have limited resources and knowledge available.

A second differentiation from what is written in the literature is that, since governmental organisations are different from competing small and medium-sized enterprises, municipalities may choose to collaborate with other municipalities.

#### <u>Knowledge gap</u>

There is a huge emphasis in the literature on this topic on the private sector, while not addressing the question of how a decentralised public organisation should behave in the context of what e.g. politicians want (locally and nationally). In addition, there is a huge emphasis on the use of ICT to create a competitive advantage or return on investment, while these goals are not at all vital for municipalities

Literature does not provide an answer to the question which principles or goals a municipal ICT strategy should be based on, to achieve public value and comply with challenging legislation. There appears to be a scientific knowledge gap regarding ICT strategy in this situation.

The gap occurring in literature can be visualised in a two by two matrix with the differentiation between private and public on one axis and large and small organisations on the other. This is presented in table 1.1 below. It shows that much research is performed in the private sector, much research is done in small organisational context, but only little has been performed on small and public organisations. This combination is less common in the literature. Moreover, the literature that is written on this subject, definitely does not address the research area of the Netherlands. The deepening focus on the Netherlands is therefore a part of the literature gap that has not yet been studied. Therefore, this research will elaborate on the ICT strategy process in small municipalities in the Netherlands.

Organisational characteristics	Private	Public
Small	<ul> <li>Bradshaw et al. (2012)</li> <li>Lampel et al. (2014)</li> <li>Drechsler, A., &amp; Weißschädel (2018)</li> <li>Levy et al. (1999)</li> <li>Gudanescu &amp; Nicolau (2010)</li> <li>Verreynne (2006)</li> </ul>	• Jakob & Krcmar (2018)
Large	<ul> <li>Lampel et al. (2014)</li> <li>Chen et al. (2010)</li> <li>Chiesa (2001)</li> </ul>	<ul> <li>Byrd et al. (1995)</li> <li>Myoken &amp; Embassy (2008)</li> <li>Tan et al. (2018)</li> </ul>

#### Table 1.1. Matrix that shows the literature gap.

# **1.2 Research Question**

ICT strategies have an important role in developing more public value in municipalities, but is limited due to resources. Currently, there is a lack of understanding what currently forces the municipal ICT strategy process and what factors weight through to the final ICT strategy. In the current state of literature, no distinct differentiation is made between public value and return on investment, whilst the function of a public organisation does not have to that an investment is profitable in terms of value. These are two different goals that are pursued. This example shows different incentives are apparent when developing a public ICT strategy compared to a firm in the private sector. In order to find the actual bases an ICT strategy is based upon, the following research question is formulated:

1. How is ICT strategy in small Dutch municipalities formed?

Next, as the way of developing ICT strategies is established, the effect of municipal collaboration on the ICT strategy will be researched. As more municipalities are collaborating in the field of ICT, the influence on the strategy process is relevant as well. Especially since collaborations do not have an unambiguous positive effect (Frere et al., 2013; Allers & De Greef, 2018). By evaluating different cases, this research will explore the effect of collaboration on the ICT strategy process. Therefore, the following second research question is formulated:

#### 2. How does municipal collaboration affect the ICT strategy process?

For the two research questions, two underlying sub questions are formulated in order to help answering the main research question. The first sub question defines the theoretical demarcation of the ICT strategy process, from whereon possible bases for ICT strategy are found. This will form the main theory behind the questions that will be asked during the interview.

The second sub question goes in on the ICT strategy factors of interest that are established during the investigation of the cases. For different municipalities, different factors will be distinguished, thus there will be overlap as well as differences. This sub question derives all possible factors and serves answering both research questions.

Theoretical sub question:

1. What factors influence the ICT strategy process?

Empirical sub question:

2. What are the factors influencing the ICT strategy process of Dutch municipalities?

Altogether, these research questions aim to find the factors behind the strategy process and how these influence the final ICT strategy.

# **1.3 Societal Relevance**

The research will have both societal and theoretical value. Filling the identified scientific knowledge gap proves the research to be theoretically relevant. Specifically, the research adds knowledge on how the ICT strategy for the niche of small public organisations (municipalities) is developed. Moreover will this exploratory research provides a well-defined bases for further research.

As for societal relevance, the research helps municipalities to make strategy and thus saves societal costs for strategy development. In addition, municipal ICT strategies also improve with this research. The additional knowledge that this research will add, adds to more sophisticated and rational trade-offs in the ICT strategy process. This is helpful for all involved actors and important due to the limited resources available for ICT in small municipalities.

# **1.4 Research Approach**

This research uses a multiple case study approach. The social problem cannot be fully explained and addressed from the preceding literature. Therefore, the research question aims to gain understanding in the phenomenon of the process of ICT strategy in small municipalities. The objective is to understand what factors influence the ICT strategy process and what trade-offs may be viable for small municipalities.

The cases are selected based on the number of inhabitants of municipalities. The aim is to select municipalities around 50,000 inhabitants. In each case, interviews will provide insight into the ICT strategy process. In addition, if available, a document analysis will take place. Both serve the purpose of data collection.

The strength of this research are the multiple cases that are analysed and thus the possibility of comparison between these cases. By analysing multiple cases, patterns can be identified and the main differences can be extracted as well.

# 1.5 Scope of the Research

The study focuses on how ICT strategy is structured in small Dutch municipalities. To this end, four cases are used and each case falls within the desired demarcation as best as possible. The four cases give the opportunity to find differences within the timeframe of 25 weeks. In order to get as complete an insight as possible into the ICT process, the aim is to speak to both policymakers and the political component of each case. In this way, different perspectives are emphasised within the cases and the information is as multifaceted as possible.

The research establishes various factors that influence the ICT strategy process. In doing so, relationships are sought between these various factors. With the relationships and possible patterns between factors, a picture can also be created of the effect that certain choices may have. However, it is beyond the scope of this research to actually measure the effect of a certain choice. The exploratory research is focused on discovering possible influences of choices to factors of the ICT strategy process, but to get a more certain picture, a broader research into the effects will be necessary. This is therefore beyond the scope of the research.

# **1.6 Research Outline**

The research question as emerged from the scientific knowledge gap will be answered through different stages. The study is structured as follows. Chapter 2 introduces the theoretical background. This chapter establishes what according to literature the ICT strategy process is and by which factors it is influenced. Chapter 3 will discuss the research methodology. It discusses the selected cases and the method of data collection. It will also explain why a case study approach is chosen.

Chapter 4 presents the analysis of the four cases. All cases are first analysed individually. Chapter 5 will elaborate on the comparison of the cases and also link this comparison to the found literature.

Chapter 6 provides answers to the two research questions. First, it discusses how ICT strategy is formed in small municipalities, based on the factors that influence the ICT strategy process. Finally, the effect of a collaboration on the ICT strategy process is addressed.

Chapter 7 presents the conclusions and limitations of this study. In addition, policy recommendations are given, based on the results of the research conducted. Finally, three possible future research topics are presented.

# 2. Theoretical Background

The introduction has presented the lack of knowledge on the ICT strategy process in small public organisations. In order to tackle the research question to tackle this problem, first the theoretical background is discussed. This includes the conceptual model of the research as well.

For this research, different strategy process concepts have been investigated. Chiesa's (2001) framework was finally chosen for several reasons. First, it describes important and logical dimensions of an ICT strategy process, namely the context foresight, selection and acquisition. All these dimensions are realistic and required to come to an ICT strategy. Secondly, what makes the framework suitable for this research is that it breaks down each dimension into different components/factors, making the process of forming an ICT strategy tangible. This makes it more accessible for analysis, which is desirable for investigating differences in the ICT strategy process between municipalities. These differences can be properly identified by the differences in the tangible components or factors. It results in a more precise analysis and therefore, with the analysis in mind, this framework was chosen.

However, the framework also has its disadvantages. Actors are not very explicitly put forward, while in this case politics is a very important consideration. On the other hand, the framework does focus on how to get knowledge into an organisation, for example through collaboration. In this respect, the framework does include actors, but as mentioned earlier, not extremely explicitly. Nevertheless, it is logical that a framework that is all-encompassing does not exist, otherwise this research would not have been necessary.

Finally, the tangible factors allow missing components, such as political influence and the context of a small organisation, to be added to the framework.

As such, this chapter will provide a theoretical background on the written literature on strategy process, on multiple levels, with the framework of Chiesa (2001) used as a basis. This framework describes the process of a technology strategy in a competitive context. The context differentiates from what is studied in this research, but the four key dimensions from the framework are recurring categories from various approaches to strategy in differentiating environments and thus provide a solid bases for researching the ICT strategy process. Finally, the theoretical background is the scientific justification for the interviews performed in the case study.

This chapter starts by explaining the framework of Chiesa. Afterwards, the four dimensions, as showed in figure 2.1 are evaluated and the research is demarcated, after which the context of public and small organisations is discussed. To these dimensions, there are factors influencing them. By establishing these factors from the literature, the first sub question is answered.

## 2.1 Key dimensions in technology strategy

Chiesa (2001) developed a framework that emphasizes the most important decision areas during the formulation of a technology strategy. It is based upon the main decision areas as identified in strategy process approaches to

technology by, among others, Porter (1985), Hax & Majluf (1991) and Floyd (1997).

Chiesa defined four different key dimensions for the technology strategy. This consists of (1) context foresight, (2) selection, (3) acquisition and (4) timing. These factors are all interconnected and thus dependent on each other.

The context foresight (1) is a context driven analysis where the external context as well as the internal context is analysed. For the external context it is important to know what is available in the current market





and within the future capabilities of the technology. For the internal context, the possible applications that could be generated through the new technology should outperform the current process applications. Consequently, the technology is always evaluated based on the potential application.

Next, with the selection (2) certain aspects should be considered; relevance (value creation), risk, appropriability, interdependencies with other technologies and option creation. These factors should be weighed against each other and follow largely from the context foresight.

For the technology acquisition (3), there is a choice between 'make', 'cooperate' or 'buy' and this choice will depend on the factors as mentioned in the selection dimension.

Finally, the timing (4) context is a factor in opting for technological improvement. The choice of being a first mover has both its advantages and disadvantages. Besides this choice, there is the possibility of a window of opportunity, the time necessary for the adoptability of technology which differs per firm and the availability of complementary assets for working with the new technology, as factors that influence the timing of technology selection.

Chiesa mentions that all dimensions of the framework are interconnected and have to be considered jointly. The process towards the strategy formulation is a continuous trade-off and observance of the other dimensions. To create a more sophisticated understanding of the dimensions and their interrelationships, they are discussed more in detail underneath.

#### 2.1.1 Context Foresight

As starting point of building a strategy, a context foresight is performed. This context foresight focuses on the characteristics of an organisation and the future competition, by analysing the external and internal context. The external context focuses on what the citizens want (customer needs) and what emerging technologies will be applied. In the municipal context, a view is created to anticipate and respond on municipal developments in combination with the technological developments and legislation.

Next, an internal context analysis is performed. The skills and technological capability of the organisation are analysed, as well as the current resource availability that should support the implemented technology. Hereby the gaps in knowledge and resources are identified that should be taken into account whilst considering the strategy.

For public organisations, the external analysis is often partly fixed, due to the obligation to execute legislation. As such, legislation determines the direction of the ICT strategy process to a certain degree. Moreover, small municipalities are dependent on the developments in the market as they cannot develop ICT themselves due to limitations in knowledge and investments capabilities (Vos, 2017).

Altogether, the context foresight is important regarding legislation and decisions from the national government, provincial government and other actors, e.g. a possible ICT partner. These make the context foresight a very important factor to the decision areas of selection and acquisition. In addition, strategies are often created for periods of between 3-5 years (Jakob & Krcmar, 2018), which ensures that there is often sufficient time to react to upcoming changes.

#### 2.1.2 Selection

Chiesa (2001) states that the selection of a technology is dependent on the technology its relevance, associated risk, appropriability, interdependencies with other technologies and the options that it creates.

Firstly, in the context of a municipality, the ICT should be applicable and it should create public value. So, the technological developments should embody the current activities and push them to a next level. This can be further referred to as improving the service level of the municipality. Besides, the number of activities supported by the emerging ICT is of importance as well.

Moreover, the risks that are associated with the implementation of ICT are considered. This is a factor that should be estimated and legitimated by the local council, as they are responsible for the budget of the municipality. So, here the political context becomes more apparent during the strategy process. Risk is something that tends to be avoided by public instances and therefore public risk management has become more popular (Cienfuegos, 2012). As such, the attitude towards the strategy of a municipality needs to be reluctant in the number of risks taken.

For the selection, the appropriability of the technology in the organisation is important. In the end, the whole organisation needs to deal with the new technology and thus everyone has to commit to the ICT strategy. Within the appropriability, the allocation of resources or the possibility thereof is evident to consider (Hax & Majluf, 1991). The organisation needs to be able to incorporate the ICT strategy.

Following from the appropriability, the interdependencies with other integrated technologies within the organisation should be considered. Hax & Majluf (1991) refer to this as the horizontal strategy of technology, the interconnection from the integrated ICT with the different business units.

Finally, the selection of ICT creates options for an organisation. The options ICT can create are various. Mohapatra and Singh (2012) divided the options that ICT strategy can create by determining the value that it could add. They divided internal and external option creation.

Internally, ICT can create the following options according to Mohapatra and Singh:

- Control: Extra insight in operational data can lead to more control and therefore better guidance of the process if necessary, by creating better synergy among different departments or functional areas.
- Efficiency: ICT enables to take opportunities for further efficient way of working, by e.g. cutting inefficiency due to delay in information availability.
- Performance: Driving by improved information availability as a result of aligning ICT and business, the performance in terms of speed, integration, correctness and compliance increases.
- Management effectiveness: availability of easily collecting, comparing and analysing data result in timely action.
- Optimization of resources: ICT can be cost heavy. With the implementation of software as a service and even infrastructure as a service, the development of ICT brings less costs.

Externally, ICT can create the following options according to Mohapatra and Singh:

- Customer management: Improved insight leads to more understanding in the needs and preferences of customers, or in municipal context the citizens.
- Cost cutting: Digital environments improve efficiency along the chain of actions required for specific requests by citizens.
- New business opportunities: In the municipal terms, it opens areas of operations that were not addressed before. ICT can enable this and improve the service given by the municipality.

As presented, within the selection, dependencies of different actors and factors e.g. current ICT, create trade-offs. These trade-offs are processes within the decision area of the selection should become apparent during the case studies.

## 2.1.3 Timing

The aspect of timing is highly valued in a competitive context. Hax and No (1993) describe timing as one of the major categories of strategic decision making in a technology strategy. In the competitive environment, timing involves the decision on being a leader or to lag behind competitors. It is associated with costs and risks. The risks are evident considering the unknowing consequences of future ICT, although it can result in competitive advantage and enable differentiation from competitors. D'Aveni and Ravenscraft (1994) agree by noting that sustaining

competitive advantage requires continuous improvements and key factors in continuous innovation are know-how and timing. Another time related aspect is the time scope of accumulation of competences, where over periods of time technologies are embedded in an organisation.

Overall, this is less significant in a public environment. Differentiation is not at all a goal for a municipality, just as it is acceptable not to be in the lead when it comes to ICT development. The main focus is to create services that ensure more public value, whether that is prior to other municipalities or not.

# 2.1.4 Acquisition

Chiesa (2001) presents that acquisition of a technology can be done in four different ways. These are to develop technologies internally, buy them externally, learn from external partners or develop in collaboration with other organisations. In the context of small municipalities , internal development almost never happens, whereas external purchase is more common. Collaborative development allows for the sharing of risks associated with development. The downside is that collaboration involves more knowledge transfer and produces a solution that may be less appropriate than if it had been developed for a single organization. However, in a public context, acquisition can be more than that. Municipalities often collaborate for various reasons, such as learning from each other, or they outsource ICT jointly, seeking to save costs, among other things.

Small municipalities in the Netherlands often have partnerships and thus collaborate with each other. As ICT is a valuable but expensive commodity, some municipalities, especially the smaller ones, tend to collaborate with other municipalities. Collaboration enables to opt for the different choices of acquisition of technology. Each type of collaboration has their own advantage regarding acquisition. To further decompose the types of collaboration, Preece (2014) describe the factors, strengths and implications of collaboration. First, Preece describes the main factors and objectives a collaboration can serve. For acquisition in municipalities, this can imply the following:

- Learning: A collaboration is created to learn from each other, but mostly this will be spread to a
  collaboration in further adaptation for new technologies as well. They jointly will make, sell or buy a
  product. The major benefits are cost reduction and increased efficiency. The deficit is that adaptation of
  the same technology in different organisations may require organisation transition as well, as a bought
  technology fits one organisation better than one other.
- Leaning: When a municipality relies on the ICT system of another municipality, they are leaning on them. One organisation profits from one other whilst they can specialize in that specific process. The advantage is that this is a quick, short term solution that works. However, the dependency always remains, so the relationship should not be impaired.
- Leveraging: The full integration of operations with partners. It creates a new portfolio of resources and therefore widens the possibilities. However, the bureaucracy within these large firms can largely influence smaller firms. The direction chosen by the large firm often has to be followed.

Inkpen (2014) adds that collaboration is an opportunity create knowledge within one's own organisation. Especially sharing tacit knowledge (intangible factors ingrained in one's personal experiences) is difficult to formalize and share easily. It requires a dynamic process that involves interaction between the municipalities or organisations that are collaborating. Finally, Chiesa (2001) mentions that external acquisition is an opportunity that reduce the time spent to develop and implement technologies.

The choices of how to acquire technologies are influenced by the selection for the technology that has been made and vice versa. If internally and externally the technology cannot be developed nor obtained in any other way, the selection has to be reconsidered.

However, the acquisition of small municipalities can be influenced externally in different ways. Since, acquisition is usually outsourced in small municipalities, external parties tend to have influence on the ICT strategy. Dimaggio and

Powell (1983) describe the different institutional forces, by which is meant that different external factors may influence the strategy of, in this case, a municipality. Firstly, Dimaggio & Powell describe coercive isomorphism, which means that other organisations influence the choices of an organisation because they depend on it. In addition, they also have to take into account society's expectations. Normative isomorphism has a similar property, but then it concerns norms that an organisation must satisfy, based on professions or networks. In these two cases, organisations are forced to change from external pressures.

There is a third type of organisational change called mimetic isomorphism. This involves imitating other organisations, because one believes that the other organisation has set things up better. It has the advantage that it is often seen as safe and therefore more likely to be a legitimate choice. Dimaggio and Powell (1983) describe this as occurring especially when an organisation does not yet fully know where it wants to go, or with what means it should achieve this.

#### 2.1.5 Demarcation of the research

For this research, the dimension of time has been excluded. Therefore, the scope of the research is within the context foresight, selection, acquisition and technology strategy. Since the research aims to determine the factors behind the process and process itself, the actual ICT strategy itself is not taken into account. This leaves the context foresight, selection, acquisition and their interrelation plus the relation towards the ICT strategy, within the scope of the research.



Figure 2.1.2. Demarcation of research

However, both dimensions consist of multiple sub aspects as presented above. With the in depth understanding as goal of the research, each dimension and its corresponding factors should be studied in depth.

As presented in paragraph 2.1.3, timing is mainly used to create differentiation in private markets. Literature puts much emphasis on this aspect, just as Chiesa does in his framework (figure 2.1.2). Moreover, the aim of the study is to trace the process that guides the ICT strategy and to find the factors of interest of this process. Therefore, processes should be analysed and not objects. Timing is more of an object than a process, since it does not provide an answer to the question who determines what in the overall process. As a result of the nature of timing, timing is not so much a process as e.g. selection is. This combined with the main function of timing within the strategy process, timing is excluded from the scope of the research.

The demarcation of the strategy process is with the visualised demarcation in figure 2.1.2 almost complete. However, small municipalities are in the niche of public and small organisations, which are contextual factors that may very much influence the ICT strategy. Both are discussed below.

#### 2.2 Selection and acquisition in the context of small public organisations

The scope of the research focuses on mainly context foresight, selection, acquisition of the ICT strategy. However, the framework of Chiesa (2001) does not (fully) apply to the context of small municipalities. The dimensions in the framework are affected by the nature of the cases that will be researched. The municipality adds that the organisation is small and public, which brings implications of its own towards the strategy process.

To create a view on the effects of small and public organisations, the strategy processes outside of the context of ICT are analysed. The insights are thus from a more general point of view.

#### 2.2.1 The public context

The research focuses on the aspects of selection and acquisition during the process of ICT strategy. This process is influenced by the circumstances in which the organization finds itself. Dutch municipalities are in the situation of being politically steered by the alderman, local councils, and are strongly influenced by the national government, VNG, provinces and other pacts. Taken together, these are a lot of influences that a municipally has to deal with when outlining a strategy.

The political influence has its reflection on strategy processes. Companies that face high levels of political influence are more likely to high level of incrementalism (Barnes, 2002). So, more small changes are made along the process, whereas strategy should enable one vision for an effective strategy (Lampal et al., 2014). The political influence affects the strategy by making the strategy less singular focused.

Leskaj (2017) elaborates on this aspect by mentioning that such incremental strategies are the result of the political environment. Politicians strive to have electoral success and create value for the citizen. This is largely achieved by being responsive on contemporary issues, within the possibilities of (local) governments. However, this creates difficulties for municipalities that cannot uninhibited pursue rational, strategic models, due to continuous developments in the political arena.

Finally, the alderman and council have to approve and agree on the strategy. Therefore, the content of the strategy may pursue their political view and goals. Therefore, the political colour may be reflected in the final strategy.

#### 2.2.2 The small organisational context

The research strives to define the ICT strategy process in small public organisations, by analysing municipalities. Apart from the specific ICT sector, the strategy process is affected by the size of the organisation. According to Mintzberg (2014), small organisations have a smaller managerial hierarchy and limited supporting staff. In these smaller organisations, the power tends to be in hands of the chief executive and there is less formal control. Moreover, within these organisations, more informal ways of information sharing are invoked. Regarding the strategy process, smaller organisations tend to lean on the vision and decisions of only a small group of people. The influence of this small group is therefore higher than it would be in larger firms. More emphasis is put on leadership by Mintzberg. Strategies are more deliberate and tacit knowledge can be transferred easier, since connections within smaller organisation are more apparent between all hierarchal layers.

Verreynne (2006) puts emphasis on leadership. She states that the involvement of internal and external stakeholders is especially important during the strategy process. Since the involvement of stakeholders is rather apparent in smaller in organisations, the needs and influences on the strategy are more evident. This results in a less emergent strategy in smaller organisations, as was argued by Mintzberg. On the other hand, emphasis can also be placed on resources, given the limitations of resources. Means – possibly from outside parties – may be more important than leadership. There may be too many external influences to place that much emphasis on leadership.

Another focus for the strategy process is to concentrate on just a few key ideas. The effect of being a small organization is that the ability to reach all potential successful ideas is not feasible. Porter (2014) describes that an important dimension of strategy, which is not always taken into account, is trade-offs. By asking the question what strategy is, he states that the essence of strategy is what not to do. After all, without making trade-offs, no choices would be necessary and as a result no strategy would be needed.

## 2.3 Examining factors

In order to examine factors that force the strategy process, in the analysis the ICT strategy must be viewed from as many perspectives as possible. As a result, it is less likely that factors remain undiscovered. The strategy is questioned with the perspective of Chiesa's framework, as described in the demarcation of the research. However, to add to

that, Mintzberg's five perspectives are used in order to derive and address all the factors of interest from the ICT strategy. This ensures the lowest possibility of a factor being lest of the study.

Quinn (2014) puts that a "strategy is the pattern or plan that integrates an organisation's major goals, policies and action sequences into a cohesive whole" (p. 9). However, municipalities are unlikely to have an established plan that meets all of these requirements. Mintzberg (2014) views the strategy from a broader perspective, which might allow to derive more factors. This view is called the five P's. The P's that stand for: plan, ploy, pattern, position and perspective. The P's are explained briefly underneath, based on Mintzberg (2014):

Strategy as a plan is the pre-conceived action to achieve a certain goal. Here, the two main aspects are that the plan is made prior to the action and the strategy develops in a deliberate and guided way. Strategy as a ploy is used as a manoeuvre to outwit an opponent. These are often very strategic moves but may be less relevant in the field of municipalities, given the lack of a competitive market. Strategy as a pattern is about developing the pattern over time, where actions are constant, whether with or without the intention to do so. Usually, this is referred to as an emergent strategy. Strategy as position includes placing an organisation in its environment. In this way, strategy is to maintain the balance between internal and external context. A position can also be compatible with a plan, ploy or pattern. Finally, there is strategy as a perspective, which deals with how an organisation, or the people in the organisation, deal with the outside world and how they deal with it. A perspective can often be in the minds of employees, making it a cultural aspect that employees behave according to. Perspective therefore also has the characteristic of not changing very quickly, whereas a position or a plan can change much more quickly.

## 2.4 The identified process influences

To conclude the theoretical background, the most important factors that influence the ICT strategy process are brought together in table 2.4. This is done on the basis of the factors found in the literature. These factors will also serve as a basis for the interviews that will be used in the cases, but other factors that influence the strategy process will also be searched for.

In the theory, several factors have been discovered that can influence the ICT strategy process. These are listed in table 2.4 below.

Dimension	Factor	Source			
Context	Technological developments	Chiesa (2001)			
Foresight	Legislation (national, provincial)	Chiesa (2001)			
	Vision and goals	Jakob & Krcmar (2018)			
	Resource availability	Chiesa (2001); Burgerman et al., (1988)			
Selection	Service level or performance	Chiesa (2001); Moore, (1995)			
	Risks	Cienfuegos, (2012)			
	Appropriability	Hax & Maljuf, (1991)			
	Interference with other ICT	Hax & Maljuf, (1991)			
	Optimization of resources	Mohapatra & Singh, (2012)			
	Efficiency	Mohapatra & Singh, (2012)			
	Customer (citizen) management	Chiesa (2001)			
Acquisition	Access to knowledge (internal, external)	Chiesa, (2001)			
	Learning	Preece, (2014)			
	Leaning	Preece, (2014)			
	Leveraging	Preece, (2014)			
	Autonomy	Chiesa, (2001)			
	Costs	Rockart & Scott, (1984)			
Political	Political success	Leskaj, (2017); Barnes, (2002)			
context	Political colour	Garbuio, (2008)			
Small	Strong leadership	Mintzberg, (1973)			
context	Fewer decision makers	Mintzberg, (2014)			
	External forces (market, government)	Verreynne, (2006)			

Table 2.4. Factors that influence the strategy process as derived from literature.

The political and the small context both do not have as many factors to them because they indirectly influence the factors in the context foresight, selection and acquisition decision areas as well.

With the identification of these factors the first sub question can be considered answered. All factors can influence the ICT strategy in small Dutch municipalities, but the case analyses have to show final outcome of different factors. Moreover, the factors are sometimes interconnected and tend to be double or at least overlapping to some extent. This is done purposely to start the case analysis with a broad view on the possible factors that influence and form the strategy process.

# 3. Research method

This chapter discusses the research method and the selection of the case study. First, the applicability of the case study is discussed. Next, the case study design is evaluated in terms of validity and reliability. Finally, the selected cases are discussed because they all have their specific value in answering the main question of this research.

# **3.1 Research Approach**

The study aims to investigate the ICT strategy process of small Dutch municipalities. Yin (1994) argues that the situation where a "how" or "why" question is asked about a phenomenon over which the researcher has little or no control, the case study approach has a definite advantage. Since the ICT strategy process is a set of events, beyond the researcher's control, that lead to the ICT strategy, but these motives and/or incentives are still unknown to small municipalities, a case study approach is well suited to this research.

Now that the choice of the research is established, the specific definition of a case study as research strategy is described by Yin (1994, p. 12) as "the essence of a case study, the central tendency among all types of case study, is that it tries to illuminate a decision or set of decisions: why they were taken, how they were implemented, and with what result". It shows that case study as research strategy fits the research its goal since strategy formulation is making trade-offs and find out why these are made (Porter, 2014). The essence of the case study thus matches the research goal.

This research can be marked as exploratory. The exploratory aspect of the research is based on the fact that one does not know what exact choices in which decision areas lead to the final ICT strategy. The process behind it is yet unknown and currently poorly explained in literature for the niche of small municipalities.

# 3.2 Case Study Design

For the design of the research, it is of utmost importance to create a logic between the data to be collected and the research questions. The case study is the basis for the data collection and thus the research.

## 3.2.1 Type of design

First, the type of research is discussed. The research is an embedded, multiple case study. Embedded means that a case is not completely investigated, but only the relevant parts of the case. For this study that means in order to get a good understanding of the ICT strategy, only information-related and political actors being interviewed. Consequently, other parts of the organisation are not being investigated. Therefore, some influences towards the ICT strategy process may be overlooked or remain unknown. The choice for an embedded research is based on two reasons. First, analysing the organisations as whole is too time consuming, given the limited research time of 25 weeks. Moreover, the additional information obtained about the specific subject ICT strategy process by analysing that part of the organisation that is not involved in this research, is likely to be limited.

The research is a multiple case study design. Multiple cases have the advantage that the cases van be compared. The comparison can lead to an understanding of important differences and similarities. On singular cases Yin (1994) stated (p. 4): *"The analyst's objective should be to pose competing explanations for the same set of events and to indicate how such explanation's may apply to other situations"*. By comparing multiple cases, these explanations can be verified by comparing the cases, and different explanations can be found for the same set of events. Multiple cases allow for differentiation between the cases. As for this study, it will distinguish between municipalities that collaborate with other municipalities and those that do not. The design of the research is further visualised in figure 3.2.1. The cases that are presented in the figure with their type of collaboration, are further introduced in the remaining of the section.



Figure 3.2.1. The multiple case research design. Each municipality finds itself in a unique position regarding collaboration.

As showed in the figure, the multiple case design of the case study allows for comparison and therefore differences in ICT strategy processes may be linked to a difference in e.g. ambition, sort municipality or having a collaboration or not.

# 3.2.1.1 The selected cases

Four cases were selected for this study. An attempt was made to find municipalities with approximately 50.000 inhabitants. These municipalities are labelled as fairly small municipalities and are therefore well within the scope of this study. Moreover, the municipalities needed to be in different lay-outs of collaborations, so that the differences on collaboration could be analysed. This is particularly important for answering the second research question.

Both criteria are satisfied with the selected cases Venray, Roosendaal, Rijswijk and Medemblik. They are all in different situations, which must be taken into account for it is important when analysing the cases described above. Environmental factors can influence certain factors or the entire ICT strategy process.

Venray is the first municipality that was investigated. The municipality of Venray is located in the province of Limburg and has around 45.000 inhabitants. Venray currently has no partnership in the ICT field. However, they are looking for a partner in the ICT field and are in the process of setting up a collaboration with a neighbouring municipality.

Roosendaal is a somewhat larger municipality with over 50.000 inhabitants, but still falls within the boundaries of the study. Roosendaal is situated in the province of Brabant and is surrounded by several villages and one larger city. Since a few years, the municipality of Roosendaal is involved in a collaboration. Roosendaal is one of de participants in ICT-WBW, a partnership of 5 municipalities. ICT-WBW calls itself a new company that takes ICT management and ICT maintenance off the hands of municipalities. They currently support almost 2700 workplaces in 25 different locations.

The municipality of Rijswijk is located in the province of Zuid-Holland and has just under 50.000 inhabitants. In 2016, Delft and Rijswijk set up a joint business management organisation for executive ICT services. Because the collaboration consists of only two municipalities it supports less workplaces than for instance ICT-WBW. Rijswijk and Delft support approximately 400-450 workplaces.

Finally, the municipality of Medemblik was investigated. Medemblik is located in the province of Noord-Holland and is mainly surrounded by smaller municipalities. Medemblik is one of the participants in DeSom. A shared service centre of 6 municipalities. They provide an ICT environment and focus on the workplace, operating systems, telecommunications and ICT infrastructure. They support almost 1000 workplaces on 30 different locations.

The different cases each have different factors that can influence the ICT strategy process. The inputs and differences that are known in advance are described above. Different lay-outs and sizes of collaborations are therefore investigated, but other variables, such as position in the collaborative process, are still unknown. The introduced cases meet the case description and are analysed in the next chapter.

#### 3.2.2 Data collection

To conduct the qualitative research, semi-structured in-depth interviews are conducted. This choice is made because new insights about the process can be gained during the interview, which were not anticipated in advance. This is in line with the exploratory nature of the research. A semi-structured interview provides the opportunity to go deeper into these new insights, so that detailed information can be obtained (Baarda et al, 2009).

Several questions were prepared prior to the interviews. These questions are based on the factors mentioned in the theoretical background of this research. As mentioned earlier, the interviews are semi-structured, which means that questions other than those listed in Appendix I may also be asked during the interview. This has to do with the fact that the respondents are involved in the ICT strategy in different ways. The interviewees have different backgrounds and functions. This means that during the interview, the policymakers and political bodies of the different municipalities place different emphasis on certain subject or influencing factors. The semi-structured approach leaves room to deal with differences among the interviewees. The interviews were processed and returned to the interviewees for verification.

#### 3.2.3 Rationale and direction

As the research is identified exploratory, it is important to elaborate on the rationale and direction of the research. First, the literature background defines the aspects of the strategy process, insights in the effect of small organisations and collaborations. Moreover, implementation of new technologies and specific ICT strategies are discussed. This background is important to know what direction the research is going to and thus defines a bases for the data collection process, the interviews. Having set a base for data collection and already knowing what purpose of the exploration is (Chapter 1), it is important to define criteria where the explanation can be marked successful. The main criteria from the case study to be successful, is when most factors found in the ICT strategy document of a municipality are explained by the interviewes and the process leading to these factors is clarified. Moreover, strategy can be in one's mind, so when undocumented factors come forward, it is a bonus but a definite worth mentioning. Lastly, all identified possible factors affecting the strategy process should be covered and their influence on the case has to be noted, after which should be discussed whether or not these set of events may apply to other municipalities. When these expectations are met, the explanation could be marked successful, because that covers the unit of analysis as well as it helps tackling the societal problem behind that was the reason for the research in the first place.

#### 3.2.4 Validity and reliability

The validity and reliability of the research design are evaluated by four criteria: the construct, internal and external validity and the reliability (Yin, 1994). Each of the four criteria are separately discussed. It has to be noted that not every criteria can be met, due to the time scope and type of research.

Firstly, the construct validity determines whether correct operational measures are studied. By linking the literature to the research questions, different drivers are examined that could possibly be behind the ICT strategy process of small municipalities. Construct validity is hard to get fully operational when analysing the strategy process, since operationalisation in advance is not desirable to the study. The process should be viewed open minded, with all aspects and factors included that affect the process.

Secondly, the internal validity determines to what extent the case itself can be explained. With five interviews every case is seen from different actor perspectives, the case is analysed from different sides. Combining these insights leads to overall view on the case. However, there is a deficit of similar perspectives from one case, so one person determines the view of what will later be generalized as a whole actor group.

Thirdly, the external validity established to what context the results of the study can be generalized. Case studies are usually not the greatest in terms of external validity. However, to be able to draw more generic conclusions to the results of the study, multiple case studies are used as the *replication logic*. Replication logic cases can confirm emerging relationships or patterns for an emerging theory, or disconfirm this relationship or pattern (Ridder, 2017). This allows to generalize from experiments. Since case studies remain having different external and internal factors, an exact similar replication remains

Lastly, the reliability is measured which means that if the study was to be repeated with the same data collection procedure, the same data would be collected. In general, case studies are reliable since the in depth interview with the prepared interview questions are a standardized procedure for the data collection.

Overall, the internal validity and reliability will be good. The external validity is tried to increase by analysing multiple case studies, but will remain a weaker point of the research design. Finally, the construct validity is with the inductive type of research not desirable nor well possible.

#### 3.2.5 Drawing conclusions from case studies

The goal of the case study is to determine the ICT strategy process and determine how factors may affect trade-offs made in this process within the case studies. However, drawing legitimated conclusions from case studies resulting from an analysis is the least codified and therefore difficult part of the research method. The vulnerability of case study analysis is that researchers come to premature or false conclusions due to poor or not structured information processing (Eisenhardt, 1989).

For each single case and multiple case analysis, tactics are presented by Eisenhardt (1989) to overcome the danger of drawing false conclusions from the case study. For single cases applies that the key tactic is to gain a lot of data on the case. Therefore, in this research multiple interviews are held per case. Since the strength of this research is to compare cases, the single case tactics are less vital than the tactics for multiple case research. Moreover, the cases seem similar, but these are different contextual aspects. These differences are therefore described in the selected cases and make the analysis as such more sophisticated and thus more legitimate. The second tactic that is applied in this study is the coupling of group similarity to intergroup differences. This is achieved by having multiple sources within one case that can be compared to another case from the same group – e.g. compare the policy makers and the political influences – and the intergroup difference of collaboration and no collaboration.

# 4. Analysis

In this chapter, the analysed cases are presented. Where in the previous chapter, the design of the cases was described, this chapter presents the outcome of the cases. The analysis is aimed at answering the sub-question on what factors are influencing the ICT strategy process. To this end, the strategy of each case was analysed from the broadest possible perspective. Quinn (2014) puts that a "strategy is the pattern or plan that integrates an organisation's major goals, policies and action sequences into a cohesive whole" (p. 9). Municipalities that will be researched do not often have a full integrated strategy. Often an information plan is generated, which is a plan of what to develop, but are limited in the actions required to achieve the major goals. R7 put that the information plan is more often a back up to base things upon and is not extremely specific. Based on this definition, the cases do not have a strategy that consists of all aspects as put by Quinn. However, on strategy not definition is agreed upon. Mintzberg (2014) takes a broader look by considering multiple definitions and arguing that not one of definitions is "right". Moreover, the definitions complements each other, so for the cases, all definitions are considered in order to create the most objective view on the ICT strategy. This reduces the chance that factors of importance that drive the ICT strategy process are left out. The definitions are strategy as plan, ploy, pattern, position and perspective are further presented in the theoretical background, chapter 2.

Once all factors have been identified, it is important for further fair comparison that the analysis of the influence of these factors on the ICT strategy is as consistent as possible (Yin, 1994). To achieve this, all factors are analysed in the same way using different categories. These categories provide a good basis for discovering different patterns between the cases, in order to answer the main research question, which will be further discussed later in the research.

This chapter starts with the identification and explanation of the categories. Then, the cases of Venray, Roosendaal, Rijswijk and Medemblik are analysed separately.

## 4.1 General analytical frame

The framework of Chiesa (2001) provides a bases for the analysis, but to gain a deeper understanding of the ICT strategy process in municipalities, the factors that become apparent in the cases are valued to dimensions in categories. For each case all factors are examined by multiple dimensions. These dimensions are, in the thought of the exploratory research, chosen to label the factors. Differentiation between dimensions is used to define and indicate differences and similarities between cases. The categories are presented underneath.

The category in which factors are first categorised is input, throughput and output. These three dimensions each influence the ICT strategy, but are based on other factors from other phases. The dimensions can be found in the open systems approach (Katz & Kahn, 1966). They state that an open system interacts with its environment and is influenced by it. The input is received from the environment. In the case of a municipality this includes for example resources, information and legislation. Factors can come from throughput, referring to the internal process. Finally, there are factors that stimulate from the output to be achieved. The factors can be divided into dimensions that connect to either input, throughput or output.

Second, the factors are categorised by the actors that enforce these factors. An actor is a social entity, person or organisation that can influence the strategy in any form (Enserink et al., 2010). In order to find out whose goal is being achieved, the factors are divided by actor. Each factor is stimulated by an actor that want to see its interest included in the ICT strategy.

The third category distinguishes the types of strategies deliberate and emergent as introduced by Mintzberg (2014). The difference between the strategies is that deliberate strategies are more explicit whereas emergent strategies may by implicit. If one goes from an intended strategy towards the realized strategy with the realization of the

intentions, a deliberate strategy is distinguished. On the other hand, there are the emergent strategies that result from the absence of intentions, but where patterns have nevertheless developed that also constitute a realized strategy. Mintzberg (2014) notes that strategies almost never are fully emergent nor fully deliberate.

Furthermore, a fourth category is the differentiation between internal and external pressures. Porter (2014) described that a strategy is there to make trade-offs, but these trade-offs can be pressured by internal and external factors. For example, a municipality has legislation and local politics that can influence the ICT, while it may not be preferable for internal business operations. Ivancic et al. (2017) argue that external pressures result in uncertainty that has to dealt with. Moreover, tracking these external pressures and managing the influences become part of the process with external pressures. Veryenne (2006) found that small organisations tend to deal with numerous external pressures during strategy formulation. This category allows for testing that in the context of a small and public organisation.

In addition, factors can be both and goals and means oriented. While goals are often thought to be leading in the strategy process, means can also be leading. If a municipality has a collaboration that facilitates certain services, replacement may be relinquish although another service would serve the goal better.

Finally, the ICT strategy is categorised in a time dimension. As the research strives to determine the ICT strategy process and as processes develop over time, a time component may add value to the analysis in the judgement on the ICT factors derived from the case analyses.

# 4.2 Venray

Venray is the first case studied. Venray does not have a collaborative agreement in the field of ICT. First, the ICT strategy is presented from as many points of view as possible. Then, the factors that lead to the ICT strategy are presented after which the factors are categorised and analysed.

#### 4.2.1 Current ICT strategy process

Venray's ICT strategy is considered from the perspectives of plan, pattern, position and perspective as stated by Mintzberg (2014) (presented in the beginning of the chapter).

As a plan the ICT strategy is broadly described in a general document. In this document, a programme has been chosen that invests in the development of digital skills of the employees and tackles the absolutely necessary developments such as the implementation of the compulsory laws. Furthermore, ICT developments will shift from being supply-oriented to demand-oriented. In addition, Venray is working on cloud solutions, unless they are not yet available with the desired functionalities. This plan has been adopted by the local council, that had to choose between three different levels of ambition, that each come along with an own strategy.

From the perspective of the pattern, the input from the domains regarding new ICT is very clear, although it has not been written down deliberately. Venray does not have the ambition to be innovative in the field of ICT. It wants to be a good follower in the field of ICT development. It wants to make use of technology once it has proven itself. Nevertheless, document analysis shows that innovative steps are being taken in pilots towards blockchain and smart city development, (Venray, 2019)

### 4.2.2 Factors of interest with regard to the ICT strategy process

The table underneath shows the factors that are derived from the ICT strategy of the municipality of Venray. The strategy is established with the five P's of Mintzberg (2014). All factors are elaborated on, with quotes from the interviewees, in order to get a broader view on the whole perspective.

Table 4.2.2. Factors of Venray's ICT strategy.
Factors
Developments in other organisations
Input from domains
New ICT in organisation
Legislation
Level of current ICT
Complexity of ICT
Ambition and vision of organisation
Costs
Justification
Market development
Political colour council

#### **Developments in other organisations**

A main factor for the idea generation are developments, documents or strategies from other organisations. The nationwide trend is leading in this perspective. *"70 percent of the ICT strategy is copy and paste from other municipal ICT strategies" (R1).* Venray finds the comparison with other municipalities' developments very important. *There is no specific order to the sources in meaning of importance (R2).* R2 noted that the most important aspect is: where am I in comparison to the nationwide development on the area of ICT? Based upon the current state of ICT compared to region or nation, the relevance or necessity for a technology is evaluated.

#### Input from domains

The municipal departments, head business operations and alderman are involved in the process. Input from the municipal departments is taken in an early stage, together with the developments and research. However, from the earlier claim that 70% of the ICT strategy is reproduceable from other municipalities, the input from the domains to the strategy are to be less taken into account choosing the relevant ICT to develop or focus upon. The strategy can therefore not be typed as horizontal where the interconnection with all the domains is solely prioritized (Hax & Majluf, 1991).

#### New ICT in organisation

Venray aims to be good follower and to apply only proven ICT results in a certain way of security. In the example of Venray, they focus on data driven working, which implies that data has to be gathered to base the decisions upon, and algorithms have to made to ensure right decisions are automatically made. To come to these prescriptive decisions, the chain informatization is very important. This has to do with interference with other ICT as well. Available techniques (e.g. IoT) are proven concepts and are becoming more and more widely used. This follows the earlier factor of developments in other organisations. Since it is more common to do develop this ICT, Venray usually follows.

The vision of the alderman is clearly reflected in the development towards what has been developed in the draft strategy. The interaction between the alderman and policymakers is on continuous bases. The alderman must stand for the content of the ICT strategy, so if they do not agree to the content, it has to be changed. The alderman thought with the policy makers, but could not add that much in terms of content.

There are different ICT strategies aligned with the ambition as presented in the document analysis. The final decision for the chosen strategy is made by the local council. They are shortly debriefed and have to choose upon that information but have a huge influence on the ICT strategy.

#### Access to knowledge

Following from the ambition and vision that finally is chosen upon by the council, it gives access to knowledge. The document analysis provides insight into the fact that the municipal council determines which service level is to be pursued. They determine whether a budget is made available for hiring ICT specialists. Venray can improve its service by hiring specialists, but whether they are going to do this is determined by the local council. This means that access to knowledge is determined by the council.

#### Legislation

Venray's plan describes that the implementation of legislation has many consequences for ICT. This legislation makes demands on many of Venray's resources, while they are still in the process of creating a good ICT basis. Creating this basis also calls for many resources, as is further elaborated in the factor 'current ICT in the organisation'.

#### **Current ICT in organisation**

The current ICT heavily affects the strategy of what Venray can achieve. Above all, there has to be a well-structured bases to be able to implement legislation and other developments regarding ICT. This basis is referred to as 'factory' by R2. We must have a factory which can be built upon. That factory does not have any legislation and regulation in it yet. It is more of an organizational concept and need, to be able to take steps forward at all. This is of course

*independent of laws and regulations, or any other type of development (R1).* The basis is not there yet, although the strategy contains aspects that need a working 'factory', thus the complementary assets are not there yet. Both R1-R2 point out that building this factory is priority number one.

#### **Complexity of ICT**

The complexity of the ICT (product) comes along with technical knowledge that is not within the organisation. The lack is of knowledge is recognized and it is major incentive to collaborate (R1). However, the market development unburdens the organisation to some extent, with the SaaS developments. Still, the complexity results in lots of resources spent towards e.g. implementation of difficult legislation.

#### Ambition and vision of organisation

In the case of Venray, policy makers present a plan that consists of three possible ICT plans, that all have their own ambition level. The first strategy is most reluctant one, the third is the most progressive one. One could say that the choice for the mid-ambitious strategy is one where, in the perception of the local council, no extraordinary risks are taken nor do they make the municipality a laggard. R4 does approve this. If there would have been 5 different plans, the third could have been the choice, but the second most ambitious plan could have been chosen as well. Likewise, the policymakers writing the ICT strategy, could very much influence the content with certain knowledge. It would then have been dependent upon the financial consequences that each of the strategies entailed.

So, regarding the content of the chosen strategy, the policy makers could very much influence the local councils. The plan that is opted for, can be guessed up to a certain point on forehand. Again, knowledge is very much needed in order to get to succeed the ambitious strategies.

The head business operations had a leading role to switch from five possible strategies to three. He reduced the number of strategical choices for the local council. *Too many options are too complex. They [the local council] do not understand that, so make it more compact. Do not make five choices but go to three choices. And within that choice, the content is further formed along the way (R2).* At last, it is pointed out that although a plan is chosen, the content still may change within the boundaries of the chosen strategy. This is referred to as an umbrella strategy by Mintzberg (2014), which entails that within set boundaries, a strategy can be emergent.

#### Costs

Due to limited resources, trade-offs have to be made among the implementing ICT. Costs quickly reduce the number of innovations. Therefore, it is not logical that innovative pilots are whilst the above-mentioned factory is not running yet. Apparently, innovation is valued highly, although that does not become mentioned in the vision and ambition of the organisation. Moreover, do costs influence the access to knowledge as well.

#### Justification

Justification deals with the legitimisation of the plan to the local council. This is compulsory and therefore the municipality of Venray must also draw up a plan., *ICT regards business management processes which are not up to the local council. In my opinion, the local council should not be necessarily involved in the ICT strategy formulation and choice (R3 – local council).* R3 further claims that since ICT costs money, the council has to approve the direction taken. However, the decision is made on very abstract level, so to some extent they approve something they have no insight on.

#### Market development

As there is no internal development, all applications are sourced from third parties. For every application, there is a 'cloud unless not available' policy (R1). This implies that they develop towards an organisation where the cloud is the standard. The cloud provides many advantages and can reduce a part of the complexity of ICT. *The cloud is not only different technology, but also a different way of being unburdened* (R2). An example of a benefit is the access to value adding capabilities that come with no extra costs, increasing range of tools and faster ability to implement

innovative customer offering (Bellamy, 2013). The market development thus affects the chosen ICT, since developments only take place if the market does so.

#### **Political colour**

Whereas R1-R3 did deny that the political colour of the council influenced the ICT strategy, R4 believed so. She stated that for over 30 years, the same political party had won the elections in Venray and that they are quite conservative. She believed that over time the civil servants know what to expect from the council and her progressive party had voted the most ambitious possible plan (as there was the opportunity to choose on the plan in the council). As budget goes into the absolute necessary first, especially innovation is cut upon to a certain extent. The conservative composition of the council has therefore its influence on the number of innovative projects possible.

#### 4.2.3 Giving perspective to the factors of interest

The presented factors are put categorised in table 4.2.3. What is noticeable is that politics has an influence late in the process, but this influence is quite large. They determine the ambition, the budget, the possibility of access to knowledge. So, they have an important role, but it comes to light late. Moreover, there are a lot emergent, which means that Venray must be able to be flexible, to deal with all these emergent factors. Moreover, it comes to light that only the council comes to light late in the process. The opinion of the council is final, but they are only consulted once, in the end. Moreover, Venray is seems to have a lot of means oriented drivers. Means are limited in small municipalities, thus the strategy has to develop around these means, instead working towards a goal with a strategy.

		Developments in other organisations	Input from domains	New ICT in organisation	Legislation	Costs	Current ICT ir organisation	n Complexity o ICT	Ambition and of vision of organisation	Justification	Market development	Political colour council
Category 1	Input	х	х		х		х		х			
	Throughput			х		х		х			х	
	Output									x		х
Category 2	Local Council			х	х	х			x	x		х
	Aldermen		х							х		
	Management		х	х					x			
	Domains		х	х								
	I-team	х	х	х	х		x	х				х
	Market			х				х			х	
	Partners											
	VNG											
Category 3	Deliberate			х	х				x	х		
	Emergent	х	х			х	х	х			х	х
Category 4	Internal pressures		x	x		x	x		x			
	External pressures	x			х			х		х	x	x
Category 5	Means oriented		х	x		х	х	х			x	
	Goal oriented	х			х				х	х		х
Category 6	Early	х			х		x					
	Mid		х	х		x		х			х	
	Late								x	х		х

Table 4.2.3. The categorized drivers influencing Venray's ICT strategy process

None of the above-mentioned actors or factors is standard prioritized, legislation omitted. It is all considered after which all ideas are mingled into an ICT strategy. This strategy tries to embrace as much of the developments as possible, within the set budget. Certain factors are missing that were in mentioned in the theoretical background. Organisational knowledge is not taken into account choosing the strategy. So, the explicit and tacit knowledge do not have any influence. Efficiency is not so much apparent, whilst that would be a main factor, as ICT is able to facilitate efficiency. It was not mentioned in the interviews, however the choice for data-driven working should enable efficiency. It thus may be a factor but was then not explicit in any terms. Besides, it seems more apparent

that data driven working was an innovation that was pushed because many other municipalities developed it. This is where mimicking becomes further apparent. lots of the factors that are influencing the ICT strategy process, are there due to the organisational size. Therefore, the organisational size and mimicking are further elaboration upon.

#### 4.2.3.1 Impact of the organisational size

Overall, it is unique that Venray did not collaborate with another municipality on the ICT area, since numerous small municipalities have at least one collaborating partner (VNG, n.d.-b). Not having a partner to act with was not a choice of luxury. We tried to collaborate with Venlo and Horst, to become a partnership that included almost 200.000 inhabitants. It was a long process after which Venlo had withdrawn. We were seeking for collaboration for quite some time, so Horst and Venray decided not to look further and join forces in the future (R2). One of the main reasons to collaborate was that the main was that when you are bigger, you have more to tell in the municipal arena (R1).

If a municipality is that small, that they do have budget for 0,5 person – e.g. a data-analyst – a collaboration could help. If two small municipalities together can hire a full-time data-analyst, it can add value for both organisations (R3). This example very much shows how collaboration allows access to knowledge for small municipalities. Here, the size can limit opportunities in the innovative area, whereas a collaboration allows to seize the opportunity of innovation. Larger organisations have more resources and therefore more choices to make, whilst small organisations do not face these decisions (R3).

Both local council and policy makers have a different logic on being a smaller organisation and the accompanying need for collaboration. Whereas policy makers value the access to knowledge, the local council values efficiency and practical arrangements, such as setting up a municipal backup in the other municipality. Both policy makers and council see the positive impact a collaboration could have, but since the perception of all different interviewees differs, the rationality behind this choice is questionable. However, the search for a collaboration is as a result of the organisation's size.

## 4.2.3.2 Intuitions of council and mimicking other organisations

A choice that has to be made by the local council is which strategy (plan) to choose. However, both local councils admitted that they do not understand the implications of the ICT strategy. It is unknown what the benefits or value of ICT are and so no legitimate trade-off can be made. The decision-making process is limited through bounded rationality; the alternatives are incompletely evaluated since the consequences cannot be properly assessed. As a result, the decisions are made with the approach of intuition. Both councils mentioned to the decision-making process based on personal experience and general feeling (R3, R4). Lunenburg (2010) describes the intuition as *"Intuition represents a quick apprehension of a decision situation based on past experiences and the reinforcement associated with these experiences, which is devoid of conscious thought"* (p. 9). The political colour influences the view of the council (R4), thus affects the overall decision-making process in the ICT strategy process.

Municipalities often tackle the same problems at the same time. By stating putting that 70 percent of the ICT strategies within municipalities are similar and the fact that municipalities are willing to learn from each other or tend to collaborate, the strategy relates to mimicking, as presented by DiMaggio and Powell (1983).

The political influence could go down as 'Coercive isomorphism', because DiMaggio and Powell (1983) stated that "politically constructed environments have two characteristic features: political decisionmakers often do not experience directly the consequences of their actions; and political decisions are applied across the board to entire classes of organizations, thus making such decisions less adaptive and less flexible" (p.150). However, the first point may be valid, but the decision makers are not the ones that thought of the initiative. Frequently, governmental legislation influences the organisation and the change that occurs cannot be fully overseen by the political body – the local council. The second argument does not apply to municipalities either. Collaboration exists in multiple different

domains. These are likely to influence future collaborations on other domains as partnering municipalities tend to find each other faster (R3), but it is not necessarily limited to these collaborations.

The mimetic isomorphism is best applied to Venray and their process of strategy formation. Mimetic isomorphism is derived from coercive isomorphism, but uncertainty is a driving factor to imitate another organisation. March et al. (1976) reasoned that organisations mimic other organisations e.g. when technologies insufficiently understood in the organisation or goals are ambiguous. Moreover, mimicking is a viable solution with less expenses when solutions are not completely overseen (Cyert and March, 1963). This is similar to the complexity ICT causes in Venray. The introduction of laws and regulations that increase the complexity of ICT in combined with developing technologies, results in an increasingly intricate environment. Municipalities are confronted with a lack of knowledge and uncertainty about developments and how to embrace them.

The ICT process as analysed with the framework of Chiesa (2001) endorses the fit of mimetic isomorphism. As all municipalities need to have an ICT strategy, the similarity between municipal organisations is apparent and ICT strategies are often public, Venray could easily framework themselves to other municipalities. It is an explanation why 'risks' are not so much included in the strategy, just as appropriability.

Since the organisation tends to mimic, the search for a collaborating partner can be clarified. Having such a partner means that the organisation can look at each other and learn from each another. The network is expanded and more knowledge is available in both organisations together than separately. Lastly, mimicking adds legitimacy for the local council in the decision making. DiMaggio and Powell (1983) argue that organisations with disputed goals are dependent upon legitimacy and therefore use the application of mimicking where an example proves the outcome, which is especially important in the political context.

# 4.3 Roosendaal

Roosendaal is situated in the province of Brabant and is surrounded by several villages and one larger city. Since a few years, the municipality of Roosendaal is involved in a collaboration. Roosendaal is one of de participants in ICT-WBW, a collaboration with five other municipalities.

#### 4.3.1 Current ICT strategy process

This paragraph elaborates on the current ICT strategy of Roosendaal seen as strategy as a plan, pattern, position and perspective.

Every four years, Roosendaal draws up a policy plan for its business operations, including ICT. The plan addresses the developments within ICT. Roosendaal does not execute the policy plan itself. This is done by the common arrangement ICT-WBW. So, Roosendaal draws up its own policy plan and does not solely take care of the execution. Within the ICT-WBW, the ICT policy plans of other participating municipalities must also be taken into account.

The pattern that is visible in the strategy of Roosendaal is anticipating future technology. It is important for the information team to study the developments in depth and to develop continuously. This allows the information team to be prepared for the developments once the domains want it to be implement, since new ICT is also driven by the domains.

In addition, Roosendaal is part of a municipal partnership in which various developments take place. At this moment, other municipalities within the partnership are less advanced in the field of ICT, so Roosendaal is leading the way in ICT innovation within the partnership.

Seen from a strategy as perspective, Roosendaal's strategy is to be cautiously innovative. They like to try out new possibilities, but it should never undermine the primary process. This train of thought of is quite widely present among the interviewees.

## 4.3.2 Factors of interest with regard to the ICT strategy process

The following table shows the factors of interest with regard to the ICT strategy process of Roosendaal. These are also all briefly elaborated on.

#### Table 4.3.2. Factors of Roosendaal's ICT strategy

Factors
Access to knowledge
Adopted ICT by collaboration
Ambition and vision of partners
Ambition and vision of organisation
Complexity of ICT
Costs
Developments pushed by the VNG
Efficiency
Input domains from municipality
Internal resources availability
Legislation
New ICT

#### Risk

#### Access to knowledge

The collaboration with the ICT WBW is in the field of ICT management and ICT maintenance but there is also the goal of developing specialist knowledge about strategic ICT products (ICT WBW, 2015). The partnership ensures that the various municipalities consult each other frequently on new developments. In addition, as an external party, ICT WBW is able to concentrate on and specialise in ICT. Roosendaal could not have done this on its own. On the other hand, Roosendaal has a higher ambition in the field of ICT than the cooperating partners. As a result, Roosendaal already innovates without its partners. These partners can profit from these innovations later on, while this is less the case the other way round.

#### Adopted ICT by collaboration

The ICT maturity of the cooperating parties influences what is possible within the partnership. As mentioned, Roosendaal has a higher ambition in the ICT area than the partners and they develop a lot, while the partners still try to get where Roosendaal already is. This means that Roosendaal is developing and waiting for the partners to catch up. R9 repeatedly referred to the "law of inhibiting head start". This law states that a head start in a certain domain often leads to little incentive to seek further improvement or progress, so that sooner or later one is outpaced. By resigning oneself to a head start, one is inhibited from going even further.

The collaboration can choose to go to the cloud, but here a budget and vision problem between the different participants in the collaboration comes to light. They all have ambitions they want to achieve, but the timeline to realise these ambitions differs enormously between organisations. Because of available budgets, different visions on ICT, whether the organisation is ready for it (R7). This leads to tensions between the participants.

Since Roosendaal has the ambition to be in the cloud, the collaboration becomes less valuable. *Besides the server related tasks, the collaboration does not add that much value (R7).* However, even though Roosendaal partly uses the services that ICT WBW provides, it still pays the full price. In terms of cost, the collaboration influences the potential of ICT strategy in terms of opportunities. However, the other municipalities cannot switch so quickly and are dependent on the existence of ICT WBW. If the partnership falls apart, the costs for all the municipalities will increase.

The council and the alderman of Roosendaal have influence on the developments in the ICT WBW. They will try to put forward their municipality's policy strongly. But since there are several parties, each with their own policies, there will always be compromises.

#### Ambition and resources of partners

The different financial situations of the partners in the partnership result in different attitudes towards the partnership's results and ICT strategy. All members pay according to their size. R9 described that the ambition among the partners can be equal when it comes to technical development steps, for example software as a service or infrastructure as a service solutions. But the financial situation of individual municipalities can limit the desired technical developments. Roosendaal is inhibited in its ambitions because it has to wait for the partnership.

#### Size of the collaborating partners

All respondents agree that different sizes of municipalities all have different types of problems. The problems of smaller municipalities are different from those of larger cities. Smaller cities also have a smaller civil service and fewer specialised employees. The financial situation and access to knowledge thus influence what partners themselves can achieve, which is reflected in the ambition.

#### Ambition and vision of the organisation

Roosendaal's ambition is to be a cautious innovator. In addition, it may not be at the expense of the primary service. The initial ICT plan that is made in Roosendaal should reflect the ambition accurately. However, the directors and
alderman have different opinions, which can create a certain tension between these two actors (R7). On the one hand, the policy makers have to take into account the limited resources available in the organisation and, on the other hand, the ambitions of the alderman. However, the alderman often has quite an influence on the content of the ICT strategy. R7 states that if the alderman wants a subject in the plan it is most likely it makes the final strategy plan.

### **Complexity of ICT**

Every interviewee agreed that the ICT is becoming more complex over time. Especially due to decentralised legislation in the 2013-2015 period, the foresight of complexity grew enormously. As a result, many organisations wanted to collaborate, as did Roosendaal (R7). However, according to the policy makers, the collaboration does not add as much value as it once has done. The collaboration was once set up due to a complex forecast: ICT would become far more complicated due to law, regulation and developing technologies. The municipalities could not oversee the implications for their organisation, so decided to collaborate in order to tackle the increased complexity. With the introduction of the cloud this complexity is partly reduced and there is no need for e.g. own servers. The collaboration is not as valuable as it once was according to them.

### Costs

The alderman stated that if the collaboration can jointly purchase ICT, the price per product will drop. *Larger quantities lead to a lower purchase price per product. However, the current situation is that all partners still work with their own applications due to contracts with the current software suppliers (RR4).* Collaboration therefore makes sense in a joint purchase of software applications. For the time being, however, several members of the partnership still have separate software applications, because these contracts have not yet expired. The costs reduction is therefore yet to come.

### Input domains from municipality

The input that domains give on ICT development largely depends upon the ICT affinity involved in a team or domain. Information advisors talk to the domains for input sometimes even foresee them of information on developments. The domain input is valued highly, as the ICT is contributory to business operations in those domains (R6).

### Internal resources availability

RR4 states the healthy financial situation of Roosendaal allows them to invest in developments, but the financial situation is not a standalone in the decision for innovation and exploration. The directors, alderman, head business department all have a saying in the distribution of the resources (R7).

### Legislation

Beyond any choice is the implementation of law and regulation, that always tops priority list of the strategy. R8 described that legislation is never an unforeseen implementation in the ICT strategy. *Legislation is coming and legislation is not like a speedboat, but it is an oil tanker that is slowly coming and bringing change. You know that legislation is coming and you have to prepare for it, but an organisation like the municipality cannot be adapted very quickly. We are a kind of oil tanker ourselves (R8).* 

### New ICT

The role of the director is to ensure the new ICT fits in the overall ambition of the organisation. *Directors mostly exclude parts of the ICT strategy (R7). E.g. if the VNG has ideas that do not fit the overall strategy of Roosendaal, it will be turned down by the directors.* Alderman mostly are more visionary and willing to innovate. The input of the alderman is valued as that important that his suggestions always has to come into the final ICT strategy (R7). The directors finally have to agree upon the content of the strategy. Overall, the strategy results from interaction between different actors, who act on the different ideas from information collected by the policy makers.

### Risk

The risks of ICT are always discussed, but not thoroughly investigated in terms of financial consequences. Especially data related risks are evaluated, but financial risks due to failing ICT are not taken that much into account during the selection process.

### 4.3.3 Giving perspective to the factors of interest

The factors of interest that forced the collaboration are the (forecast of) complexity of ICT in combination with legislation. This led to the establishment of ICT WBW, where the complicated tasks could be tackled jointly. However, the transition to cloud results in less complexity and less need to be in the collaboration. It is confirmed by the interviewees that the collaboration still is bases to discuss and learn, but the collaboration brings an inhibitory effect to Roosendaal. The collaboration results that Roosendaal displays characteristics of 'muddling through', as presented by Lindblom (1959).

Lindblom distinguished two ways policy making. The first method is the root method in which all options are thoroughly discussed to a level where the decision is rational. Secondly there is the branch method, in which incremental steps are taken successively. This is referred to as successive limited comparison method, as developments are based on continuing the chosen route.

Roosendaal's collaboration with the other municipalities has comparative characteristics to the branch method. The branch method assumes the impossibility of unambiguous goals, due to many different interests. In Roosendaal, the ambition and possibilities – financial and organisational – differ between the municipalities. ICT WBW has these unambiguous goals, due to which every member shall take incremental steps. This is applicable to Roosendaal, as move on slightly more ambitious than their collaborating partners and by doing so, taken their partners with them.

The factors that furthermore influence the ICT strategy process are categorised in table 4.3.3. It shows that there are no late factors influencing the strategy process. All factors are apparent during an early or mid-phase of the strategy process. The table shows that the New ICT is determined a discussion between the directors/management and the alderman. The tension that can arise here comes through the perspectives both have. An alderman usually is visionary and then has wishes, whereas the management has to ensure business operations continuity. These different interests collide. This factor does not come late in the process (although it regards decision on which ICT to choose), since the management and alderman are consulted multiple times during the strategy process.

It is also noticeable that there are a lot of external factors. Since Roosendaal is part of a collaborative arrangement, Roosendaal has a dependency that ensures that in addition to the regular external factors, such as legislation, there are additional external factors that influence the ICT strategy process. This is related to the emergent nature of the many factors influencing the ICT strategy. The ambition, resources and progress of other municipalities is something that arises for Roosendaal, while this can be outside the preconceived route. The emergent character of the factors thus seems to be connected to the many external factors.

		Acces to knowledge	Adopted ICT by collaboration	Ambition and resources of partners	Ambition and vision of the organisation	Complexity of	Costs	Development s pushed by the VNG	Input domains from municipality	Internal resources availability	Legislation	New ICT	Risk
Category 1	Input				x				х		x		
	Throughput	x	x	x		x	x	x		x			x
	Output											х	
Category 2	Local Council	х	х				х						
	Aldermen		х		х		х					x	х
	Management				х		х					x	x
	Domains								х		х	x	
	l-team	x								x	х	x	x
	Market					х						x	
	Partners	x	х	x			х					x	
	VNG							х					
Category 3	Deliberate	х			х					x	х	x	
	Emergent		х	х		х	х	х	х				х
Category 4	Internal pressures				x		x		х	x		x	x
	External pressures	x	х	x		x		x			х		
Category 5	Means oriented	x	x	x		x	x	x	х	x		x	
	Goal oriented				x						x		x
Category 6	Early				х	х			х	х	х		
	Mid	х	х	х			x	x				х	х
	Late												

# Table 4.3.3. The categorized drivers influencing Roosendaal's ICT strategy process

# 4.4 Rijswijk

The municipality of Rijswijk is located in the province of Zuid-Holland and has just under 50.000 inhabitants. In 2016, Delft and Rijswijk set up a joint business management organisation for executive ICT services.

### 4.4.1 Current ICT strategy process

Rijswijk has an information plan, but that is somewhat generic. Specific developments or concrete actions to pursue goals are missing. This generic plan is approved by the council. Rijswijk's information plan also includes switching to as many as possible software as a service (SaaS) applications. This policy has been implemented in order to transform to all solutions in the cloud and is something that Rijswijk has given high priority to. However, the service to citizens always remains the number one priority. Finally, Rijswijk's overall ambition is to be a good follower and to go with the flow of the pack. As a result, they do not have to develop themselves and only develop further if that is recommended by the VNG.

Strategy as a pattern is recognised by a stream of actions with consistency in behaviour (Mintzberg, 2014). For the municipality of Rijswijk, definite patterns have emerged, which a based on e.g. politics and organisational vision. A first pattern in the outsourcing, partly with collaborating partner Delft. The joint arrangement is part of the strategy of Rijswijk, since they have been doing so for the past six years. Furthermore, the strategy is to value the information of two entities the most, input from the domains and VNG. Input from the domains consists of the business operations that e.g. need developments, other connections between systems to progress in business operations. Self-selected applications are chosen unless not possible due to the back-end infrastructure managed by Delft (the collaboration partner). Rijswijk always works with proven technologies (R10), once they are recommended by the VNG. These recommendations mostly come along with legislation. Finally, risks regarding personal data are always evaluated.

Strategy as position in one where Rijswijk has a very clear mind to. In terms of developments and innovation, they want to be in the midfield, or the "bunch of the peloton" (R10). They do not have the ambition nor the position to innovate and experiment in the ICT field, which complies with the pattern of working with proven technologies. Regarding the position in the joint arrangement with Delft, they do not consider themselves the leader, slightly dependent but still quite autonomous. This position is deliberately created to provide the best service to the citizens, which remains the highest priority.

Strategy as a perspective usually consists of the internal view of the people in the organisation and sometimes is referred to as 'culture'. The interviewees were very explicit on the importance on service to citizens and development should always lead to improvements for the citizens (R10).

# 4.4.2 Factors of interest with regard to the ICT strategy process

The table underneath shows the factors that are derived from the ICT strategy of the municipality of Rijswijk. The strategy has been formulated using the five P's of Mintzberg (2014). All the factors are elaborated on, with quotes from the interviews, to get a broader view of the whole perspective, how each factor has affected the ICT strategy process and what the importance of each factor is.

Table 4.4.2. Factors of interest of Rijswijk's ICT strategy.

Factors
Access to knowledge
Adopted ICT by collaboration
Ambition and resources of partner
Ambition and vision of organisation

Autonomy
Complexity of ICT
Costs
Desired service level
Efficiency
Justification
Legislation
Market Development
New ICT in organisation
Political colour
Position of ICT in organisation
Risks

# Access to knowledge

The knowledge in the organisation can be optimised if employees can specialise on certain topics. This is achieved by collaborating with Delft. It ensures that more specialists can be deployed, giving access to knowledge.

"The initiative for a collaboration on ICT came from the politics" (R10). The council influenced the collaboration with Delft and insisted that Rijswijk should at least talk to Delft. Towards this collaboration, it was very important that the partner would help Rijswijk, not that Rijswijk would sit wait and follow. This was the fear of a possible collaboration with The Hague as partner. "The Hague is a sizeable city that has a lot to deal with themselves. If we would follow their path, we would always be waiting and not be prioritized. With Delft, the balance is different, more even so to say" (R11). Leveraging is furthermore closely related to the strong factor autonomy.

## Adopted ICT by collaborating partner

The ICT purchased by the collaboration partner Delft has a moderate influence on the choice of Rijswijk. choices, Rijswijk must go along with some choices, but in as many cases as possible they decide for themselves. This factor is therefore influential, but they have organised it in such a way that ICT is minimally externally determined.

### Ambition and resources of collaborating partner

Delft is larger and has more resources and a different ambition than Rijswijk. For Rijswijk, this construction works very well, because Delft can develop ICT and carry out pilots with it, while Rijswijk can then apply it once it is proven technology. This construction works for the perspective of Rijswijk.

### Ambition and vision of organisation

The management determines where we want to go as a municipality, specifically in terms of services to the citizens (*R10*). Rijswijk pursues to be a good follower when innovations are proven in other municipalities and only applies these (proven) technologies when advised by the VNG. *If you look, for example, at the legal frameworks that are coming our way, say for example the Environmental Act, then we are not going to discover the wheel, say we are not going to invest. And we're not going to put in the application ourselves. We look around us. What are neighbouring municipalities doing, and can we possibly link up with them (R10).* Furthermore, an example was provided where they stated that Delft e.g. is an innovator whereas they would never do innovative projects., by working with proven technologies fewer financial risks are faced, although that factor was not explicitly addressed by the interviewees.

Lastly, as mentioned before the management is represented in the "GMT" where prioritisation among ICT projects, renewals and investments is considered. The role of the information is mainly to develop an overall view and push forward all ideas, acquired by the domains.

### Autonomy

Autonomy is highly valued in Rijswijk. Whereas ICT complexity drives the search for collaboration, autonomy becomes very apparent in choosing who to collaborate with and the form of collaboration. Rijswijk has chosen to collaborate with Delft and e.g. not with the Hague. The difference in size between the Hague and Rijswijk would always lead to Rijswijk following the choices The Hague makes and The Hague deals with its own issues first. Delft is more of an equal partner, due to which they can keep their identity within the joint arrangement. But because Delft is larger and more of an innovator, they own the infrastructure of the joint arrangement, which has its implications. *Our policy is, of course, also reasonably dictated by the fact that we have the back-end infrastructure at Delft. So, if you look at the technical possibilities, we are already following that, so to speak (R11).* 

Next, autonomy influences the lay-out and agreements of the joint arrangement. This becomes apparent because Rijswijk can independently decide to deviate from the choices made by Delft, if it is possible with the infrastructure in Delft. *Whether this is wise and efficient is another question (R10)*. The quote shows how important own decision making is for Rijswijk. The back-end infrastructure of Rijswijk is placed in Delft, so that results in dependency, especially since the resources of Delft are limited as well. Since every city has different priorities, Rijswijk believes it is important to maintain control where it is appreciated and needed. That is why Rijswijk has its own application landscape and its own application managers. *We do not want to be 100 per cent dependent on the joint arrangement. You want to be able to make your own choices about whether to go left or right in an application landscape, and the application landscape is the front door, where business needs are translated. You can never delegate that to an external party, not even if you are going to SaaS.* The autonomy is driven from the perspective and organisational design where the business needs are prioritized, and dependency is experienced negatively.

### Costs

The available financial resources are limited, so intelligent use of the resources is necessary. Therefore, the final decisions on which ICT is implemented are made by a group that consists of employees from business, information and management, known as GMT. *They make decisions regarding the prioritisation [of the ICT-related changes, renewals] and costs, so consequently they must make choices. The Information team makes a kind of proposal and the GMT cuts it (R11).* 

Costs are an incentive to collaborate. The increasing costs are the result of ICT's more prominent place in society, but it requires to become more efficient as well since municipalities have to deal with limited resources.

### **Desired service level**

The desired service level is a very important factor regarding the prioritization of ICT and the choice to collaborate. Two municipalities can jointly provide a higher service level – e.g. higher service availability – than one on its own. Besides, the interviewees let it be known that the service to citizens always remain priority one. This affects the selection on what ICT to purchase.

### Efficiency

In line with the costs, more efficiency is required to lower the costs of ICT. By outsourcing to Delft, ICT can be handled more efficiently. However, Rijswijk is still able to decide whether they want to follow Delft or not, so efficiency has less influence than autonomy.

### ICT complexity

The foresight of the complexity is an incentive to collaborate. In period before 2015, major changes in legislation were announced that would affect the ICT. This was for many municipalities a reason to collaborate with other municipalities. Rijswijk was no different in this perspective and partnered with Delft. The reason was twofold. Firstly,

the costs were harder to oversee and collaboration should be able to tackle this problem. Moreover, ICT becomes so complex that specialists are required on different aspects Due to the size of small municipalities, one employee usually has multiple functions and the increasing complexity results in ICT developments being harder to follow for one employee. By collaboration, more specialists on one subject can be recruited and the complexity can be tackled.

### Justification

On a general level, the aim of Rijswijk is digitisation, case-oriented working and standardisation. Specifically, on information: privacy, re-use of data and use of open data. These are the spearheads, so to speak, that we have defined (*R10*). These general notions are part of the plan of Rijswijk. Partly, these are held consciously very broad and open, because they have to able to justify decision on the plan for the council.

### Legislation

Legislation influences the actions taken very much. The influence of the legislation is noticeable at the moment the VNG brings it forwards. The VNG is a main factor in which developments are prioritized and which actions are undertaken (R10). Another factor where legislation influences the strategy process, is the imposed choice between different software suppliers. Municipalities have the legal obligation to approach different parties in large tenders. It drives the strategy by forcing it to consider different applications in the selection process. The strategy therefore always includes an optimisation step in which the party that best meets the predefined criteria is chosen. This is reflected in the strategy by the execution of the selection and is especially reflected in offering the best possibilities for the business. In addition, it also helps to reduce the risks, thus complying with new privacy legislation, for example.

### New ICT in organisation

The new ICT in the organisation is introduced by the information team, but the final implementation is decided by the management. They choose because certain trade-offs need to be made. At the moment, the path has been set for as many SaaS applications as possible.

### Market development

The market development influences the choices that can be made and therefore the actions. The strategy of Rijswijk is to switch to SaaS. However, if the market decides to switch to SaaS earlier than Rijswijk would have preferred, there is no other option than to follow. As a result, the market may influence the plans and actions predefined to reach the goals set.

### Political colour council and alderman

The interviewees agree that the input of the alderman is limited in terms of content. Still, the alderman sets priorities from the political point of view. *The choices the alderman makes, he has to have the political support for the budget. So, priorities are set there as well. They are not always based on policy or strategy. They are, of course, also determined by the political force field. Ultimately the council-programme and the aspect given more priority, are influenced by politics.* The conclusion is that the politics drives the strategy, without taking the actual strategy into account.

The interviewees believe that the political colour can influence the total strategy. *If you have a very right-wing city council, which is very much in favour of entrepreneurs, that means that at the end of the day, within your information policy and information provision, the focus is on entrepreneurs rather than, say, at the expense of citizens. I'm not saying that's going to happen, but the budget is limited and so is the funding. After all, the political pursued policy within a municipality eventually trickles down throughout the organisation.* 

#### Position of ICT in organisation

Rijswijk values the input for needs from the domains very highly. The needs are translated by the information advisors to ICT. *Input from domains is enabled by tacit knowledge: information advisors have a very good feeling for the organisational development on business operations. Therefore, they are very necessary.* The view on the role of ICT was described as follows: *In principle we are, say in terms of ICT, a fulfilment organisation, so the business* 

translates how they want to organise the service to the citizens. Concluding the role of ICT in combination with ambition and position regarding ICT, results in ICT being an enabler for the domains in Rijswijk.

### Risks

Rijswijk values risks very highly and considered continuously, especially regarding citizen data.

### 4.4.3 Giving perspective to the factors of interest

The more intriguing factors and consequences are described in this section. Firstly, Rijswijk values the input of domains more than input from any other stakeholder. The position and construction of the collaboration allows Rijswijk to make their own choices and limit dependency. This can be referred to as strategic autonomy. However, this autonomy has weaknesses as well. Whilst the political influence resulted in the collaboration in order to reduce costs, Rijswijk still values business needs over efficiency and costs. The input from the domains are chosen over an economical factor, which shows the prioritisation in the factors. Obviously, that is limited by resources, but it does reflect Rijswijk's approach.

The alderman and the city council initiated the collaboration with Delft. They thought it wise to look for partners in the growing field of ICT, in order to tackle the increased complex field of ICT.

Another insight that emerged from the analysis is that the final decisions on the prioritization of ICT implementation, and thus the accompanying costs, are taken by the management and the directors.

Moreover, the type of collaboration that Rijswijk has with Delft allows for a more emergent strategy. They do not have to follow Delft's choices and can make choices that go beyond theirs. Rijswijk is therefore more adaptive and less locked in the collaboration.

A lot of influential factors are external pressures (see table 4.4.3) and above all are these external pressures often not dependent on other factors. For example, market development heavily influences other factors, such as efficiency, new ICT and costs. No municipality can escape the integration of ICT emerging from legislation. That influences the costs, complexity and can even affect the ambition and desired service level, since resources are limited and trade-offs have been made. The prioritization of legislation may result in this, the external pressure ICT complexity drives the need for collaboration. Due to increasing challenging tasks, municipalities tend to collaborate, as did Rijswijk.

An influence less apparent from the table, is that innovation is a mean to achieve better service and compliance with legislation. These last two are the main pillars Rijswijk continuously focuses on. Regarding legislation, it is notable that Rijswijk applies legislation when advised by the VNG, and no other stakeholder. The VNG is therefore leading in this aspect.

Lastly, none of the factors are evaluated late in the process, as showed in table 4.4.3. The factors mingle along the process and all considered during the process. The process is more continuous, every actor gets to have his or her say in the process and all is considered. Therefore, no factor comes 'late' in the strategy process.

		Justification	Autonomy	Costs	Efficiency	ICT complexity	Position of ICT in organisation	Ambition and vision of organisation	Knowledge in organisation	Desired service level	Ambition & resources of partners	Risks	Legislation	Adopted ICT by collaboration	Political colour council	New ICT in organisation	ICT market developments
Category 1	Input							x			х						
	Throughput		х	х		х	х		x			х		х		x	x
	Output	х			х					х			х		x		
Category 2	Local Council	х	х	х	х			x						х	x	х	
	Aldermen	x	х					x				х		х			
	Management	х	х	х	х			x				х				х	
	Domains			х		x	х		х	x						х	
	I-team			х	х	x	х		х	х		х		х		х	
	Market					x										х	х
	Partners			х	х	x					х			х		х	
	VNG												х				
Category 3	Deliberate	х					х	x					х				
	Emergent		х	х	х	х			х	х	х	х		х	x	х	х
Category 4	Internal pressures		х	х			x	x	x	x		x				x	
	External pressures	x				x					x		х	x	x		x
Category 5	Means oriented			х	х	х	х	x	х		х			х		х	х
	Goal oriented	х	х							х		х	х		х		
Category 6	Early			x		x		x		х			х		x		х
	Mid	x	х		х		x		x		x	х		х		x	
	Late																

# Table 4.4.3. The categorized drivers influencing Rijswijk ICT strategy process

# 4.5 Medemblik

Finally, the municipality of Medemblik was investigated. Medemblik is located in the province of Noord-Holland and is mainly surrounded by smaller municipalities. Medemblik is one of the participants in DeSom. A shared service centre of 6 municipalities.

# 4.5.1 Current ICT strategy process

In terms of strategy as a plan, Medemblik has produced an information policy plan in the last two years, because the municipal council requested one. R13 calls the information policy plan not a particularly specific plan, but it does contain values that are relevant to a municipality. This does not make the information plan unique. The plan ensures that a direction is given to where ICT in the organisation must go to, but it is based upon other information policy plans and is just a global plan that offers the possibility to choose specific actions later. Another part of the plan is the collaboration, as introduced in chapter 3.

Viewing strategy as a pattern, an obvious trend became clear. Until now, municipal departments bought in their own ICT ignoring the information team. The result is different applications with the same functionalities which is an example of inefficiency and leads to high costs. In order to get a better insight and overview of the costs and procurement of applications, all money for ICT has been taken away from the departments. As a result of this action, the departments are expected to come to the information team for new purchases. Since the information team creates an overview of functionalities, there will be more insight into the application landscape and the associated costs. It is hoped that this 'strategy' will force a change. This strategy thought up beforehand, but not recorded and processed as such.

The position of Medemblik is to be a smart follower in developments. However, they are dependent on the shared service centre and thus on the choices of partner municipalities.

Lastly, the strategy as perspective regards the culture in Medemblik and is actually very interesting. They are not yet that aware of the consequences, complexity and costs ICT involve. So, a cultural change is taking place, as part of an emergent strategy, but that becomes clear in the case. Mintzberg (2014) puts down that a perspective is hard to change, because it is in the minds of employees and the awareness takes time to develop.

# 4.5.2 Factors of interest with regard to the ICT strategy process

The strategy outlined in the previous section has factors that led to this strategy. The factors are examined and elaborated on separately. The overview of the factors of Medemblik is presented in table 4.5.2.

Factors
Access to knowledge
Adopted ICT by collaboration
Ambition and resources of partners
Ambition and vision organisation
Costs
lustification
Knowledge in council
Leadershin
Leadership
Legislation

Table 4.5.2. The identified factors of the ICT strategy process

Level of current ICT
Market development
New ICT in organisation
Open source development
Position of ICT in organisation
Risks

### Access to knowledge

Knowledge and experience on the right setup of the organisational ICT has led to the current situation in Medemblik, in which there is room for improvement. R13 attributes this to two main aspects. Firstly, the ICT capacity within the own organisation is not sufficient and secondly, there is a lack of experience in the organisation with this subject. Putting these aspects together the knowledge is lacking in the organisation, which makes it difficult to develop a strategy that meets the needs and ambitions of the departments. This is also due to the fact that the information team has been established just a few years, which means that the experience is growing, but not yet on the desired level (R13).

All ICT-related matters were outsourced to the shared service centre, which meant that coherence and overview were lacking within Medemblik itself. The knowledge for quality was not so much lacking, but without integration the knowledge was lacking in the own organisation.

### Adopted ICT by collaboration

Medemblik participates in a shared service centre. Legally the shared service centre is called a joint arrangement. *In the context of municipalities, that means that you are controlled by a municipality, but the shared service centre has its own management and business operations. By control is meant that the general board includes alderman of the municipalities. That is also the tricky part. Since we opted for this legal construction, the budget for the IT organisation, for example, has to be approved by six municipal councils. That is just not feasible, especially now that cuts in the budget have to be made* (R13). So, the political context makes it more difficult for the shared service centre to perform. Still, Medemblik depends on this shared service centre for choices in the ICT-field. If the shared service centre does something, Medemblik is in principal obliged to go along.

The main task of the shared service centre is to maintain the existing resources and ensure continuity, security and safety. That is the most important aspect for them, which causes the municipalities to have little confidence in their ability to handle innovation. However, Medemblik has to follow the shared service centre.

### Ambition and resources collaboration

For efficiency purposes and purchasing benefits, the joint arrangement of Medemblik wanted to use the same applications in all municipalities. This political idea was constructed but blocked by the management of several municipalities. This was the result of several factors. Different applications meant for some organisations that the primary process would be very much changed, and continuity of the primary process was therefore not always guaranteed. In addition, the different ambitions between the municipalities, either high or low, obstructs the convergence of application for all municipalities. Therefore, in the strategy process efficiency and cost reduction are valued lower than the continuity of the primary process.

On the other hand, the resources of the collaboration bring advantages such as improvement of quality. *In the past, each municipality had a few people who did everything in the field of ICT. You can never achieve the same level of quality as if you had a specialist there. So now you see that certainly in the field of information security and privacy, the shared service centre can deliver something better than we as small municipalities could deliver individually.* 

### Ambition and vision of organisation

The organisation vision lacked ICT related goals before. However, within the latest vision, ICT got a prominent place, making it possible to translate this into a vision on ICT. The vision states, Medemblik wants to be a 'smart follower', in terms of innovation and development. A more concrete ambition is *that we are going to have a flexible automation. We have to standardise, because otherwise you are not flexible and we have to move much more towards generic functionalities* (R13).

### Costs

Cost cutting is an important factor for the ICT strategy. The costs of ICT are nationwide increasing, and where the departments used to have their own budget in which a lot was possible, this has now become more complex with these rising costs. Departments are used to contractors who relieve them of all their worries, at all costs. The current strategy forces prioritisation and selection between market suppliers, due to limitations in resources. The result of not being unburdened any more, is increasing ICT complexity for the organisation.

Costs affect the desired service level as well. For example, we would like to have permanent IT project leaders at the IT organisations, because you have enough changes to implement. And now, each time a project leader is hired and then leaves again. If you had one or two permanent project leaders, that would help the process enormously. But we cannot get that through in politics, because it costs a tonne extra per year in the budget (R13). Regarding the strategy process, the costs are valued higher than service level. It shows the importance of costs. However, the effect is that all the knowledge in the organisation disappears every time.

Finally, costs influence the collaboration as well. The financial situation of each municipality results in a more difficult debate regarding the costs made in the shared service centre. We have to get the budget right, often with six municipalities, and then you see that it becomes political, because one municipality says, well, I am willing to make a five per cent cut and another one says, well, no, we are not going to do that. Well, try and work it out. It shows the political influence on the costs, that results in an external pressure municipalities have to deal with.

### Justification

Justification is politically demanded. Although the knowledge in local council is limited, they wanted to have some type of information plan. Therefore, a very general and logical plan is put down, which acts as a steppingstone on which a number of developments can be hung up. Due to the wide, generic plan, the ICT is only limited affected by the justification of the plan.

### Knowledge in council

The knowledge on ICT in the local council is limited and this is a wide-known problem. In the local council of Medemblik, exactly one person has the knowhow on ICT. If she agrees, the whole council will follow her and if she does not agree upon a proposition, everyone follows. The opinion of the council therefore depends upon one person, so she influences very much the possibilities on the allocation of resources.

#### Leadership

The indecisiveness of the management resulted in a lack of overview of what is going on in the organisation, what needs there are to ensure a continuous and uninterrupted primary process. The current strategy was based on information that is collected bottom up. Departments provided an *extremely long list of ambitions, wishes and legal changes. That was the first time that an organisation-wide overview of these kinds of developments was presented and shocked the management.* They concluded that it could not be handled and priorities had to be set. *I said all right, all right, and then it became silent, nothing happened. This is also due to inertia of the management (R13).* Indecision leads to the strategy anticipating on the developments of for example market, instead of the other way around. The

lack of leadership thus also led to massive costs, because the shared service centre did not purchase applications jointly, as elaborated on in ambition and resources collaboration.

### Legislation

In addition to the obliged ICT implementation as a result of legislation, R13 highlights another topic that plays a role in the strategy. While some laws are specifically addressed to a particular department, some laws fall in between departments and no one becomes the problem owner. *There is legislation that falls between the cracks. Because who feels responsible for the Open Government Act? It's not just one person; everyone sees it coming and thinks well, new law, not for me.* That may be due to, or a consequence of a lack of decisiveness in the management or in the culture of Medemblik.

### Level of current ICT

As mentioned, the current ICT has a major impact on what municipality can do. Multiple software purchases by the departments have led to high costs and inefficiency. The current strategy is based on 'correcting' these decisions and creating an overview on the ICT.

### Market development

Currently, market developments are putting a lot of pressure on the ICT strategy. As a result of history of decentralised purchase: We are still in a situation where we are very often confronted with the fact that the market simply makes certain choices. And because for a long time the decision about ICT purchases rested with the domains, we never really got a good look at what they said yes to (R13). There is goal and wish to become less dependent on the market, but currently Medemblik still faces the situation where choices are made for them.

### New ICT in organisation

Medemblik, like every other municipality, changes towards more SaaS applications. However, this new ICT is more expensive than the previous ICT, so there is extra pressure on the costs, which forces more trade-offs.

### **Open source development**

An external pressure in the strategy is open source development. The private market parties are not alone in providing ICT solutions, open source applications are available too. Now that the trade-offs are necessary in the current situation of Medemblik, they have opened their view to open source application. These are available for free, result in less costs and therefore worth considering. The open source is viewed in advance of the market parties.

### **Position of ICT in organisation**

The position of ICT in Medemblik was in origin not prominent. Up to three years ago, no information team steered the purchase of application and the domains did not form a unit when purchasing the software. In fact, each domain bought its own software. This position in ICT is currently changing, as they are aware of the effects of decentralised purchase: much software has overlapping functionalities, which means some functionalities are purchased multiple times. This view on ICT, which is embedded in the organisation, is forcibly and consciously changed. The position of ICT therefore very much forces the strategy by changing the strategy of purchase.

### Risks

Risks to do with privacy of any extend are very much prioritized. The alderman has a very narrow vision on ICT and has no affinity with it. Foremost, safety is very important to him as a result of a data breach in the past. Risks are therefore very influential in what is possible, and what is not. *ICT must be safe, because years ago we had a data breach that was widely reported in the press. The alderman definitely never want that to happen again. If you want money for a certain project, you throw in a term like information security or privacy and you get it, but when it comes to something else, it is more complicated. It shows the prioritization of risks and how risk can affect what can be achieved. This can be taken into account during the strategy process.* 

### 4.5.3 Giving perspective to the factors of interest

This paragraph relates factors and put them into perspective of each other. Moreover, the most important aspects are extracted. Altogether, these are most influential aspects on the ICT strategy process in Medemblik.

Firstly, the collaboration leads to in ICT being more political influenced than desirable by the business operations. It results in a viscous situation and moreover, there is only one person with ICT knowledge in the council. If she agrees on the topic, the whole council will. It results in a massive external pressure, and that is only one of many external pressures. Lastly, the alderman's role is very limited and single visioned and thus not helpful in creation of a vision. This lack of attention by the alderman may affect the lack of decisiveness.

The collaboration does bring quality. Where one municipality does not have the resources for specialists, the collaboration has. within the collaboration, efficiency is valued less than changing the primary process, because an integrated applications landscape through all collaborating municipalities was cancelled. Moreover, similar ambitions make the collaboration easier and ensure a more fluent collaboration. As a result of the different ambitions, the organisations are continuously arguing about the developments or costs.

Another very important factor is the current ICT in the organisation. Due to divided purchases of ICT in the past, the total application costs are increasing and getting out of boundaries. An additional effect is that ICT is less covered by market parties and the complexity of ICT for the organisation is therefore increased. Moreover, the efficiency in between application lacks, functionalities are purchased twice although that adds no value.

So, the current ICT results in high ICT costs, which then leads to the strategy of first searching for open software before looking at purchasing from a market party. This inventive method can possibly result in lower costs.

Another effect that emerged from the decentralised purchase of ICT, is that it is now centrally led, since the costs are monitored at a central place, which is the information team. This step towards centralization implies that there is a need for leadership or a decision maker in the complex ICT landscape.

Lastly, the lack of decisiveness sometimes results in legislation falling between the cracks. This can be referred to as diffusion of responsibility. It refers to the feeling of decreased responsibility of action for members of a group if the person is part of this group (Wegner & Schaefer, 1978). This became very much apparent in the decisiveness factor as described in the previous section. However, awareness of this phenomenon also means a step forward and it generates strategic opportunities. This makes it an important but unique factor.

The case shows a few unique factors, that were not apparent in other cases, such as open source development and leadership. Regarding the categorization as presented in table 4.5.3, it reasonable similar to the other cases. The factors are mostly emergent and means oriented. The emergent factors are also led by the shared service centre, that allows for e.g. access to knowledge. The unique factor of leadership mainly is within the management and alderman. From these decisions and vision are expected, but unfortunately that is not (yet) apparent in Medemblik.

		Access to knowledge	Adopted ICT by collaboration	Ambition and resources of partners	Ambition and vision organisation	Costs	Justification	Knowledge in council	Leadership	Legislation	Level of current ICT	Market development	New ICT in organisation	Open source development	Position of ICT in organisation	Risks
Category 1	Input				x					x					х	
	Throughput	х	х	х		х			х		х	х		х		х
	Output						х	х					х			
Category 2	Local Council		х		х	х	х	х								
	Aldermen		х		х			х	х							х
	Management				х	х			х	x			х			
	Domains					x				х	х		х		x	
	I-team	x				x	x			х	x		x	х	x	x
	Market											х				
	Partners	х	х	х				х								
	VNG															
Category 3	Deliberate				х		х			х			х			
	Emergent	х	х	х		х		х	х		х	х		х	x	х
Category 4	Internal pressures	x			x	x			x		x		x		x	x
	External pressures		x	x			x	x		x		x		x		
Category 5	Means oriented	x	x	x		x		x	x		x	x	x	x	x	
	Goal oriented				х		х			x						х
Category 6	Early				х					x	х				x	
	Mid	x	x	x		x	x	x	х			x	x	x		х
	Late															

# Table 4.5.3. The identified factors of the ICT strategy process

# 5. Comparing the cases

This chapter describes the comparison of the various cases studied. The ICT strategy processes that have been made are broken down into different factors and compared with each other by means of categorization. It may provide insight into the patterns that have emerged and how these can be related to the different cases. Finally, the factors identified in the cases are also compared to what has been written in the literature. This is visualised in figure 5.0, in which the contents of this chapter are shown in the framed box.



Figure 5.0. The comparison of the cases. Cases are compared to each other, taking the different types of collaboration in mind. Next, the factors emerged from the cases are compared to what was written in literature.

# 5.1 Comparison of cases' factors by categorization

The differences on each category are analysed. Table 5.1 shows the analysis of the number of times that a certain factor occurred in each case. It should be noted that not every case has the same number of factors distinguished. Therefore, the table should be read as a table in which the ratio of the numbers within the own case is the main interest. The absolute numbers are less relevant and are therefore not discussed in this analysis.

		Venray	Rijswijk	Roosendaal	Medemblik
Category 1	Input	5	3	3	3
	Throughput	4	9	8	9
	Output	2	4	1	3
Category 2	Local council	6	8	3	6
	Alderman	2	6	5	6
	Management	3	6	5	6
	Domains	2	5	3	5
	I-team	7	7	5	8
	Market	3	3	2	2
	Partners	0	6	5	4
	VNG	0	1	1	0
Category 3	Deliberate	4	5	5	5
	Emergent	7	11	7	10
Category 4	Internal pressures	5	8	6	8
	External pressures	6	8	6	7
Category 5	Means oriented	7	10	9	11
	Goal oriented	4	6	3	4
Category 6	Early	3	7	5	4
	Mid	5	9	7	11
	Late	3	0	0	0

### Table 5.1. Differences in categories by appearance of factors.

The first category distinguishes between input, throughput and output factors. All that could be concluded from the factors is that there are less throughput factors when a municipality is part of a partnership. This is due to the throughput factors that occur when municipalities enter a partnership. The difference between not having a partnership and having a partnership is somewhat remarkable.

The second category provided the insight that the role of the alderman and that of the municipal council can be very different from case to case. Some municipalities have set it up so that the municipal council has practically no say in business operations (e.g. Roosendaal), while in other municipalities the municipal council has more influence in the process. This also depends on collaborations in the ICT field. Collaborations make it necessary to make agreements with several local councils, sometimes up to six local councils. This makes for a viscous process in which it is difficult to reach compromises. The insight into the influence of the various actors also shows that management often makes the final decisions, while information to base these decisions upon is mainly retrieved from the domains bottom up. Finally, the role of VNG differs considerably between municipalities. Whereas some follow when informed, others add much less value and therefore see the VNG at best as an advisory body.

The third category shows that strategies of municipalities are quite emergent. This even though the policy is also based on legislation, ambition and vision of the organisation which are more deliberate. Municipalities respond to this to a reasonable extent by making very generic plans or stating the obvious in these plans. This may be referred to as an umbrella strategy, as presented by Mintzberg & Waters (1985). Within certain framed demarcations, a direction is provided but exact content (of actors or on actions) is not within the strategy. Councils need plans to carry out their monitoring and controlling tasks, while they are not concerned with their content. It may be referred to as deliberately emergent.

Category four shows that the driving forces internal and external pressure both play an equal role. The organisation has to deal with legislation and political decisions that lead to the thought of the strategy being more imposed (Mintzberg, 2014). An imposed strategy is where external environment dictates patterns in actions. However, strategy is very much influenced internally too, e.g. choosing the position one wants to pursue or the ambition a municipality has. The numerous external pressures are reflected in the more emergent strategy as well. When a municipality has to deal with external pressures, not everything is overseen on forehand. A more emergent strategy combined with external pressures being quite apparent, thus seem to go hand in hand.

The fifth category indicates whether factors are means-oriented or goal-oriented. The table shows that administrators are means-oriented. This is logical in view of the fact that most municipalities are short on cash. This category does not provide any further insights.

The sixth category describes when a factor comes to light during the strategy formulation process. An interesting conclusion that can be drawn here from the analysis of the four different municipalities is that no factor comes to light late in the process. All municipalities know very well what is in store for them and all factors are included in the making of an ICT strategy. Creating a strategy is also an incremental process. Various parties are consulted and their input is incorporated into the strategy. By involving parties at an early stage, all factors emerge in an early state

Patterns between the categories were searched for, but not found evidently. As put before, external pressures come along with a more emergent strategy, which is logical since external pressures force a more emergent strategy (Mintzberg, 2014). Finally, goal-oriented factors go either with political actors - council or alderman - or result from legislation. The other factors are very much means-oriented.

### 5.2 Comparison of cases' factors and literature

In the different cases, certain standards occur in the formation of an ICT-strategy. Renewal of plans often takes place every four years, which is a generic standard used by the municipalities. Much of the input for making a strategy comes from the domains of the municipalities and often a group of management members makes the final decision on the actions. The alderman's role differs per municipality, mainly because of the alderman's ICT affinity. In addition, specialists within information teams consider the council to be mostly ignorant in the field of ICT, so this is taken into account to a certain extent. These general characterisations of actors are not the most in-depth in describing the strategy process, but they do give an insight into when and why processes occur.

What also emerges from the cases studied is that many municipalities draw up a plan as an umbrella strategy. This provides room for manoeuvre on the exact content. This is often necessary, because a large part of the municipal ICT strategy process is influenced by external and therefore becomes emergent. Umbrella strategies (Mintzberg, 2014) have the characteristic of being more emergent, although there are frameworks that are set by the local council.

Although an umbrella strategy leaves room for the implementation of the strategy, agreement on the implementation of the strategy with several local councils is a major challenge, as the cases of Medemblik and Roosendaal show. The balancing of costs, innovation, service provision in combination with the own ambition of

each municipality leads to difficulties in reaching an agreement. The motives found in the four cases explain these difficulties.

# 5.2.1 Factors from literature that were not apparent

In the second chapter, different factors that may influence the strategy process in small municipalities were derived from the literature. All of them were searched for during the interviews, but there were factors that are not relevant in the context researched. Table 5.2.1 shows the irrelevant factors by colouring red or orange. Red factors were not found in the cases, whereas orange factors could be related to the cases, but were not explicitly mentioned or there was variation in answers between the cases.

Derived ICT strat	egy process factors	
Context	<ul> <li>Technological developments</li> </ul>	Resource availability
Foresight	Legislation (national, provincial)	
Selection	<ul> <li>Service level or performance</li> </ul>	<ul> <li>Optimization of resources</li> </ul>
	<ul> <li>Number of activities supported by new</li> </ul>	Efficiency
	ICT	Costs
	Risks	<ul> <li>Customer (citizen)</li> </ul>
	<ul> <li>Appropriability</li> </ul>	management
	<ul> <li>Interference with other ICT</li> </ul>	
Acquisition	<ul> <li>Access to knowledge</li> </ul>	<ul> <li>Leveraging</li> </ul>
	Resources	Autonomy
	Learning	Costs
	Leaning	
	<ul> <li>External forces (market, government)</li> </ul>	
Political context	Political success	Political colour
Small context	Leadership	Fewer decision makers

Table 5.2.1 Factors not apparent in the context of small municipalities

Firstly, the red coloured factors are discussed.

<u>Appropriability</u>. Appropriability does not come forward. Whether the knowledge for implementation of ICT is available is not (thoroughly) considered. This may be due to legislation, where ICT has to be implemented regardless whether it is appropriate.

<u>Customer (citizen) management</u>. This is not a driving force for the ICT strategy process. Municipalities are mainly concerned with coping with major external pressures such as the consequences of introducing new legislation. It could become relevant in the future, but is not a driving force at present, given the limited resources at their disposal.

<u>Leaning</u>. This is something that is not done within the researched cases. An explanation for this may be that the characteristic of leaning is that it usually offers short-term solutions (Preece, 2014). Moreover, it is more common to learn from each other and then act together in the field of ICT. Since several municipalities are facing problems, it is more convenient to join forces than to lean on each other.

<u>Customization</u> is not relevant since municipalities indicate to have multiple options on e.g. software suppliers. This may be due to the large number of municipalities and the fact that it is commercially attractive for the market to serve municipalities.

<u>Political success</u> cannot be achieved in the area of ICT strategy. R2 indicated that on areas in other domains, the influence of political success was noticeable, but in the case of ICT none of the interviewees had experienced political success as a factor behind the ICT strategy.

*Fewer decisionmakers*. Then there is the idea that fewer decisionmakers would facilitate the process of strategy, as there are fewer people involved. This is probably true in comparison with larger municipalities, but it still has the internal tensions between the councillors, directors (R7) and the influence of the council, not to mention the lower management. Smaller municipalities have less civil servants, but the number of decision-makers seems hardly smaller than in large municipalities. However, this conclusion cannot yet be drawn because it has not been specifically investigated.

Secondly, there are the orange-coloured factors, where there was either doubt or disagreement as to whether or not they influence strategy.

<u>Interference with other ICT</u> means that new ICT has to fit the already present ICT. It is referred to as ICT that need to be dealt with from mainly external sources, e.g. a shared service centre. It was indicated that there are many dependencies between ICT, because chain automation is becoming increasingly prominent. Interference with other ICT would therefore become increasingly important. On the other hand, with the emerging idea of common ground (VNG, n.d.-a), ICT should be increasingly independent. Here there are two possible thoughts that clarify the factor being either important or not important.

<u>The political colour</u> of the council was not widely supported among the interviewees. Only two interviewees thought the political colour worked through into the ICT strategy. Therefore, is not very much supported, but also not totally declined.

<u>Strong leadership</u>. According to literature strong leadership is necessary. This becomes apparent in the case of Medemblik. The term leadership is broad concept and in Medemblik specifically refers to decisiveness. As argued by Horey and Fallesen (2003), decisiveness is a component of leadership, leadership entails much more. Horey and Fallesen point out that with decisiveness it is important how decisiveness manifests itself in an organisation. In the case of Medemblik, no responsibility was taken, which can also be linked to leadership.

# 5.2.2 Factors appeared in cases that were not in literature

Not all factors mentioned in the literature are present in the cases. However, a number of factors that were not mentioned in the literature emerged in the cases. This research adds factors to Chiesa's framework, making it applicable to the context of small municipalities. Table 5.2.2 presents these factors, that are coloured green.

Derived ICT strat	tegy process factors	
Context Foresight	<ul> <li>Technological developments (market, open source)</li> <li>Legislation (national, provincial)</li> <li>Ambition (and vision) of organisation</li> <li>Complexity of ICT</li> </ul>	<ul> <li>Resource availability</li> <li>Developments in other organisations</li> </ul>
Selection	<ul> <li>Service level or performance</li> <li>Number of activities supported by new ICT</li> <li>Risks</li> <li>Interference with other ICT</li> <li>Adopted ICT by collaborating partner</li> <li>Level of current ICT</li> </ul>	<ul> <li>Optimization of resources</li> <li>Efficiency</li> <li>Cost cutting</li> <li>Control</li> <li>Position of ICT in organisation</li> <li>New ICT in organisation</li> </ul>
Acquisition	<ul> <li>Access to expertise (internal, external)</li> <li>Resources</li> <li>Learning</li> <li>External forces (market, government)</li> </ul>	<ul> <li>Leveraging</li> <li>Autonomy</li> <li>Costs</li> <li>Ambition and resources of partners</li> </ul>
Political context	Political colour	Knowledge Council
Small context	Leadership / decisiveness	Size of collaborating     partners

Table 5.2.2. Factors that emerged from the cases.

The factors mentioned above are all been discussed in the previous chapter. In the next chapter, the factors will be briefly described, in order to come to a proposal of adapting the framework of Chiesa (2001) to make it a suitable framework on the ICT strategy process for the context of small municipalities in the Netherlands.

# 5.3 Reflection on the adaptation of Chiesa's framework

The aforementioned factors are partly derived from the conceptual model. This conceptual model is based on Chiesa's framework, but has been adapted beforehand to make it suitable for the context of this research. Firstly, this section reflects on the adjustments initially made to the framework.

Subsequently, with the help of the cases, another adjustment was made to the framework. As described in this section, some factors were removed from the framework and others were added. The removal and addition of factors will also be reflected upon in this section.

Lastly, the implications for the theory will be discussed.

# 5.3.1 Initial adjustment on Chiesa's framework

Initially, the dimension of timing was removed from the Chiesa and the small and political context were added to framework of Chiesa.

# 5.3.1.1 Timing

The first modification of Chiesa's framework is the removal of the key-dimension timing. Timing is a distinguishing dimension through which competitive advantage can be gained. Chiesa mentions, among other things, the window of opportunity, the profitability profile and the availability of complementary assets as factors that influence timing.

However, in the public context, building competitive advantage is not relevant. For municipalities, the interests and motives are different. Within the operational possibilities, they want to add as much public value as possible. Given their legislative role, reliability and continuity are important factors. Therefore, as the cases show, municipalities generally work with proven technologies. Chiesa's introduced factors of the dimension time are closely related to competitive advantage and are therefore not relevant for small municipalities. However, the factor 'availability of additional assets' may be relevant for municipalities in terms of knowledge.

In the interviews, the dimensions of selection and acquisition were mainly discussed. Several respondents felt that timing was important. R2 stated that it is important for an organisation to be ready for the introduction of certain technology, otherwise it will not be properly incorporated into the organisation. Other respondents felt it was right to leave time out of the framework. The key-dimension time as used by Chiesa is related to competitive advantage and does not apply to small municipalities. If time is a factor at all, it is related to whether the organisation is ready and the application generates the intended public value. Therefore, the key-dimension time is removed. Finally, this assumption can only be validated correct or proven wrong with further research.

# 5.3.1.2 Introduction of political and small contextual as key-dimensions

The second adjustment was the introduction of both political and small contextual as key-dimensions. Some of the factors belonging to these dimensions do not influence the process of the ICT strategy. Two factors, namely leadership and political colour, affect other factors belonging to key dimensions such as contextual foresight, selection and acquisition. The adjustments to the conceptual model were therefore desirable and convenient.

The political and small contextual factors are included in the selection and acquisition dimensions. No additional dimensions are added to the framework. In order to maintain this basis and the related theory, it is most legitimate to place political and small context factors under the dimensions of selection and acquisition. This will be realised in the next chapter.

The conceptual model is based on Chiesa, but some adjustments have been made. In general, these adjustments are desirable. Especially the political and small context factors are very relevant and added to the data gathering in the interviews. The exclusions of timing can be debated, but the choice was well-considered and only new research could determine the correctness of the choice.

### 5.3.2 The introduced factors

The introduced factors attributed to the dimensions of selection and acquisition emerged from the cases. Some of these factors show some similarity with factors already identified in the literature. Other factors intersect with factors from the literature. The factors that are more debatable are reflected below.

This applies to the factor ambition and vision of the organisation. These can be part of the internal context forecast mentioned by Chiesa (2001). The internal context forecast is mainly about knowledge, skills and the associated implications for technology. However, Chiesa very briefly refers to Adler (1992), who also mentions the mission of management. A mission is different from ambition and vision, because usually a vision is drawn up first and only then a mission. So, the differences on this last point are marginal and debatable. Overall, these non-technological factors were thus found to be less clear or stated differently in Chiesa's internal context foresight, which is why it is explicitly mentioned in table 5.2.2.

Another added factor, the complexity of ICT, resembles the external context exploration factor of Chiesa (2001). However, external context exploration mainly related to technological solutions that were on the horizon, not to difficulties and complexity of ICT. Thus, the line of thought was in opportunities, whereas complexity of ICT carries a much more negative or obstructive connotation.

Lastly, level of current ICT may have been placed under the interference with other ICT label. However, the model Chiesa assumed opportunities, whereas opportunities are not the only factor influencing ICT strategy. It is about maintaining a position as well. However, Both factors carry a different connotation, thus therefore the factors are named apart.

The other new extracted factors are with more certainty not in accordance with the literature that is already present.

# 5.3.3 Implications for the theory

The introduced factors of interest form a robust basis for the ICT strategy process in small municipalities. The adjustments to Chiesa's framework are therefore rather substantial. This directly ensures that the added value of the framework is high, because strategy process frameworks are often aimed at larger, private organisations. The small municipality is often not taken into account, whilst the changes in relevant factors (both the non-applicability of some factors and the introduction of additional factors) reveal that the differences are quite significant. The political influence in combination with the consequences of a small organisation are certainly different from what is scientifically researched in this area. The proposed framework thus offers a solid basis for strategy formulation for a small municipality, where prior research did not support this.

On the other hand, this research has not yet been quantified and four analysed cases may not yet be sufficient to ensure that absolutely no important, relevant factors have been overlooked. This is related to the non-validation of the results with the respondents. By eliminating these limitations, the framework can be further refined and, if applicable, improved.

# 6. How an ICT strategy is formed

This chapter describes the analysis of important trade-offs that have to be made in the process of ICT strategy formulation, based on the factors distinguished in the previous chapters. To do so, an oversight of the factors influencing the strategy process is provided. This oversight contains a brief description of what each factor does to the strategy process and is the proposed framework for the ICT strategy process in the context of small municipalities in the Netherlands.

Within this framework, there are factors that are either uncontrollable or controllable. These are distinguished and both have implications. The uncontrollable are to be incorporated in the strategy, whereas the controllable factors result in trade-offs that a municipality can make. It provides insight into the various strategic choices made by municipalities concerning controllable factors. By linking this to the type of collaboration, insight can be gained into the factors within which municipalities are required to make trade-offs.

Ultimately, strategy formation is about making choices. By combining the proposed framework with providing insight into the possible trade-offs, the research succeeds in providing insight into the strategy process at an abstract level.

# 6.1 Proposed framework, based on Chiesa's technology strategy process framework

In this research, the way in which ICT strategy is formed in small municipalities in the Netherlands has been explored. For this purpose, it has been investigated what factors influence the ICT strategy process and many factors have emerged in the different cases. This section presents a framework that describes factors that force the ICT strategy process in a short, comprehensive way.

The factors that influence the ICT strategy process are based on what is discussed in the previous chapter, where apparent factors in the cases were compared to what was derived from literature. This difference resulted in a final list of factors influencing the ICT strategy process that are applicable for small municipalities in the Netherlands.

Whereas previously, small municipal and political context got their own set of factors appointed, these are now put into the dimensions context foresight, selection and acquisition. These categories are already proven theoretically relevant by Chiesa (2001), due to which the legitimacy of the framework underneath increases.

The proposed framework is an adjustment on Chiesa's (2001) framework, that focuses on a technology strategy in a private, competitive environment. The framework underneath presents the relevant factors of the ICT strategy process in the small Dutch municipal environment and gives a description of the factors.

Dimension	Factor	Description of the factor				
Context Foresight	Technological developments (market, open source)	Municipalities are dependent on market developments, as they do not have the resources to develop their own ICT. In addition, open source software is being considered to save costs, as ICT costs are rising. However, this needs to be carefully evaluated in relation to privacy and data security and is therefore more closely linked to risks.				
	Legislation (national, provincial)	Legislation is an inevitable external factor which the ICT strategy must embrace, certainly with regard to selection and acquisition. Legislation is known well in advance, giving municipalities time to anticipate. Legislation may increase complexity as well.				
	Ambition and vision of organisation	The ambition and vision of a municipality can guide the ambition in the field of ICT and the related goals. Visions are inspired by an alderman, provided that he has affinity with this.				
	Complexity of ICT	Increasing complexity is the result of legislation and ICT developments. Reduction of complexity can be achieved by market parties unburdening the municipalities. Complexity is				

### Table 6.1. Framework of the factors of the ICT strategy process in small municipalities.

		set to be a main factor for municipal collaboration, since small municipalities have limited access to knowledge on their own.					
	Resource availability	A municipality's available resources in the field of ICT are highly dependent on the current state of ICT and the municipality's financial health. In addition, the resources must be made available for ICT, which in turn has to fit into a municipality's vision and ambition and therefore depend on choices made by the council.					
	Developments in other organisations	This factor applies especially to municipalities without an ICT partner; municipalities look at what other municipalities are developing and copy that. DiMaggio and Powell (1983) refer to this phenomenon as mimicking, often resulting from uncertainty. Organisations in a collaboration do this too, but to a lesser extent, since they already have the partners they cooperate and share developments with.					
	Justification	Justification to the council is a responsibility of the alderman. The municipal organisation usually draws up a broad plan, within which there is still room for movement, also called an overall strategy (Mintzberg, 1985). The alderman is accountable for this. He is also accountable for the course of the partnership if it is present.					
Selection	Service level or performance	The service level refers to the creation of public value or enabling functionalities to increase public value. This is also strongly related to quality.					
	Risks	Risk can be either technical or financial. Failures are risks small municipalities are not willing to take. All indicate to work with proven technologies, to avoid risks.					
	Interference with other ICT	ICT should fit in the organisation, by means that is ICT should add value to e.g. processes. In the municipal context this usually involves connections to systems or chain automation.					
	Adopted ICT by collaborating partner	If a municipality is in a collaboration, it be directly affected by the collaboration, depending on the service agreement. Some municipalities can deviate from the collaboration its choice, whereas others cannot. This relates to autonomy.					
	Optimization of resources	Optimisation is making the right trade-offs to become as cost-effective as possible and to have access to knowledge. The choice of market development or open source software may an example.					
	Efficiency	Efficiency is generally pursued for cost reasons. However, sometimes there is a trade-off between quality and efficiency. E.g. Rijswijk argued that because of autonomy (which was not cost-efficient), the service was better suited to their own processes.					
	Position of ICT in organisation	In principle we are, say in terms of ICT, a fulfilment organisation, so the business translates how they want to organise the service to the citizens (Rijswijk, R1). Services are thus not emerging from ICT but are driven by the domains.					
	Level of current ICT	The current ICT has an influence on the possibilities a municipality has. Both Venray and Medemblik point out that the current level of ICT is one of the most important factors in view of the demands made by changing legislation. It relates to costs and quality.					
	Political colour	If you have a very right-wing city council, which is very much in favour of entrepreneurs, that means that at the end of the day, within your information provision, the focus is on entrepreneurs rather than, say, at the expense of citizens. I'm not saying that's going to happen, but the budget is limited and so is the funding. After all, the political pursued policy within a municipality eventually trickles down throughout the organisation (Rijswijk, R2). This summarizes how the political colour can influence the selection of ICT.					
	Knowledge Council	The council must agree to a strategy, although knowledge in the council is limited.					
	Leadership	The lack of decisiveness sometimes leads to ICT not being ready for new legislation. This car be referred to as diffusion of responsibility. It refers to the feeling of decreased responsibility of action for members of a group if the person is part of this group (Wegner & Schaefer, 1978) Leadership remains therefore very important. Resources are scarce, and lack of decisiveness leads to leads to a lack of uniformity in the ICT field.					
Acquisition	Access to knowledge	For small municipalities, access to knowledge is limited. Collaborations are therefore used to increase access to knowledge, since resources of multiple municipalities can be pooled to acquire and retain specialists. In both the case of Medemblik and Roosendaal. It is pointed out that a great deal of value must be attached internally to tacit knowledge. If new employees are constantly being recruited, they have to master the ICT field, which is a rather complex situation. Inkpen (2014) describes that sharing tacit knowledge is rather difficult.					

	Costs	ICT costs have been rising for the past decade (M&I, 2020). For small municipalities with limited resources, these rising costs are a problem that needs to be tackled. By cooperating with other municipalities, costs can be reduced.
	External forces (market, government)	Externally, the market very much determines what a municipality has to deal with. For example: <i>The cloud is not only different technology, but also a different way of being unburdened</i> (Venray, R2). An example of a benefit is the access to value adding capabilities that come with no extra costs, increasing range of tools and faster ability to implement innovative customer offering (Bellamy, 2013). The market development thus affects the chosen ICT, since developments only take place if the market does so. The same applies for governmental legislation or developments pushed by VNG, these external forces highly affects the strategy process.
	New ICT in organisation	New ICT is generally determined by the alderman, but management sometimes cut in the list of implemented ICT as well.
	Autonomy	Collaboration affects autonomy. Collaboration is beneficial when it comes to saving costs and better access to knowledge, but it gives less autonomy. By cooperating with only one partner, Rijswijk experiences a lot of autonomy.
		In addition, autonomy also refers to the administrative decision-making of a municipality. A municipal council likes to determine the route its municipality takes. By taking away the autonomy through collaboration, the administrative decision-making of the council is automatically reduced, because a collaboration partner determines part of the direction.
	Ambition and resources of partners	Partners in a collaboration all have their own ambition that they strive to pursue. Ambitions between municipalities are sometimes quite identical , due to the same obligations municipalities have. However, the timeline of achieving this ambition differs massively between the organisations, due to e.g. costs, knowledge (Roosendaal, R2). It results in tension between the participants, if they do not have the same short term ambition. Especially the very small municipalities cannot develop as quickly as larger ones.
	Size of collaborating partners	Smaller municipalities have sometimes less complicated problems, since some regulations only apply to a manageable sized number of citizens. Therefore, not all ICT solutions are necessary for different sizes of municipalities, even within the niche of small municipalities. It goes to show the importance of considering with whom a municipality should cooperate.

# 6.2 Factors that can and cannot be controlled by the small municipality

The paragraph above describes the various factors that are important within ICT strategy process. Although all factors affect the formulation of the ICT strategy of a municipality, there are factors that the municipality can influence and factors that it cannot influence. Earlier, reference was made to external and internal influences. The municipality has less or no grip on external influences. In the case of e.g. market development or legislation, these are aspects that must be incorporated into the ICT strategy. In other words, these are factors the municipality cannot influence or control, but they have to be incorporated in the ICT strategy.

On the other hand, there are factors that a municipality can control, the controllable factors. These factors can be influenced by the municipality and therefore come forward in the ICT strategy process. The trade-offs that a municipality makes in its strategy therefore also coincide with these controllable factors. Table 6.1.1 presents the different passive and active factors.

Uncontrollable Factors	Controllable Factors
Complexity of ICT	Costs
Level of current ICT	Access to knowledge
Political colour	Service level
Knowledge Council	Risks
External forces (market, government)	Autonomy
Justification	Ambition and vision of organisation
Technological developments (market, open source)	New ICT in organisation
Legislation (national, provincial)	Leadership
Resource availability	Position of ICT in organisation
Interference with other ICT	Efficiency
Developments in other organisations	Optimization of resources
Adopted ICT by collaborating partner	Size of collaborating partners
Ambition and resources of partners	

Table 6.1.1. Differentiation between factors that are either uncontrollable or controllable for a municipality.

Both types of factors influence the ICT strategy. However, only the controllable factors can result in trade-offs for a municipality. After all, municipalities have to deal with the uncontrollable factors, but on the controllable factors they have choices to make. The next section discusses the choices on controllable factors that the different municipalities have made.

# 6.3 How does collaboration affect the ICT strategy process?

The previous section has illustrated that there is a distinction between uncontrollable and controllable factors. The controllable factors are of interest since a municipality can influence them directly. The case analyses have shown that collaboration can strongly influence these controllable factors. This was confirmed both in the interviews and document analysis. This section will therefore look at how collaboration influences the various factors in the ICT strategy process. For this purpose, the cases are examined first, showing that the controllable factors are indeed strongly influenced by collaboration. Then, in a more general form, it will be described how collaboration influences the ICT strategy process.

# 6.3.1 How collaboration influenced the controllable factors in the studied cases

This section discusses how the collaboration in the studied municipalities affects the controllable factors. Each case will be discussed briefly, but not necessarily all controllable factors will be addressed.

# 6.3.1.1 Venray

Venray indicated that they would have more <u>access to knowledge</u> with a collaboration. With the extra specialist the collaboration would bring, the <u>service level</u> would also improve. In addition, Venray indicated that they would spend less on 'extra <u>costs</u>'. This would also allow Venray to pursue a different (higher) <u>ambition</u> in the ICT field. Finally, collaboration can lead to <u>efficiency</u> if the same actions can be carried out for several municipalities.

# 6.3.1.2 Rijswijk

In the process of choosing a collaboration partner, Rijswijk deliberately opted for Delft and not The Hague. For Rijswijk, the <u>size of the partner</u> was important here, as they did not want to be overshadowed by a large municipality such as The Hague. In addition, Rijswijk finds it important to retain <u>autonomy</u>. They want to be in control of organising their own <u>service</u> (level), even if this means higher <u>costs</u> and less <u>efficiency</u>. This is mostly possible, but there are some limitations due to the joint arrangement being based in Delft. Lastly, due to the autonomy and the small partnership, the <u>ambition</u> of Rijswijk can be different from that of their collaborating partner.

# 6.3.1.3 Roosendaal

Roosendaal has started to work together because of the increasingly complex ICT landscape. By joining forces, these more complex problems could be tackled by working more <u>efficiently</u> and sharing <u>knowledge</u>. In addition, the sharing of resources should reduce <u>costs</u>, improve the <u>service quality</u> of business operations and <u>optimise ICT resources</u>. These motivations led Roosendaal to opt for a large-scale collaboration.

# 6.3.1.4 Medemblik

Medemblik has made similar considerations as Roosendaal. They see the lesser <u>autonomy</u> and control of their own (new) <u>ICT</u> as less valuable than increased <u>efficiency</u> and lower <u>costs</u>.

# 6.3.1.5 Unmentioned controllable factors

Finally, there are controllable factors that are not included in the above considerations made by the municipalities. This usually concerns the factors of leadership or position of ICT in the organisation. These are factors that drive the other factors, just like ambition, which has an effect on many other factors and thus determines the coherent whole. This clearly shows which controllable factors are influenced by the collaboration and which are not.

# 6.3.2 The effect of collaboration on the most important controllable factors

The previous paragraph shows that many controllable factors can be influenced through collaboration. This ensures that collaboration can be attractive, but it is never a straightforward decision. As the cases show, there are both advantages and disadvantages to working or not working together. Figure 6.3.2 visualises the trade-offs that municipalities face, when considering a collaboration.



### Figure 6.3.2. The distribution of the cases according to different factors that influence the ICT strategy.

The figure presents the different choices municipalities have made, corresponding with the effect on different factors. It also reflects on what the choice for a larger collaboration does to the factors of the ICT strategy process. Because of the differences in the collaboration between Rijswijk (2 municipalities) and Roosendaal/Medemblik (5+ municipalities), it is clearly illustrated what the effect is of more partners on the factors access to knowledge and costs. This has to be taken in account by making a ICT-strategy. The figure is discussed in detail below.

### Costs and efficiency

The ICT costs have increased over the past decade (M&I, 2020). For small municipalities with limited resources, collaboration is a way to increase the quality of their ICT facilities in order to achieve successful integration of legislation and increase service levels. Moreover, with collaboration municipalities attempt to accomplish cost savings (Janssen et al., 2012). In this regard, economies of scale can be achieved by working together, for example by jointly purchasing products and services and sharing services. Collaboration can be efficient in this respect, but there are obstacles to achieving this efficiency. Knol et al. (2013) address that inefficiencies and higher costs in shared service centres (SSC) may arise as a result of, for example, transaction costs and/or agency theory. Transaction costs are costs that are additional to the product that has been or is jointly purchased, for example information search or controlling costs. Efficiency viewed from the agency theory perspective concentrates on arrangements between organisations (agent) and the SSC (principal) to ensure that the common interest is pursued. A factor that can affect efficiency and reduce the cost of (contractual) is to ensure that a collaboration partner has the same level of ambition and, if possible, relatively equal resources. The cases show that different municipalities may have different strategies and ambitions. Collaboration with other municipalities can therefore impose restrictions on one's own strategy and ambitions. The cases of Roosendaal and Medemblik show that combining the visions, ambitions and means of several municipalities creates administrative and political tensions. With equal ambitions between the different municipalities (agents), the differences will be less divergent and with them the tensions.

### Access to knowledge

Collaboration comes with increased access to knowledge. In the case of Venray, it was explicitly mentioned that collaboration would made it possible to have more specialist knowledge available, something that is very difficult for one municipality itself. Collaboration leads to more access to knowledge and the more resources are pooled, the more or better specialists can be recruited and the higher the access to knowledge. More access to knowledge increases quality of service level (or reduces risks). However, this consideration goes hand in hand with the earlier mentioned costs and efficiency, and reduced autonomy.

### <u>Autonomy</u>

Collaboration affects the autonomy of a municipality. As mentioned, the fact that six municipalities must agree on one common plan for a shared service centre means that each municipality must be prepared to compromise on its own plan. The case study of Rijswijk shows that they find it very important to make their own decisions. They value customization of service as more important and desirable for the service level than more access to knowledge, even if it is more expensive and less efficient. In addition, pooling of resources means that a council has less direct influence on the implementation of the strategy. Because more decisions are taken externally, the municipal council loses part of its administrative decision-making power. This means that the council has less decision-making power than it would have had if it had not been part of a collaboration.

So, if a municipality does not collaborate, it can pursue its own strategy and provide customization on ICT services. If a municipality collaborates, it increases the access to knowledge by hiring specialists and in that way increase service level. Both customization and access to knowledge can increase the service level (or reduce risks), but that is dependent on the context and values of a municipality.

In conclusion, there are different kinds of trade-offs that can be made by municipalities. They cannot be taken separately for each factor. Many of these factors influence each other, so a trade-off is often a coherent and integral whole. In appendix E, the influences of factors on each other are worked out in detail. By determining where the municipality wants to be, a strategy can be made.

### 6.3.3 Why every municipality makes their own, different trade-offs

A municipality can make various choices regarding its ICT strategy. How a municipality shapes its ICT strategy based on the controllable factors, depends on the situation the municipality finds itself in. It depends on the available knowledge and resources within the municipality. For example, a municipality does not have a specialist available and it needs to reduce privacy risks with specialist knowledge, collaboration is attractive, because pooling resources allows to recruit specialists. On the other hand, if a municipality has a privacy expert available and finds it particularly important that ICT meets its business needs as harmoniously as possible, more autonomy is desirable. These are examples of considerations between the various controllable factors that result in a final ICT strategy. It is therefore not possible to determine standardly what is best for every municipality or what the best new ICT is for the municipality.

This situation is slightly different for private parties. Chiesa (2001) has described in his framework how a private party can move from the combination of these factors to a choice of technology. This research has made an attempt to come as close as possible, but due to the nature of the municipality, it did not entirely manage to do so. This will be briefly discussed in the last section of the chapter.

# 6.4 From factors to the strategy process and formulation: the differences between Chiesa and this research

Chiesa moves from the strategy process to the actual selection and associated acquisition of ICT by determining where the most potential lies. To this end, Chiesa makes various scenarios and calculates the expected turnover for each scenario. By normalising and weighing this for the different scenarios, it can be determined which technology is the most robust for the different scenarios.

For municipalities the potential turnover is not relevant. As the municipalities indicate, it is often about input from domains, sometimes input from the alderman or what the government imposes through legislation. In addition, municipalities look at what other municipalities are developing. Municipalities are looking into the future extensively, but no mechanism emerged in the interviews on the basis of which ICT is finally selected.

The above has demonstrated that it was not logical to continue on Chiesa's basis when it comes to translating the considerations of factors into the final formulation of the strategy. The situations are different since the small municipal context has many more external dependencies and that makes choosing ICT very different. The choice was therefore made to clearly identify the various factors and to map out the considerations of collaboration as best as possible. In this way, it is more insightful how certain factors are influenced.

# 7. Conclusion & Discussion

This final chapter discusses the main conclusions, policy advice, limitations of the research and further research. The main conclusions are derived from the findings of the research conducted and are used to answer the research question. The policy advice is based on the most important findings of this research that can be linked to the societal problem that was the reason for doing this research. Afterwards, the limitations are discussed. Insight in these limitations puts the findings in the right perspective and may lead to further research, that is lastly discussed. Further research is also based on the conclusions of this research.

# 7.1 Conclusion of the research

This research sought to explain how an ICT strategy is formed in small Dutch municipalities. This stemmed from the lack of literature on ICT strategy formation in the area of small and public organisations. This niche has its own implications, as a public organisation has to deal not only with local politics, but also with provincial and national politics and subsequent legislation. Small organisations necessitate the smart use of resources, but this is made increasingly difficult by the enormous number of tasks that small municipalities have to carry out. Therefore the following research questions have been formulated:

- How is ICT strategy in small Dutch municipalities formed?
- How does municipal collaboration affect the ICT strategy process?

In order to answer the first research question, the ICT strategy process was scrutinised on the basis of various factors. The formulation of an ICT strategy consists of making considerations and these considerations are influenced by factors. Each factor has an influence on the strategy process. In the end, the weighing and choice of these factors together determine the final ICT strategy.

The factors are presented in the figure 7.1.1. Not all factors all applicable in all situations. Some factors relate to having a collaboration with other municipalities.



Figure 7.1.1. The factors in perspective of Chiesa's adjusted framework.

These factors were represented in one or multiple cases. There were factors that were mentioned in literature, but turned not to be valid for this research, which is verified in paragraph 5.2.2. The following factors were found to influence the ICT strategy, while they were not derived from the literature in chapter 2. These factors are:

- Ambition and vision of the organisation
- Level of current ICT
- Position of ICT in the organisation
- Complexity of ICT
- Knowledge in the council
- Developments in other organisations
- New ICT
- Open source development
- Adopted ICT by a collaborating partner
- Ambition and resources of partners
- Size of the collaborating partners

A critical note on some of these factors is that they have been added to the framework by the researcher. A factor may be part of another factor already identified in the literature. However, the researcher did not find any indications during the data collection for this in the course of this study. A factor that could fall under other factors influencing the ICT strategy are first and foremost ambition and vision of the organisation. This may be part of the internal context forecast, although literature shows that non-technological factors are less apparent in the context foresight. Following that path, complexity of ICT can be the external context foresight, but the context foresight in Chiesa (2001) was mainly referred to as technology solutions that were in the offing, not with difficulties and complexity. Finally, the level of current ICT may have been placed under the label of interference with other ICT. However, Chiesa's model assumed opportunities, whereas opportunities are not the only factor influencing ICT strategy. It is also about maintaining a position. The other new extracted factors are with more certainty not in accordance with the already existing literature.

Consideration of the presented factors leads to the identification of which ICT to invest in, the identification of added value to ICT possibilities and how these ICT are acquired (Chiesa, 2001). Factors to be taken into account when considering these, is that a municipality is subject to a great deal of external pressures, for instance legislation or politics. Moreover, it should be taken into account beforehand that the strategy of a municipality is fairly emergent, due to the numerous emergent factors. Therefore, Mintzberg's (2014) umbrella strategy fits well, as it leaves room to manoeuvre within frameworks within an ICT strategy.

To answer the second research question, the research examined what effects a collaboration has on the ICT strategy process. In order to answer this research question, the influence of collaboration on the various factors, as presented above, is investigated. The most important considerations for collaboration and the differences between various forms of collaboration were investigated. This leads to insight in the main effects of collaboration affecting the ICT strategy process.

Collaboration is initiated as the result of ICT becoming more complex, partly due to legislation and the increasing costs of ICT. Collaboration should deal with this by bundling resources. Although market developments such as software as a service (SaaS) can relieve municipalities of their burden and make ICT less complex, recourses remain scarce, due to which collaboration remains attractive.

The choice of collaboration and the form it takes is shown in figure 7.1.2. Venray does not work in collaboration, which means it cannot pool resources. This means, for example, that purchasing is not cost-efficient and access to knowledge is limited. However, Venray is not dependent on other parties as it comes to its ICT strategy process. This means that the local council can accurately control the strategy.

In its collaboration with Delft, Rijswijk has chosen to maintain autonomy as much as possible. As a result, Rijswijk can deviate from the choices made by Delft. In addition, when making strategy, Rijswijk only has to take Delft into account as an external party. The strategy is therefore subject to limited external influence of the collaborating partner.

Finally, Roosendaal and Medemblik are in a large partnership (5+). Many resources can be combined, increasing access to knowledge and quality of service, and reducing the costs through joint purchase. On the other hand, it also results in the fact that five municipal councils have to agree on the direction that the partnership takes. This creates higher transaction costs and administrative struggles since municipalities do not all share the same ambitions and resources.

The case studies show that the main trade-off for collaboration are costs, access to knowledge and the degree of autonomy. The choice a municipality makes depends on the situation it is in or what it needs. Figure 7.1.2 shows what how the main factors of interest are affected by collaboration.



Figure 7.1.2. How municipal collaboration affect the ICT strategy process.

Regarding the theoretical contribution, this study is different from much literature. Literature usually deals with IT/ICT strategies of large companies or multinationals. This research deals with a subject that has a completely different context, for which there is apparently less interest or attention. Where the impact of large companies and even large public organisations is seen as interesting, it is different for a small municipality. However, there are many small municipalities in the Netherlands that this research has given them a better insight into making their ICT strategy. Due to the large number of small municipalities, the added value of the research is significant and different from what has been described in the literature up until now.

Regarding the societal contribution, the research introduced that small municipalities face difficulties with ICT regarding legitimacy, costs and knowledge. With the insights from this research, municipal councils can gain more in-depth knowledge about the ICT strategy process, which will result in a more legitimate strategy. In addition, this research offers municipalities insight into the trade-offs that can be made for increasing access knowledge or

reducing costs. The results of the research questions therefore help to tackle the social problems, by offering additional insight into the ICT strategy process and choices that small municipalities have.

# 7.2 Policy advice

Following the EPA programme, policy advice will be given based on the performed research. Three different policy recommendations will be presented.

### 7.2.1 Collaborate with another municipality, preferably multiple

The first advice relates to the urgent need to collaborate. The problem small municipalities are facing is limited resources to cope with increasingly complex ICT. In addition, the costs of ICT are constantly increasing. This is a reason for many municipalities to collaborate. However, the VNG has shown that in the area of ICT collaboration, there are still numerous municipalities that do not yet collaborate. The advantages of collaboration as presented in this study are increased access to specialist knowledge. The specialist knowledge is needed to cope with the more complex ICT landscape. In case the transaction are held low and both cost efficiency and access to knowledge increase, it is a good choice to collaborate with multiple parties. The larger the partnership, the more resources can be pooled.

The advice is addressed to the local council. They ultimately decide on municipal collaboration and are advised to look for collaboration partners, if a municipality is not yet collaborating in the field of ICT. It is important to determine how much autonomy or administrative influence they wish to retain.

### 7.2.2 Search for equal ambition in collaboration

The second policy advice is aimed at both local councils and aldermen. The advice is to be particularly critical when selecting the collaboration partner, otherwise tensions may arise between the different partners. A collaboration partner should preferably have the same vision and ambition with regard to ICT. If two alderman with totally different visions try to reach one common plan, neither council will be satisfied. In addition, a collaboration partner should preferably have the same amount of resources. This is generally related to the size of the municipality. The case of Roosendaal showed that, despite their available resources, they were held back by collaborating partners with fewer resources or ambitions. This is certainly not what collaboration should lead to, because it creates tension about the direction to be taken.

Logically, a municipality is dependent on the municipalities around it in its search for collaboration. It is quite unusual to look for a collaboration partner far outside the municipality, let alone outside the province. Nevertheless, the strategy should be to look for a collaborating partner that has similar ambitions and resources, even though collaborating with the neighbouring municipality might be more convenient at first.

# 7.3 Discussion and limitations of the research

The research has limitations to it, which are further discussed in this section. It reflects on the results and adds nuance to the implementation of the research.

### 7.3.1 Researcher Bias

The first limitation is that the researcher has a subjective opinion on the data, also referred to as researcher bias. All conducted interviews are dependent on the researcher's interpretation and therefore it is possible that a researcher, unintentionally or not, does not judge the results completely objectively. Moreover, case study analysis provides the researcher with lots of data that has to be processed. It leads to the possibility of missing relevant data. This problem is partly counteracted by conducting the analyses as consistently as possible, but researcher bias cannot be completely avoided in case study research.

# 7.3.2 Selection bias

To a certain extent, there is a selection bias. This means that the data sources have been subjectively chosen and may therefore give a wrong picture of the population. This selection bias is due to the fact that all cases were approached through the network of consultants. This means that the selected municipalities have (had) problems for which they sought external advice on the basis of which they decided how to solve the problems. Based on this advice, they solved the problems themselves or entered into a certain type of collaboration.

As a result, municipalities that are reasonably neutral in the field of ICT may remain underexposed in this study. On the other hand, external validity is never the powerful aspect in case study research (Yin, 1994). By doing multiple case studies, it has been attempted to overcome this, but there might still be a selection bias.

### 7.3.3 Lack of validation of results

The results of the study and the conclusions drawn from them were not validated with the interviewees. It is therefore possible that the results are presented as interpreted by the researcher. There is a possibility that the interviewees do not agree on this interpretation. This limitation of the study is therefore an important implication and should be taken into account when interpreting the conclusions of this study.

### 7.3.4 Interviewees per municipality

The next limitation is that in the different cases the interviewees did not all have the same function. It is true that an attempt was made to speak to a political actor and a policy maker in all cases. This did not succeed everywhere. Many of the interviewees held the position of information advisor, but the function content was not exactly the same in all cases. As a result, the cases are not fully comparable, whereas the comparison between the different cases is the strength of the study.

Besides, it should be noted that in some cases, the usefulness of talking to a politician was not seen, due to the too little affinity with ICT.

In addition, the research had to be carried out in 25 weeks, which limited the number of cases. With more cases, the results could have been more valuable, because there was more room for generalisation. More cases would have revealed more differences, for example on the aspect of the organisation of the collaboration.

### 7.3.5 The definition of small

The definition of 'small' also creates a limitation, because small can be a broad concept. In the municipal context, there are also smaller municipalities with fewer than 20,000 inhabitants. These may encounter different problems than municipalities with about 50,000 inhabitants. Both types of municipalities will have many similar problems and situations, but there may be factors influencing the ICT strategy process that have not been identified in this study. Possibly these would have come to light if smaller municipalities had also been investigated.

### 7.3.6 Chosen framework

In this study, the conceptual model is based on the framework developed by Chiesa. This was chosen because Chiesa was able to break down the various process dimensions into tangible factors. However, more has been written about strategy processes in relation to technology, but the tangibility of Chiesa made the researcher choose this framework. This framework creates a certain bias. Using a different framework could have pushed the research in a different direction. Perhaps fewer or different factors would have emerged that influence the ICT strategy process. It could therefore have given a different picture of the ICT strategy process, although this cannot be said with certainty.
## 7.3.7 Covid-19 pandemic

The final limitation of this research is that it took place during COVID-19. This meant that the interviews did not take place in person. The interviews took place digitally, which made the interviews a little less personal. This can influence the openness of a respondent.

## 7.4 Further research

This exploratory research opens the doors for further research into aspects that have emerged in this study. Three suggestions for further research are made below.

#### 7.4.1 The organisation and design of effective municipal ICT collaborations

The conclusion showed that collaboration between small municipalities is desirable. Not collaborating means that smaller municipalities will not have access to necessary knowledge and will face limitations in efficiency. However, in the case studies, collaboration was not always perceived as positive. This is because a municipality becomes dependent on the ambitions and ideas of other parties, and councilors find it difficult to exercise control over a collaboration that is remote from their own municipality. At the moment, it is not known how these collaborative arrangements can be successfully set up so that they reduce transaction costs and increase service quality, while at the same time allowing municipal councils to properly exercise their supervisory role and providing the collaboration with sufficient legitimacy. The question that then arises is: How should municipal collaboration in the ICT field be organized and shaped? The outcome would be very valuable, because it appears that municipalities are currently faced with difficult considerations in the design of joint arrangements in the ICT field.

## 7.4.2 Application of the Delphi method for proposed framework verification

The disadvantage of a case study is that the bias of the researcher may lead to certain factors being interpreted in a way that may not be intended. The framework proposed in section 6.1 for small Dutch municipalities should therefore be further verified. This could be done by applying the Delphi method. By linking the answers of experts in a number of rounds (revisiting the framework), an attempt is made to reach a consensus on the framework on which no factors are missing and unnecessary factors are left out of the framework. In this way, the basis provided by this research could be used for further research.

#### 7.4.3 What fits a municipal ICT strategy's situation

This research has presented important trade-offs to be made regarding collaboration with other municipalities and provided an insight on the ICT strategy process of small municipalities.

It would be of particular interest to know under which circumstances certain factors would work best or, put differently, which factors are valued in which situation. The status of a factor such as "level of current ICT" has a certain implication for ICT strategy. However, this research cannot indicate whether good current ICT entails a certain choice that is different from bad current ICT. The distinguished current factors may have deeper connotations, be complementary to other factors, or in fact counteract other factors. Further research would be useful because no municipal situation is similar and the uniqueness of each municipality will lead to a different ICT strategy process. This distinction is not made in this research, but is of great importance. This may be done by quantifying this research.

## References

- Allers, M., & de Greef, J. A. (2018). Gemeentelijke samenwerking verlaagt uitgaven meestal niet. *Economisch Statistische Berichten*, *103*(4757), 38-41. Retrieved from <a href="https://www.coelo.nl/images/artikelen/Gemeentelijke samenwerking verlaagt uitgaven meestal niet\_ESB.pdf">https://www.coelo.nl/images/artikelen/Gemeentelijke samenwerking verlaagt uitgaven meestal niet\_ESB.pdf</a>
- Baarda, B., Goede, M., Teunissen, J., & de Goede, M. (2009). Basisboek kwalitatief onderzoek. Noordhoff.
- Barnes, D. (2002). The manufacturing strategy formation process in small and medium-sized enterprises. *Journal of small business and enterprise development*. 9(2), 130-149. Retrieved from <a href="https://www.emerald.com/insight/content/doi/10.1108/14626000210427384/full/html">https://www.emerald.com/insight/content/doi/10.1108/14626000210427384/full/html</a>
- Bellamy, M. (2013). Adoption of Cloud Computing services by public sector organisations. 2013 IEEE Ninth World Congress on Services, 201–208. Retrieved from <u>https://ieeexplore.ieee.org/stamp/stamp.jsp?arnumber=6655698&casa\_token=t6LPXja9EvYAAAAA:r4YD5fAnH</u> <u>PCCqj40z34y2\_Kz5R5LeFYbdx5O4NF9t\_CFm0R7JRsrOtzOqC2rntF6Q6-qmYaYuq&taq=1</u>
- Bradshaw, A., Cragg, P., & Pulakanam, V. (2012). Do IS consultants enhance IS competences in SMEs?. *Electronic Journal of Information Systems Evaluation*, 16(3), 13-24. Retrieved from <a href="https://www.researchgate.net/publication/274639223">https://www.researchgate.net/publication/274639223</a> Do IS consultants enhance IS competences in SMEs
- Burgelman, R., Kosnik, T. & van den Poel, M. (1988). *Toward an Innovative Capabilities Audit Framework*. *Strategic Management of Technolgie and Innovation*, 31-44.
- Byrd, T. A., Sambamurthy, V., & Zmud, R. W. (1995). An Examination of IT Planning in a Large, Diversified Public Organization. *Decision Sciences*, *26*(1), 49–73. <u>https://doi.org/10.1111/j.1540-5915.1995.tb00837.x</u>
- Chen D. Q., Mocker M., Preston D. S., Teubner A. (2010). Information systems strategy: reconceptualization, measurement, and implications. *MIS Q, 34*, 233–259. Retrieved from <u>https://www.jstor.org/stable/pdf/20721426.pdf?casa\_token=rCnWXwvCYgcAAAAA:nCDsdAJ75cr9Gzzx0POCr</u> <u>meCWzoInUQm0INpgbmZjvu0I0mZN712oYq12gxgMgLDPnoLuvXIZQR3H-\_iG3UJk5UecyStydyrj0-NV-</u> <u>MP0yH3zTIMZ-Di</u>
- Chiesa, V. (2001). R & D Strategy and Organisation. Imperial College Press.
- Cienfuegos, I. (2012). Decision theory and risk management in public organizations: a literature review. *Revista de Gestión Pública*, 1(1), 101-126. Retrieved from https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.464.5560&rep=rep1&type=pdf
- Cyert, R. M., & March, J. G. (1963). A behavioral theory of the firm. In *Organizational Behaviour. Essential Theory of Processes and Structure*. (2nd ed., Vol. 4, pp. 169–187). ME Sharpe.
- D'Aveni, R. A., & Ravenscraft, D. J. (1994). Economies of Integration Versus Bureaucracy Costs: Does Vertical Integration Improve Performance? *Academy of Management Journal*, *37*(5), 1167–1206. <u>https://doi.org/10.5465/256670</u>
- DiMaggio, P. J., & Powell, W. W. (1983). The Iron Cage Revisited: Institutional Isomorphism and Collective Rationality in Organizational Fields. *American Sociological Review*, *48*(2), 147–158. <u>https://doi.org/10.2307/2095101</u>
- Dominic, T., & Theuvsen, L. (2015). The Impact of External and Internal Factors on Strategic Management Practices of Agribusiness Firms in Tanzania. *GlobalFood Discussion Papers*, *55*, 2–23. Retrieved from <a href="https://www.econstor.eu/handle/10419/106940">https://www.econstor.eu/handle/10419/106940</a>

- Drechsler, A., & Weißschädel, S. (2018). An IT strategy development framework for small and medium enterprises. *Information Systems and e-Business Management*, 16(1), 93-124. Retrieved from <u>https://openaccess.wgtn.ac.nz/articles/journal contribution/An IT strategy development framework for small</u> <u>and medium enterprises/13088534/files/25050086.pdf</u>
- Eisenhardt, K. M. (1989). Building Theories from Case Study Research. *Academy of Management Review*, *14*(4), 532–550. Retrieved from <a href="https://doi.org/10.5465/amr.1989.4308385">https://doi.org/10.5465/amr.1989.4308385</a>
- Enserink, B., Hermans, L., Bots, P., Koppenjan, J., Kwakkel, J., & Thissen, W. (2010). *Policy Analysis of Multi-Actor Systems*. LEMMA.
- Est, R. van, E. de Bakker, J. van den Broek, J. Deuten, P. Diederen, I. van Keulen, I. Korthagen & H. Voncken (2018). Waardevol digitaliseren: Hoe lokale bestuurders vanuit publiek perspectief mee kunnen doen aan het 'technologiespel'. Den Haag: Rathenau Instituut.
- Floyd, C. (1997). Managing technology for corporate success. Gower Publishing, Ltd.
- Frère, Q., M. Leprince en S. Paty (2013). The impact of intermunicipal cooperation on local public spending. *Urban Studies*, *51(8)*, 1741–1760.
- Garbuio, M. (2008). Psychological and political influences on strategic decision making (Doctoral dissertation). Retrieved from <u>https://api.research-</u> <u>repository.uwa.edu.au/portalfiles/portal/3240771/Garbuio Massimo 2008.pdf</u>
- Gudanescu, N., & Nicolau, A. (2010). ICT strategy support for business development and innovation. *Internal Auditing & Risk Management, 20*(4). Retrieved from <u>https://www.researchgate.net/profile/Guse Raluca/publication/227368393 Assets restatement model from t</u> <u>he natural capital maintenance perspective/links/5519a7c70cf26cbb81a2af54/Assets-restatement-model-from-the-natural-capital-maintenance-perspective.pdf</u>
- Hax, A. C., & Majluf, N. S. (1991). *The strategy concept and process: a pragmatic approach* (Vol. 2). Englewood Cliffs, NJ: Prentice Hall.
- Hax, A. C., & No, M. (1993). Linking technology and business strategies: a methodological approach and an illustration. *Perspectives In Operations Management*, 133-155. Springer, Boston, MA. Retrieved from <u>https://dspace.mit.edu/bitstream/handle/1721.1/2391/SWP-3383-25782453.pdf?sequence=1</u>
- Henderson, J. C., & Venkatraman, H. (1999). Strategic alignment: Leveraging information technology for transforming organizations. *IBM Systems Journal*, 38(2.3), 472-484. Retrieved from <u>http://www.gti4u.es/curso/material/complementario/henderson y venkatraman 1993.pdf</u>
- Horey, J. D., & Fallesen, J. J. (2003). *Leadership Competencies: Are We All Saying the Same Thing*? 721–733. Retrieved from <u>https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.115.772&rep=rep1&type=pdf#page=737</u>
- ICT WBW. (2015). ICT samenwerking West-Brabant-West Meerjarenbegroting 2015-2018. https://raad.roosendaal.nl/Documenten/Bijlage-2-begroting-ICT-WBW-2015-2018.pdf
- Inkpen, A. C. (2014). Creating Knowledge through Collaboration. In *The Strategy Process. Concepts, Contexts, Cases* (5th ed., pp. 262–266). Trans-Atlantic Publications.
- Jakob, M., Wolf, P., & Krcmar, H. (2015, June). *Decision Objects for IT Cooperation Decisions in the Public Sector*. 133–140. <u>https://core.ac.uk/download/pdf/32227107.pdf#page=150</u>

- Jakob, M., & Krcmar, H. (2018). Toward an IT-Strategy Approach for Small and Mid-Sized Municipalities in a Federal System. 102–110.
- Janssen, M., Kamal, M., Weerakoddy, V., & Joha, A. (2012). Shared Services as a Collaboration Strategy and Arrangement in Public Service Networks. 2012 45th Hawaii International Conference on System Sciences, 2218– 2227. https://doi.org/10.1109/hicss.2012.527
- Katz, D. and Kahn, R. L. (1966). The Social Psychology of Organizations. New York: John Wiley.
- Knol, A., Janssen, M., & Sol, H. (2014). A taxonomy of management challenges for developing shared services arrangements. *European Management Journal*, 32(1), 91–103. Retrieved from <u>https://doi.org/10.1016/j.emj.2013.02.006</u>
- Lampel, J., Mintzberg, H., Quinn, J. B., & Ghoshal, S. (2014). *The Strategy Process. Concepts, Contexts, Cases.* (5th ed.). Pearson Education.
- Leskaj, E. (2017). The challenges faced by the strategic management of public organizations. *Revista Administratie* si Management Public, (29), 151-161. Retrieved from <u>https://www.ramp.ase.ro/ data/files/articole/2017/29-</u> <u>10.pdf</u>
- Levy, M., Powell, P., & Galliers, R. (1999). Assessing information systems strategy development frameworks in SMEs. *Information & Management*, *36*(5), 247–261. <u>https://doi.org/10.1016/s0378-7206(99)00020-8</u>
- Lindblom, C. E. (1959). The Science of "Muddling Through". *Public administration review*, *19*(2), 79-88. Retrieved from <u>https://www.jstor.org/stable/973677</u>
- Lunenburg, F. C. (2010). The Decision Making Process. National Forum of Educational Administration & Supervision Journal, 27(4), 1–12. <u>http://nationalforum.com/Electronic%20Journal%20Volumes/Lunenburg,%20Fred%20C.%20The%20Decision</u> %20Making%20Process%20NFEASJ%20V27%20N4%202010.pdf
- March, J. G., Olsen, J. P., & Christensen, S. (1976). Ambiguity and choice in organizations. Universitetsforlaget.
- Mintzberg, H., & Waters, J. (1985). Of Strategies, Deliberate and Emergent. *Strategic Management Journal*, 6(3), 257-272. Retrieved from <u>http://www.jstor.org/stable/2486186</u>
- Mintzberg, H. (2014). Five Ps for Strategy. In *The Strategy Process. Concepts, Contexts, Cases.* (5th ed., pp. 3–9). Pearson Education.
- M&I. (2016, October). Conclusies ICT Benchmark Gemeenten 2016. Retrieved from https://mxi.nl/uploads/files/page/ict-benchmark-gemeenten-2010-2016.pdf
- M&I. (2020, July 29). *Stijging ICT-kosten gemeenten zet ook dit jaar door*. Mxi.NI. Retrieved from <u>https://mxi.nl/kennis/400/stijging-ict-kosten-gemeenten-zet-ook-dit-jaar-</u> <u>door#:%7E:text=De%20gemiddelde%20ICT%2Dkosten%20per.hun%20begroting%20uitgeven%20aan%20ICT.</u> <u>&text=Dit%20blijkt%20uit%20de%20ICT,Partners%20uitgevoerd%20bij%2035%20gemeenten</u>.
- Mohapatra, S., & Singh, R. P. (2012). Information Strategy Design and Practices. Springer Science & Business Media.
- Moore, M. H. (1995). Creating public value: Strategic management in government. Harvard University Press.
- Myoken, Y. (2008, January). Overview of ICT Strategy in Japan. British Embassy. https://www.unapcict.org/sites/default/files/2019-01/Overview\_of\_ICT\_Strategy-1.pdf
- Porter, M. E. (2014). What Is Strategy. In *The Strategy Process. Concepts, Contexts, Cases.* (5th ed., pp. 15–20). Pearson Education.

Porter, M. E. (1985). Technology and competitive advantage. The Journal of Business Strategy, 5(3), 60-78.

- Preece, S. B. (2014). Why Create Alliances. In *The Strategy Process*. *Concepts, Contexts, Cases* (5th ed., pp. 257–261). Pearson Education.
- Quinn, J. B. (2014). Strategies for Change. In *The Strategy Process. Concepts, Contexts, Cases*. (5th ed., pp. 9–15). Pearson Education.
- Rekenkamer Rijswijk. (2018, November). Rekenkameronderzoek informatiebeleid en informatievoorziening gemeente Rijswijk.

https://www.rijswijk.nl/sites/default/files/2018\_rapport\_informatiebeleid\_en\_informatievoorziening.pdf

- Ridder, H.-G. (2017). The theory contribution of case study research designs. *Business Research*, *10*(2), 281–305. https://doi.org/10.1007/s40685-017-0045-z
- Rockart, J. & Scott, M. (1984). Implications of changes in information technology for corporate strategy. *Interfaces* 14(1), 84–95.
- Rotmans, J. (2018, May). *De omgevingswet als transitie-opgave*. <u>https://www.g40stedennetwerk.nl/files/2018-04/Omgevingswet-essay-Jan Rotmans.pdf</u>
- Tan, B., Ng, E., & Jiang, J. (2018). The process of Technology Leapfrogging: Case analysis of the national ICT infrastructure development journey of Azerbaijan. *International Journal of Information Management*, 38(1), 311-316. Retrieved from <u>https://www.sciencedirect.com/science/article/pii/S0268401217308824?casa\_token=glMel1DzuccAAAAA:BrCE</u>
- United Nations. (2020). Take Action for the Sustainable Development Goals. United Nations Sustainable
- Development. https://www.un.org/sustainabledevelopment/sustainable-development-goals/

--YUjePzGZQ92Q3d15 EBT7AyEC7A-qq-eF7ETN0424uQu4Z7kHftAHQswbWf5OhfpUaZsk

- Verreynne, M. L. (2006). Strategy-making process and firm performance in small firms. *Journal of Management & Organization*, *12*(3), 209–222. <u>https://doi.org/10.5172/jmo.2006.12.3.209</u>
- Venray. (2019). Informatiebeleidsplan 2019 2022. Gemeente Venray. <u>https://venray.raadsinformatie.nl/document/7845007/1/03 Bijlage 1 Informatiebeleidsplan Gemeente Venray</u> \_2019 - 2022 V1 0
- VNG. (n.d.-a). Common Ground. Retrieved from https://vng.nl/artikelen/common-ground
- VNG. (n.d.-b). *Gemeentelijke samenwerking in kaart gebracht*. <u>https://vng.nl/artikelen/gemeentelijke-samenwerking-in-kaart-gebracht</u>
- Vos, M. (2017, December 4). Samenwerken bespaart geld: ja / nee | iBestuur. IBestuur. https://ibestuur.nl/podium/samenwerken-bespaart-geld-ja-nee
- Wegner, D. M., & Schaefer, D. (1978). The concentration of responsibility: An objective self-awareness analysis of group size effects in helping situations. *Journal of Personality and Social Psychology*, 36(2), 147–155. Retrieved from <u>https://doi.org/10.1037/0022-3514.36.2.147</u>
- Wesseling, H., Stolk, R., van der Beek, P., Dreef, S., van Dalfsen, F., & Bannink, F. (2020, June). *De Jacht op Publieke Waarde*. Retrieved from <u>https://mcusercontent.com/1a53b8584419838b74cbc8956/files/16249758-3905-4f2c-b670-4775ee1ca232/Essay Jacht op Publieke Waarde def .pdf</u>
- Yin, R. K. (1994). Case Study Research. Design and Methods. (2nd ed.). SAGE Publications.

Zuidervaart, B., & Markus, N. (2020, November 13). Nieuwe mislukking overheid: omgevingswet in gevaar door ICT-problemen. *Trouw*. <u>https://www.trouw.nl/politiek/nieuwe-mislukking-overheid-omgevingswet-in-gevaar-door-ict-problemen~bcd211ee/</u>

## **Appendix A: Interview questions**

As a vital part of data collecting, interviews are held among different actors within the selected case studies. For all actors, a questionnaire is set up. This brings the advantages of being able to compare the different cases and the different actors within the cases. The interview is based on semi structured method, so the interview is not necessarily limited to the questions presented underneath. However, the questions presented cover the essential elements.

## Interview

## Introduction

Firstly, the current function of the interviewee will asked for. Both the function and role influence the impact he or she has on (a part of) the strategy process.

- 1. What is your current function?
- 2. What is your function during a ICT transformation? (E.g. switching from system A to B.)
- 3. How long have you worked here?
- 4. What is, briefly, your role during the formulation of the ICT strategy process?

#### Selection

This section goes in on the selection process of ICT. Do municipalities have a context foresight they base the selection upon? Or will that be a law, regulation or actor involved.

- 5. Is the ICT strategy clear to you?
- 6. What are the starting points of the ICT strategy formulation? (E.g. improving services (internally or externally), council, alderman, laws regulations)

Hereafter, the aim is to find out the actors involved in the process and how they influence the strategy process.

- 7. Which other actors are involved during the process of ICT strategy making?
- 8. Who of these actors comes up with the initiatives and rule out certain directions?

Afterwards, the questionnaire asks for the process and the role of the identified factors influencing the selection according to literature. Literature introduces the importance of relevance, associated risks, appropriability, interdependencies with other technologies and option creation for selection of ICT.

- 9. How would you describe the process of selecting ICT solutions?
- 10. How does the current state of ICT affect the ICT strategy process?
- 11. How do (new) laws and regulations affect the ICT strategy process?
- 12. As budget is limited, resources are. So, on what is the choice of specific technologies based?
  - a. Coming back to the involved actors, what is the role of the alderman in deciding the selected ICT? Same for CIO? Council? Others?
- 13. How do risks of a certain ICT affects the selection choice?

The ICT should be embedded in the organisation. How is during the strategy process ensured the organisation can work with the ICT that will be implemented according to the strategy. If so, how is this input regarding ICT from the organisation valued?

14. What is the influence of the input (implicit (skills and resources)) and explicit (demands) from the organisation on the strategy formation?

#### Acquisition

For the acquisition of the ICT, there are multiple options to come to this acquisition. Next to internal development, there are external parties a municipality can collaborate with. There are other municipalities, regional parties and private parties. These questions determine the process behind the choice for internal development or collaboration with external parties, and in case of collaboration, the questions aim to find out how the collaboration takes place.

- 15. Do you internally develop ICT?
- 16. For external development/collaboration, with which external parties do you collaborate?
- 17. Where do these external parties add their value?
- 18. How are the collaborating partners chosen?
- 19. Of each of these parties, when are they consulted in the process?
- 20. How would you describe the goal of collaboration regarding ICT?
  - a. Examples are:
    - i. Learning: A collaboration is created to learn from each other, but mostly this will be spread to a collaboration in further adaptation for new technologies as well. They jointly will make, sell or buy a product. The major benefits are cost reduction and increased efficiency.
    - ii. Leaning: When a municipality relies on the ICT system of another municipality, they are leaning on them. One organisation profits from one other whilst they can specialize in that specific process. The advantage is that this is a quick, short term solution that works.
    - iii. Leveraging: The full integration of operations with partners. It creates a new portfolio of resources and therefore widens the possibilities.
    - iv. Are there other reasons to collaborate?

In addition, the environment or context the strategy process takes place in, a public and small organisation, influences the process as well. Some aspects of this context did not become apparent during the previous questions, so the final questions are the about the influence of the context on the process.

#### Public organisation

- 21. From a political perspective, how does the political colour of alderman effect the strategy process?
  - a. Do the initiators of the ICT strategy take the political composition of the alderman and local council into account during the process of creating ICT strategy?
- 22. How does the need for political success and progress affect the goals that the ICT strategy works towards?
- 23. To what extent are benchmarks considered in the costs determination of ICT?

#### Small organisation

24. How does the size of the organisation influence the way of selecting and acquisitioning ICT?

## **Interview Nederlands**

Dit interview heeft als doel het proces van de opbouw van de ICT strategie te beschrijven. De richting die wordt ingeslagen staat vaak beschreven in het IPB en vaak zijn er samenwerkingen die dit faciliteren. Maar waarop is die keuze gebaseerd, wie maakt die keuze en wie heeft daar invloed op?

De focus in dit onderzoek valt op de selectie en acquisitie van de technologische innovatie of transformatie. Dit wordt gedaan naar het model van Chiesa (2001), waar hij stelt dat drie hoofddimensies de ICT strategie bepalen. Dit zijn selectie, acquisitie en timing. De laatste is buiten de focus van dit onderzoek gehouden, omdat timing vooral in de private context een significante invloed heeft. Voor publieke organisaties is dit minder relevant, omdat het belang van een goede concurrentiepositie niet urgent is.

Tot slot wordt bij de ICT strategie gedacht aan de strategische innovatie, waarbij bijvoorbeeld gedacht wordt aan de transformatie van gebruikte technologie, zoals streven naar datagestuurd werken. Buiten de scope valt dus het proces dat leidt tot het dagelijks onderhoud en beheer.

#### Interviewvragen

Het interview bestaat uit 24 vragen, die zijn verdeeld over 5 categorieën.

#### Introductie

- 1. Wat is uw huidige functie?
- 2. Wat is uw functie tijdens een ICT transitie. (Bijv.: werken naar datagedreven werken).
- 3. Hoe lang werkt u hier?
- 4. Wat is uw rol in tijdens het formuleren van de ICT strategie?

#### Selectie

Bij het opstellen van een ICT strategie, hoort een bepaalde ontwikkeling van technologieën. Waar wordt op gefocust, waar wordt minder of niet op gefocust. Wordt dat gebaseerd op een toekomstverwachting of is het een gevolg van wet- en regelgeving? Deze sectie gaat daarop in.

- 5. Bent u volledig bekend met de ICT strategie?
- 6. Wat zijn de startpunten voor het opstellen van de ICT strategie?

De volgende twee vragen hebben betrekking op welke personen(/actoren) er bij het proces betrokken zijn en hoe zij invloed hebben op het formuleren van de ICT strategie.

- 7. Welke andere actoren zijn betrokken tijdens het proces van het formuleren van de ICT strategie?
- 8. Wie van deze actoren komt naar voren met de initiatieven en wie sluit sommige oplossingsrichtingen uit?

De volgende vragen gaan in op de factoren die selectie beïnvloeden zoals beschreven is in de literatuur. De literatuur haalt relevantie, risico's, toe-eigenbaarheid, connectie met andere ICT en het voortbrengen van bedrijfsopties voor de organisatie aan.

- 9. Hoe zou u het proces van de selectie van ICT oplossingen beschrijven?
- 10. Hoe heeft de huidige staat van ICT invloed op het opstellen van de ICT strategie?
- 11. Hoe beïnvloeden (nieuwe) wetten en regels het opstellen van de ICT strategie?
- 12. Uiteindelijk is de gemeente gebonden aan budget. Waar wordt de keuze voor een specifieke ICT gebaseerd?
  - a. Welke actor is hierin het meest betrokken? Wethouder, CIO, council?
- 13. Hoe hebben risico's die bepaalde technologieën meebrengen (gevolg van ICT) effect op de selectie van ICT?

#### ICT moet worden verankerd in een organisatie.

14. In hoeverre heeft de input van de organisatie (impliciet en expliciet) invloed op de inhoud van de ICT strategie ?

## Acquisitie

Er zijn meerdere opties voor de acquisitie van ICT. Naast interne ontwikkeling kan dit ook samenwerken met externe partijen, of inkopen bij externe partijen zijn. Deze vragen gaan in op de keuze voor het al dan niet hebben van een samenwerkingsverband, en welke voor en nadelen daar bij komen kijken.

- 15. Ontwikkelen jullie intern ICT? Zo ja, hoe en wat?
- 16. In het geval van externe ontwikkeling of een samenwerkingsverband, met welke partijen werken jullie samen?
- 17. Waar voegen deze externe partijen hun waarde toe?
- 18. Hoe zijn deze externe partijen gekozen?
- 19. Van elk van deze partijen, waar in het opstellen van de ICT strategie worden zij betrokken/geraadpleegd?
- 20. Hoe zou je het doel van de samenwerking op ICT vlak beschrijven? (Hoe haal je de kennis in huis?)
  - a. Voorbeelden zijn:
    - i. Leren: een samenwerking waarin geleerd wordt door alle partijen. Daarnaast kan het ook het gezamenlijk ontwikkelen zijn.
    - ii. Leunen: wanneer een gemeente op een andere gemeente leunt op het gebied van ICT, dan leunen zij op de andere gemeente. Het is vaak een simpele, snelle methode, maar leveren vaak geen lange termijn oplossingen voor problemen.
    - iii. Benutten: volledige integratie van alle ICT activiteiten bij andere partners. Het zorgt voor een geheel nieuw portfolio en daarmee voor nieuwe opties.
    - iv. Anders, namelijk.

Tot slot wordt er ook gekeken naar de context waarin opbouw van de ICT strategie zich afspeelt. In deze wordt de publieke organisatie en klein-middelgrote organisatie als beïnvloedende factoren gezien.

## Publieke organisatie

- 21. Vanuit een politiek perspectief, wat voor een invloed heeft de politieke kleur van een wethouder op het opstellen van de ICT strategie?
- 22. Hoe beïnvloedt het hebben van politiek succes of progressie de doelen waarnaar de ICT strategie toewerkt?
- 23. In hoeverre zijn benchmarks meegenomen in de kostenbepaling van ICT?

## Kleine en middelgrote organisatie

24. Hoe beïnvloed de grootte van de organisatie de selectie en acquisitie van ICT?

# **Appendix B: Municipal ICT strategy**

In order to get an insight in the actions that are currently taken, the ICT strategy is analysed. Often, the published documents contain a full information policy, but this study is limited to the ICT part of this information policy. From this perspective, the relevant points are extracted. This document analysis should give insight in what the main focus points of ICT strategy are, so it can be related back to the process that led towards this strategy. This will be linked with the theoretical background (chapter 2). These two sources, singular and combined, should be the main bases for the interview questions.

## **Case 1: Venray**

The first document analysis is on the municipality of Venray. They present their plan on information policy by a 60 page document. The table underneath presents the main factors that influence the ICT strategy. Next, the notion of the influence of the strategy process has been interpret. Where does the factor come from, how is it established. By the interpretation of these factors, a corresponding question for the interview is given. This should lead to insight in the ICT strategy process of the specific municipality. Next, it is linked with the literature and generalized, to come up with one general interview protocol for all interviewees, which can be found in appendix A.

Factor that influences ICT Strategy	Impact on the ICT strategy process	Corresponding question for interview (general interview)	Dimension
Collaboration with chain partners and other municipalities	Cost reduction Complexity of ICT related questions	<ul> <li>Where does the collaboration originate from?</li> <li>How are the collaborating partners chosen?</li> <li>How do you anticipate on the partner, whilst creating the ICT strategy?</li> </ul>	Acquisition
Limited availability in resources	Choices have to be made. How did you come to choice of working data driven as a pillar?	<ul> <li>As budget is not unlimited, resources are. So, on what is the choice of the specific pillar(s) based?         <ul> <li>What is the role of the council in deciding the direction? Same for CIO? Alderman? Other?</li> </ul> </li> </ul>	Selection
Potential extra 2 FTE for realising goals.	More workforce to do innovation.	What are enabling factors in technological development?	Timing
Increasing ICT costs	Nationwide trend of increasing costs, but how much is desirable, as it takes money of the total budget.	How does the nationwide increasement of ICT costs affect the decision on ICT investment?	• Relation selection & acquisition
Laws and regulations	Create a norm for the realisation of information strategy.	<ul> <li>How is each of these following laws or initiatives processed into the ICT strategy?</li> <li>Omgevingswet</li> <li>Wet hergebruik overheidsinformatie</li> </ul>	Context     foresight

Table A1: Venray ICT strategy analysis.

Base digital service	What is absolutely necessary for the citizens	<ul> <li>Wetsvoorstel open overheid</li> <li>Besluit digitale toegankelijkheid overheid</li> <li>elD – identificatie en authenticatie</li> <li>Algemene verordening gegevensbescherming (Avg)</li> <li>Baseline Informatiebeveiliging Overheid (BIO)</li> <li>What is the starting point of the process?</li> <li>E.g. improving services (internally</li> </ul>
Policy goals of the Information & automatization team	Who decides?	<ul> <li>or externally), council, alderman.</li> <li>Who comes up with the initiatives and rules out certain directions?</li> <li>Context foresight</li> </ul>
Focus on technology	In Venray, all of the following techniques are applied within projects: Gemeentelijke Gemeenschappelijke Infrastructuur, Digital twin, smart cities (IoT), sensordata, Common ground, blockchain.	<ul> <li>There is no clear focus. Why is not chosen to opt for some specific technologies and develop those?</li> <li>What process creates the environment to implement every technology successfully?</li> </ul>
Number of projects or initiatives that have information- or ICT- components involved: 120	Lack of focus, as the developing information team was surprised by the high number.	<ul> <li>The more demanding need of ICT reflects on the increasing number of projects it is involved in. What ensures all ICT in the projects are covered and well supported (or as much as possible)?</li> <li>Relation selection &amp; acquisition</li> </ul>
Focus for ICT development is until 2029	Lock in	<ul> <li>Where comes the 10 year scope from? Who determines the scope?</li> <li>Timing</li> </ul>
Political choices	From a political point of view, the interest can be different among political parties	See underneath.  • Relation selection & acquisition

This presented analysis of the plan on information policy of Venray, is an example of the plan is has been worked out. However, leading up to plan, the local council had to approve it choose one of the three ambition levels as presented in the plan. The chosen ambition level, the middle ambition, was chosen in 2019 by the local councils. As there was 1 vote against and the rest all in favour, there were no political contradictions. Still, one could wonder whether the formation of the local council or political of the alderman influences the process of ICT strategy.

Regarding the ambitions levels in the plan, one could ask why all three ambitions levels are still within the plan, whilst only one is chosen to pursue, as it influences the timing of the strategy massively. Lastly, the wait and see

attitude of the local council, as concluded from the amendment, suggests that the timing is dependent on the politics.

Besides the information plan, the following research questions may be relevant for the ICT strategy process:

- How does the political colour of the local council effect the strategy process?
  - Do the initiators of the ICT strategy take the political composition of the local council into account during the process of creating ICT strategy?
- How is timing a part of the strategy?
- What is the effect of the possibility of changes in the plan

## **Case 2: Roosendaal**

Not publicly available.

## **Case 3: Medemblik**

NA.

## Case 4: Rijswijk

The second document analysis is on the municipality of Rijswijk. They have not presented their information policy publicly, but an analysis of the Rekenkamer on their information policy and provision gives insight in the process leading towards the ICT strategy (Rekenkamer Rijskwijk, 2018). Since it is an advisory report, it mostly contains criticism on what to improve upon. However, it contains information on the process towards making an ICT strategy as well, where it especially gives insight in the role the actors have in the process. The report urges to council to develop knowledge on the Apparently, as it is the local council does not have the expertise upon information policy, due to which they are not involved, although information around information policy is provided. In regard of the strategy process, in Rijswijk the local council do not have a significant role within the process of making the ICT strategy. They do not provide information regarding difficult trade-offs that have to made. An explicit example of such a trade-off was given by Rekenkamer Rijswijk where the trade-off between handling fast and citizen friendly or carefully and safe with citizen-related data had to be made, as a solution to provide both has not been found yet.

Factor that influences ICT Strategy	Impact on the ICT strategy process	Corresponding question for interview (general interview)	Dimension
The local council is not actively involved during the composition of the ICT strategy.	Lack of legitimacy. Difficult trade offs are fundamental and principal issues not overseen by the local council.	<ul> <li>How does the need for political success and progress affect the goals that the ICT strategy works towards?</li> </ul>	• Public organisation
Unknown portfolio	Difficulty in prioritization for new ICT or ICT development.	How does the current state of ICT affect the ICT strategy process?	Selection
No training for employees	Staying in touch with the evolution of ICT.	<ul> <li>What is the influence of the input (implicit (skills and resources)) and explicit</li> </ul>	Selection

#### Table A2. Rijskwijk ICT advisory report analysis.

			(demands) from the organisation on the strategy formation?		
Collaboration GRB (Gemeenschappelijke Regeling Bedrijfsvoeringsorganisatie Delft – Rijkswijk)	Outsourcing a part of the ICT strategy. (But mainly maintenance and management)	•	Where do these external parties add their value? How would you describe the goal of collaboration regarding ICT?	•	Acquisition
Change Advisory Board (CAB)	Risks of changes in ICT are thoroughly studied.	•	How do risks of a certain ICT affects the selection choice?	•	Selection
No frameworks or guidelines are presented by the alderman nor local council towards the civil servants.	The influence does not come from a politically legitimised point of view. The policy makers view.	•	<ul> <li>From a political perspective, how does the political colour of alderman effect the strategy process?</li> <li>Do the initiators of the ICT strategy take the political composition of the alderman and local council into account during the process of creating ICT strategy?</li> </ul>	•	Public organisation
The ambitions and challenges within different domains are well accounted in the Information policy.	Information from the domains is gathered to include in the strategy process.	•	What are the starting points of the ICT strategy formulation?	•	Selection

# Appendix C: Linkage between literature, case and interview

The questions as presented in the interview link to case literature and case analysis. Combined, it formed the input of the interview questions. This table ensures that the questions are based upon literature and – vice versa – that the aspects found in the pre case analysis of Venray, were linked to the literature.

Literature subject	Interview question	Case analysis
Type of collaboration	4, 9-12, 14, 19	Collaboration with chain partners and other municipalities for cost reduction and ICT complexity;
Dimensions of strategy: what the process should lead to	6, 7, 13, 20, 21, 22	Limited availability in resources Focus (on technology);
Innovation: how to adapt to new technologies	15, 18, 20, 22	ICT scope; Focus on technology; Timing;
Smaller firms	7, 8, 12, 14, 15	Limited availability in resources; Focus
ICT strategy		
Internal External	4, 15, 20, 21 9-12, 19	ICT scope, Enabling factors; Focus on technology Time horizon

Table A3. Linking	subject of literature to	interview questions.

# **Appendix D: Interviewees**

The table presents a brief overview of the interviewees. The reports of the interviews have been anonymised. The names of the interviewees are known to the researcher.

Case	Function description interviewee	Reference
Venray	Information Advisor	R1
Venray	Information manager	R2
Venray	Local council	R3
Venray	Local council	R4
Venray	Information manager	R5
Roosendaal	Information advisor	R6
Roosendaal	Information advisor	R7
Roosendaal	CISO	R8
Roosendaal	Alderman	R9
Rijswijk	Information Advisor	R10
Rijswijk	Service level manager	R11
Rijswijk	Information advisor	R12
Medemblik	Information manager	R13

Table A4. The interviewees from all the cases.

## Appendix E: Linkages between factors of the different dimensions

The figure below shows how the various factors in the ICT strategy process influence each other. It shows that there are quite a few dependencies between the different factors. This is also the reason why the trade-offs as presented in chapter six are so extensive. It is often a weighted situation in which certain preferences push factors through. The purpose of adding this model is to show that the ICT strategy process is a coherent whole, which does not necessarily have a logical order. Some relationships cannot be directed, for example technological development can result in both more and less risk. Therefore, no directions are attached to the connections.



Figure A5: Linkages between factors of the ICT strategy process.