Bachelor thesis

Factors influencing the development of GovTech in France and Germany: A realist review

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Abstract

This study analyses the factors influencing the development of GovTech in Germany and France between 2017 and 2022. GovTech stands for Government Technology and defines the close cooperation between the state and innovative startups to develop innovative solutions for public sector organisations. The factors promoting and impeding its development are examined in an exploratory way using the realist review method. The following research question guides this study: *What are the factors influencing the development of GovTech in France and Germany between 2017 and 2022?* The relevance of the thesis lies within the recency of the phenomenon, which has not yet been captured by academia but is very present in public administration practice. Due to the novelty of the GovTech phenomenon and associated data issues, the research strategy had to be adapted along the way. The study showed that factors such as the 'procurement framework', the 'technical access to the state' or 'meetup opportunities for startups/SMEs and the state' influence the development of GovTech. Further research on this topic could investigate the development of GovTech in other regions or remediate the faced issue once the data is available. Finally, recommendations for practitioners to help develop GovTech are derived from the findings.

Keywords: Collaborative Governance, GovTech, Public Innovation, Realist Review

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List of abbreviations

ANSSI	National Agency for Information System Security
API	Application Programming Interface
BMI	Federal Ministry of the Interior, Building and Community
DINUM	Interdepartmental Digital Directorate
eID	Electronic Identification
EU	European Union
GovTech	Government Technology
GTGP	GovTech Global Partnership
KOINNO	Competence Centre for Innovative Procurement
NPG	New Public Governance
NPM	New Public Management
NWS	Neo-Weberian State
PA	Public Administration
PPP	Public-Private Partnership
RAMESES	Realist and Meta-Narrative Evidence Syntheses: Evolving Standards
SME	Small and Medium-Sized Enterprise
USA	United States of America

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1. Introduction

1.1. Background

The digital transformation of the public sector is characterized by the striving for a more user-centred value creation (Mergel, Edelmann & Haug, 2019, p. 9). Previous efforts to achieve this goal heavily relied on the internal development of innovative solutions. However, many of these attempts did not pass the finish line or were not well received by citizens. For instance, one could cite the German electronic identification (eID), whose acceptance rates are unexpectedly low (Harbach, 2013) or the German digital driving license, which had to be retracted less than a month after its launch (Muth, 2021). This reality led to a paradigm shift within public administration (PA). Public sector innovation, which used to be mainly internal and closed, increasingly moved towards an "external, open and co-productive logic of co-designing public services" (Mergel, 2018, p. 2). This change is inherently connected to the paradigm shift from New Public Management to New Public Governance, which characterises a change from market-like methods within public administration towards a more collaborative way of working within networks (Osborne, 2010, p. 9). Within this context, the phenomenon of GovTech emerged in recent years.

As the concept of GovTech is new, no unequivocal definition has yet emerged. However, the main idea behind it is that increased cooperation between the public sector and young innovative companies such as startups or SMEs can lead to more innovative public service delivery or improve internal processes within public organisations (Mergel et al., 2022, p. 14). This cooperation does not take the form of a simple commercial relationship. Instead, cooperation can be seen as a form of network where the service provision is based on a strong relationship involving trust and reciprocity. This makes learning from one another and transmitting new knowledge and skills possible (Powell, 1990, p. 304). Filer (2019, p. 4) defines GovTech as "an emergent innovation ecosystem in which private-sector startups and innovative small and medium enterprises (SMEs) deliver technological products and services, often using new and emerging technologies, to public sector clients". Her definition will be used in this study to analyse this emergent phenomenon.

1.2. Scientific and Societal Relevance

The societal relevance of focusing the research on GovTech lies within the benefits GovTech can have on state modernisation and digitisation. As one can derive from the definition, the co-production between the state and startups/SMEs is expected to be greatly beneficial to governments. The idea that startups can disrupt governments' public service delivery and internal processes stems from the disruptive changes startups generated in other sectors, such as the disruption of the finance sector with FinTech startups (Gomber et al., 2018). Many states recognised this potential, which has already paved the way for multiple initiatives, all sharing the final goal to accelerate, promote and enhance the state-

startup cooperation in public value creation. Among these, one can cite the 'GovTech Catalyst' or 'Digital Marketplace' initiatives in the UK, the 'GovTech Lab' in Lithuania or 'GovTech Polska' in Poland (Maciej et al., 2022, p. 6). The societal importance of current GovTech developments can also be seen in multiple projects of international organisations such as the World Bank's 'GovTech Global Partnership – GTGP' (World Bank, n.d.) or the EU commission's 'GovTech Incubator' (European Commission, 2022). In fact, the cooperation between the state and startups has already had genuine benefits in multiple countries. For instance, the startup *Element* has developed the secure messaging app *Tchap* for French civil servants or *BwMessenger* for the German military. In both cases, the cooperation with startups helped the French and German governments to produce an innovative solution tailored to their needs (Loynes, 2020). There are numerous other examples of successful GovTech collaborations (cf. Vialytics GmbH, n.d.; Rolland, 2019; Polyteia GmbH, 2022; GovRadar, n.d.; Ambler, n.d.). These help in accelerating state digitisation and modernisation, which, in the end, benefits society in general. Focussing this thesis on the emerging phenomenon of GovTech helps to get a better grasp on its practical implications on public administration and society.

The scientific relevance lies within the lack of scientifically based knowledge of the GovTech phenomenon. As a matter of fact, the GovTech phenomenon is already well-established in public administration practice but has not yet captured the interest of academia and scientific research on the subject is still meagre. A search in the Scopus database at the time of writing showed that merely eleven articles use the word 'GovTech' in their title, abstract, or keywords. Out of these eleven articles, only five articles have the topic of GovTech at the core of their research. Among these, the focus lies on two points: the risks and benefits of GovTech (cf. Bharosa, 2022; Davydova, 2022; Engin & Treleaven, 2019) and the characteristics of specific GovTech collaborations (cf. Yoshida & Thammetar, 2021; Yoshida & Theeraroungchaisri, 2021). To the authors knowledge, no prior studies have examined the development of GovTech. Understanding how different factors might support or hamper the development of GovTech would be genuinely helpful to better understand the GovTech dynamics. By filling this knowledge and research gap, the analysis of the development of GovTech becomes scientifically highly relevant.

In a nutshell, the scientific analysis of the development of the GovTech phenomenon is not only relevant to practitioners and society in general but also contributes to more scientific knowledge in a yet unexplored field.

1.3. Research Question

Understanding the dynamics of the GovTech development would lead to a better understanding of the general phenomenon and offer practitioners valuable insights. Since the GovTech phenomenon is mainly developing in Europe (Taylor & Viner, 2021), a focus on this region is preferable. Preliminary research showed that a significant amount of GovTech initiatives appeared in Germany and that the

term ‘GovTech’ is extensively used there. This is less the case in the neighbouring country France. Comparing both countries offers additional information about possible factors contributing to the development of GovTech. The selection of these two countries is further justified in the methodology chapter. Additionally, the analysis of temporal developments and the comparison between the situation before and after the COVID-19 pandemic provides a better understanding about the phenomenon. Therefore, the focus lies on a short time period of the last five years. The analysis of GovTech in these two countries helps in understanding what factors impede or support its development and might offer valuable insights to practitioners. This leads to the following research question:

What are the factors influencing the development of GovTech in France and Germany between 2017 and 2022?

The research question makes up the foundation of this explorative thesis and is answered in the final part of this work. One theoretical sub-question and three empirical sub-questions are formulated to help in answering the research question:

1. *How does theory underpin possible factors influencing the development of GovTech?*

This sub-question will help lay the theoretical foundations of the GovTech phenomenon and will provide an analytical framework for the in-depth analysis of the factors influencing the development of GovTech.

2. *What is GovTech as a phenomenon?*

The second sub-question will clarify the GovTech characteristics and will examine concrete examples of GovTech collaborations in order to understand what GovTech encompasses before analysing its development.

3. *How did GovTech develop in France between 2017 and 2022?*

The third sub-question will analyse the temporal development of GovTech in France.

4. *How did GovTech develop in Germany between 2017 and 2022?*

The fourth sub-question will investigate the temporal development of GovTech in Germany.

From these sub-questions, programme theories are derived following the realist review method. These are then tested in the analysis chapter and will ultimately help in answering the main research question.

1.4. Structure of the Thesis

This study aims to uncover the factors influencing the development of GovTech and aims at offering beneficial insights into current public administration developments. To systematically answer the research question, a theoretical ground is first presented. The choice for a particular analytical framework is justified and core concepts are explained. Subsequently, the method used to answer the research question is outlined. Information about the chosen research design, the collected data and the data analysis is provided. Then, the selected documents are analysed, the sub-questions are answered and the factors influencing GovTech are identified and discussed. In the concluding chapter, an answer to the main research question is provided, the strengths and limitations of the study are reflected upon, suggestions for further research are given and practical implications are discussed.

2. Theory

To conduct the research, a theoretical framework is needed to contextualise and scope the realm of the topic. In this chapter, firstly, the *New Public Governance* paradigm and its two antecedents are discussed. Subsequently, the concepts of *public sector innovation* and *collaborative innovation* are clarified. The following two parts examine the theoretical foundations of *collaborative governance* and *GovTech* and show how the two are connected. Ultimately, the analytical framework chosen for this thesis and the level of analysis are observed. Altogether, this will allow an answer to the theoretical sub-question, which asks: *How does theory underpin possible factors influencing the development of GovTech?* This will then provide the theoretical foundation to answer the central research question.

2.1. New Public Management, Neo-Weberian State and New Public Governance

The current development of GovTech, which defines the increasing cooperation between the public sector and innovative startups/SMEs, occurs within the context of New Public Governance. To understand this paradigm, one must first look at the two previous and co-existing paradigms New Public Management (NPM) and the Neo-Weberian State (NWS).

NPM was the leading paradigm in public administration research and practice from the 1970s until the beginning of the 21st century. It took over the traditional public administration approach of bureaucracy, which after the post-war boom got increasingly criticised by scholars and politics (Osborne 2007, p. 378). According to Mazur and Kopycinski (2018, pp. 38-39), the paradigm of traditional public administration was strongly influenced by three intellectual currents. The first focuses on creating neutral and professional civil servants, as in Wilson's (1887) seminal article *The Study of Administration*. The second current concentrates on applying reliable principles of management. One example is the acronym POSDCORB to characterise the work of a chief executive in Gulick's (1937) *Notes on the Theory of Organization*. The last intellectual current mainly stems from Weber's view of public administration as "a hierarchically structured, professional, rule-bound, impersonal, meritocratic, appointed, and disciplined body of public servants with a specific set of competencies" (Sager & Rosser, 2009, p. 1137). In a context of fear of government failures and a severe trust in the efficiency of capitalist markets, NPM became the dominant public administration paradigm at the end of the 20th century (Bryson et al., 2014, p. 447).

NPM is characterised by a "strong business-type 'managerialism' […], in the tradition of the international scientific movement" (Hood, 1991, pp. 5-6). This means that private-sector managerial techniques took over traditional methods to achieve more efficiency and effectiveness (Osborne, 2007, p. 379). However, the concepts of 'hands-on management', 'arm's length organizations', 'performance management' and 'cost management' rapidly lost their relevance and received a lot of criticism. As a result, the late 1990s and early 2000s were characterised by a new wave of ideas, which eventually

replaced the NPM paradigm. Concepts like ‘networks’, ‘governance’ or ‘partnerships’ were increasingly discussed (Pollitt & Bouckaert, 2017, pp. 10-11). Among these concepts and models, the Neo-Weberian State (NWS) and New Public Governance paradigms appeared.

The NWS paradigm incorporates similar principles to the ones of NPM, such as the ‘external orientation toward citizens’, ‘results orientation’, as well as ‘management professionalism’, but also insists on characteristics of the Weberian bureaucratic organization such as ‘the centrality of the state’, ‘preservation of public service’ and ‘representative democracy’ (Dunn & Miller, 2007, p. 352). As Politt and Bouckaert (2017, pp. 10-11) summarise, NWS’s core claim is “[t]o modernize the traditional state apparatus so that it becomes more professional, more efficient, and more responsive to citizens. Business-like methods may have a subsidiary role in this, but the state remains a distinctive actor with its own rules, methods, and culture”.

Without the goal of replacing NWS, Osborne (2007, p. 384) developed another paradigm coined New Public Governance (NPG) which emphasises pluralism and inter-organisational relationships that shape the governance of processes. This paradigm has other names such as ‘New Governance’ or ‘Public Governance’ (Runya et al., 2015, p. 12) and takes place in a broader model called ‘Governance’ which has the core claim to “make government more effective and legitimate [through the mechanism of] networks of and partnerships between stakeholders [which] bring different skills and resources to address complex problems” (Pollitt & Bouckaert, 2017, p. 22). Applying this to the current research focus, these complex problems could be the digitisation of public administration or the design of user-centred solutions, which can be developed with stakeholders from the private sector, such as startups and SMEs. Actually, the current paradigm of NPG sets facilitating structures to deal with these challenges through innovative solutions (Sørensen & Torfing, 2015, p. 164; Torfing & Triantafillou, 2016, p. 327). This is known under the name of public sector innovation and collaborative innovation.

2.2. Public Sector Innovation and Collaborative Innovation

One must distinguish between innovation in the private and the public sector. Whereas innovation is necessary for private sector companies to achieve a competitive advantage, strive in the market and not succumb to more innovative companies (Schumpeter, 1942), public sector organisations, due to their distinct properties (cf. Rainey et al., 1976), do not have the same strong incentives to innovate. Osborne and Radnor (2016, p. 54) define innovation as “a form of change that involves discontinuity […] which is not incremental improvement but rather involves genuine ‘newness’”.

Even though some scholars argue that the state does generate considerable amounts of innovation, for instance, in the nuclear, health, biotechnology or space sectors through the DARPA (Defense Advanced Research Projects Agency) in the USA (Mazzucato, 2015, pp. 80-81), many scholars and officials argue that the actual degree of public innovation is not enough and demand more. For instance, Boomert (2010, p. 15) underlines that the current innovation within public administration is not enough

to tackle the challenges the world is facing at present, such as climate change, ageing society, or general health issues. This is also underlined by the OECD (2010, p. 6) in an Innovation Strategy report.

The awareness of those innovation boundaries of public administration and the transition from a more purchaser-provider split in the context of New Public Management towards more co-producing partnerships in the context of New Public Governance (Hartley, 2005, pp. 28-29), led to the belief that joint innovation with exterior partners in the form of networks and partnerships could contribute to more innovation in the public sector and help to solve contemporary issues of PA. "There is growing evidence that multi-actor collaboration in networks, partnerships and inter-organizational teams can spur public innovation. […] The involvement of different public and private actors in public innovation processes may improve the understanding of the problem or challenge at hand, bring forth new ideas and proposals, and build joint ownership of new and bold solutions" (Sørensen & Torfing, 2015, p. 145). In academic literature, this is known as 'collaborative innovation' or as 'collaborative governance', and it is expected to help deal with the growing amount of 'wicked problems' and to help meet external expectations and demands (Emerson & Nabatchi, 2015, p. 6; Torfing, 2013, p. 301). Although multiple empirical analyses and case studies have proved the positive impact and benefits of collaborative governance, the mere collaboration between different actors does not always produce public sector innovation. Several factors can influence whether collaborative innovation is successful or not (Sørensen & Torfing, 2011, p. 852-854). These factors are discussed in the academic literature about collaborative governance.

2.3. Collaborative Governance

'Collaborative governance', which derives from the previously discussed New Public Governance paradigm, can be defined as a "type of governance in which public and private actors work collectively in distinctive ways, using particular processes, to establish laws and rules for the provision of public goods" (Ansell & Gash, 2008, p. 545). Other authors have a broader understanding and include the non-profit sector and citizens in the collaborative process (cf. Bingham, 2011).

In this thesis, the emphasis lies on the collaboration between actors from the private and public sectors. What distinguishes collaborative governance from other theoretical concepts such as 'governance' or 'public-private partnerships (PPP)' is its attention to the collaborative process through which particular policy objectives are achieved (Bingham, 2011, p. 387). Governance literature broadly concentrates on "contextual influences that shape the practices of public administration" (Frederickson, 2005, p. 2) and PPP literature focuses on institutionalised and formal arrangements between the public and private sectors including large infrastructure projects (Greve & Hodge, 2010, p. 149). Collaborative governance literature aims to understand how the collaborative processes can be designed to achieve better results (Emerson & Nabatchi, 2015, p. 9). This thesis aims to explore the diverse factors influencing the development of GovTech, thus the factors influencing the collaborative process between

public sector organisations and young and innovative companies. Therefore, the theoretical framework of collaborative governance was chosen, and governance and PPP theories were excluded. Over the last decade, research on this topic has identified multiple factors influencing the success of such collaborations. From there, different analytical frameworks were developed (cf. Ansell & Gash, 2008; Bryson et al., 2006; Emerson et al., 2012; Thomson & Perry, 2006). These different frameworks distinguish themselves in the (specificities of the) variables which are expected to significantly influence the success of collaborative processes (Bryson et al., 2015, p. 649). For instance, Thomson and Perry (2006, p. 648) focus on variables like *Organizational autonomy* or *Mutuality*. Bryson et al. (2006, p. 45) underline that the *degree of formality of processes and structures* have the most significant effect on collaborative governance. Ansell and Gash (2008, p. 550) believe that variables such as *Facilitative Leadership*, *Imbalances* or *Institutional Design* have the most influence on the collaborative governance process. As explained in the subsequent sections, GovTech being a form of collaborative governance, it can be analysed through these frameworks.

2.4. GovTech

The variables from these analytical frameworks could help understand which conditions need to be met for GovTech to develop successfully. Most articles and reports understand GovTech as close cooperation between the state and young and innovative companies such as startups, aiming to deliver better public services. This would match the definition of collaborative governance. However, one must first dive into the theoretical groundings of the term GovTech. The last EU Joint Research Centre report from Mergel et al. (2022, p. 14) states that "most definitions share the following three common elements: (1) the public sector engages with startups and SMEs to procure innovative technology solutions, (2) for the provision of tech-based products and services, (3) in order to innovate and improve public services". Some other academic definitions do not include all these elements. For instance, Bharosa's (2022, p. 3) and Yoshida and Thammetar's (2021, p. 53) definitions do not include the first aspect of the definition from Mergel et al. (2022). Further, the World Bank defines GovTech in a broad way as "a whole-of-government approach to public sector modernization [that] promotes simple, efficient, and transparent government with the citizen at the center of reforms" (World Bank, 2022, p. 3). These disparities in the definition of GovTech are normal since the phenomenon is recent and no clear and unequivocal definition has yet crystallised. For this thesis, the definition of GovTech offered by Filer (2019), which includes all three aspects by Mergel et al. (2022) is used. The essence of this understanding of GovTech matches the definition of collaborative governance by Ansell and Gash (2008). Therefore, the collaboration between the state and startups/SMEs to produce better public value is a form of collaborative governance. These parallels between GovTech and collaborative governance make the use of collaborative governance frameworks possible. They can be used as theoretical and analytical foundation for the analysis of factors influencing the development of GovTech. The topic of

collaborative governance, in contrary to the phenomenon of GovTech, has been investigated extensively by scholars. As seen before, especially the variables hampering or promoting collaborative governance were thoroughly analysed (cf. Ansell & Gash, 2008; Bryson et al., 2006; Emerson et al., 2012; Thomson & Perry, 2006). Applying one of these frameworks to the phenomenon of GovTech could help in focusing the analysis on certain aspects to help understand which factors contribute to the development of GovTech.

2.5. Analytical Framework and Level of Analysis

The analytical framework by Ansell and Gash (2008) is the most influential collaborative governance framework (Batory & Svensson, 2020, p. 781). Therefore, in the current study it is used to analyse the factors influencing the development of GovTech. In their work *Collaborative Governance in Theory and Practice* (2008), Ansell and Gash reviewed 137 cases of collaborative governance, which allowed them to identify the following critical variables that contribute to successful collaborations: (1) the *Prior History of Conflict or Cooperation*, (2) the *Incentives for Stakeholders to Participate*, (3) *Imbalances*, (4) *Leadership*, and (5) *Institutional Design*. The first three variables set out the starting conditions for collaborative projects. The latter two influence the success of collaboration before and during the collaborative process. These variables determine whether collaborative processes between public and private actors are successful or not (Ansell & Gash, 2008). The influence of these variables on the collaborative process is illustrated in *Figure 1*. In this thesis, it is assumed that factors influencing the success of GovTech collaborations also influence the development of GovTech in general. Thus, using Ansell and Gash's analytical framework provides a solid base to analyse potential factors influencing the development of GovTech.

The first variable of the framework focuses on *Prior History of Conflict or Cooperation*. Depending on whether there is a prehistory of conflict or not, the level of trust between the two parties can be rather low and cases of suspicion or fear can arise. These "can translate into low levels of commitment, strategies of manipulation, and dishonest communications" (Ansell & Gash, 2008, p. 553).

The second variable emphasises the role of *Incentives for Stakeholders to Participate*. Collaborative processes usually are voluntary and there must be strong enough incentives for all stakeholders to participate. "Incentives to participate depend in part upon stakeholder expectations about whether the collaborative processes will yield meaningful results, particularly against the balance of time and energy that collaboration requires" (Ansell & Gash, 2008, p. 552).

The following variable *Imbalances* can be summarised as follows: "If there are significant power/resource imbalances between stakeholders, such that important stakeholders cannot participate in a meaningful way, then effective collaborative governance requires a commitment to a positive strategy of empowerment and representation of weaker or disadvantaged stakeholders" (Ansell & Gash, 2008, pp. 551-552). The *Imbalances* can take the shape of missing organizational infrastructure or

lacking skills and expertise (for instance, technical skills) to participate in collaborative processes. Also, time and energy are essential resources that need to be given on both sides to achieve successful collaborations.

The fourth condition for successful collaborations is *Facilitative Leadership*. Leadership is necessary to establish "clear ground rules, building trust, facilitating dialogue, and exploring mutual gains [and to] empower […] and represent […] weaker stakeholders" (Ansell & Gash, 2008, pp. 554-555).

Finally, the variable *Institutional Design* concentrates on "basic protocols and ground rules for collaboration, which are necessary for the procedural legitimacy of the collaborative process" (Ansell & Gash, 2008, p. 55). For instance, open and inclusive criteria to access the collaborative process and transparent procedures need to be given for a successful collaboration. The mentioned variables influence the development of collaborative governance and analysing them in the context of Germany and France between 2017 and 2022 will help to understand which factors contribute or not to the development of GovTech. Therefore, using Ansell and Gash's analytical framework (2008) helps to answer the thesis' main research question. Depending on the presence of the variables in the analysed documents, the focus of the analysis might only be on a part of these five variables.

To analyse whether these are present or not and, if yes, in which form and shape, a macro level of analysis is adopted in this research. The analysis concentrates on investigating the variables at state level. For instance, measures and actions incentivising actors to engage in GovTech activities are verified or procedures to compensate for possible *Imbalances* are checked on state level.

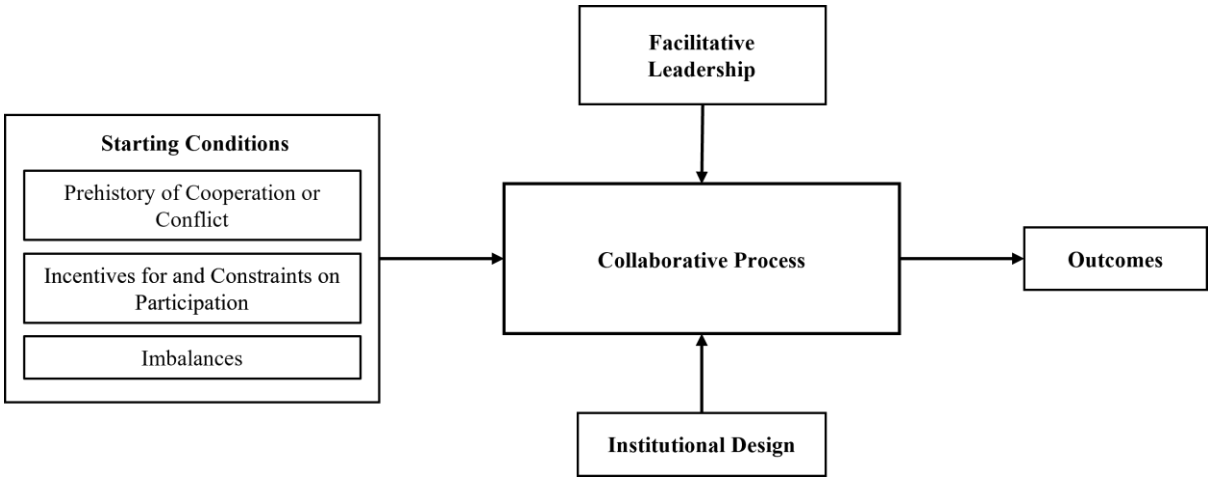

Figure 1. Analytical framework. Adapted from Ansell and Gash (2008).

2.6. Concluding Remarks

The acquired theoretical foundation makes it now possible to answer the first sub-question of the thesis, which asked: *How does theory underpin possible factors influencing the development of*

GovTech? It was shown that in the context of New Public Governance, public actors increasingly rely on the collaboration with external actors to innovate and respond to modern challenges such as the digitisation of public administration. In academic literature, this is known under the term 'collaborative governance'. The theoretical discussion showed that GovTech is a form of collaborative governance. From there, different collaborative governance frameworks can be used to identify the factors influencing the development of GovTech. For this thesis, the analytical framework by Ansell and Gash (2008) was chosen. The framework outlines multiple factors influencing collaborative processes like GovTech. These are illustrated in *Figure 1*. For instance, factors belonging to the *Facilitative Leadership* dimension or to the *Institutional Design* can influence the development of GovTech. This is how theory underpins possible factors influencing the development of GovTech and helps in answering the thesis' main research question.

3. Methods

This chapter aims to describe and justify the methods used to find an answer to the research questions. In the first part of this chapter, the general research design is described and its ability to answer the research question is clarified. Subsequently, the choice of the two cases, France and Germany, is explained and justified. Next, the realist review is explicated, and the choice of this particular method sustained. Then, the collection process of relevant data is clarified. The penultimate part explains the data operationalisation based on the theory-driven coding scheme. Finally, the last part lays out the data analysis procedure, details the change in research strategy and discusses potential issues resulting from the choice of the method.

3.1. Research Design

The research design derives from the thesis' research aim. From there, a qualitative and exploratory research design is adopted to answer the research question and understand which factors impede or support the development of GovTech in France and Germany. An exploratory design is necessary because of the recency of the phenomenon and the limited number of academic sources on possible factors contributing (or not) to the development of GovTech. For the same reasons, the use of a qualitative design is the most suitable. As a matter of fact, a qualitative research design allows an in-depth understanding of a new phenomenon (Lune & Berg, 2017, p. 16) and provides ground for future quantitative research on this topic (Ochieng, 2009, p. 17). Additionally, the qualitative focus on the two selected cases suits well the exploratory nature of this thesis and can help in confirming and disconfirming expected influences (Seawright & Gerring, 2008, pp. 297-298).

Further, a longitudinal and comparative approach is taken to achieve more nuanced and meaningful results. The longitudinal and comparative approach from 2017 to 2022 are expected to offer additional insights and might give an idea about the role of the COVID-19 pandemic on the development of GovTech.

3.2. Case Selection

This thesis takes the two states, Germany and France, as units of analysis to study the development of GovTech. This choice was made for multiple reasons. First, these two countries are currently highly interested in using the innovative potential of startups to accelerate the digitisation and modernisation of public administration. In fact, France and Germany actively use startup methods to generate innovative public services (cf. Beta.gouv, n.d.; Tech4Germany, n.d.).

Further, both countries have immense potential to develop their GovTech collaborations. In fact, both countries spend tremendous amounts of money with private companies yearly. For instance, the

public procurement volume in France reaches around 200 billion euros each year, and the market for the sale of technological products and services to the public sector is still mainly occupied by the existing players and major IT suppliers. The GovTech market in France is estimated at 16 billion euros (Girard & Fonlladosa, 2019, p. 97). In Germany, the public procurement volume exceeds 350 billion euros, and the goal is to use at least 1% of it for innovative solutions (Scheffler, 2019, p. 3). At the same time, there is also high potential on the offer side: France has more than six hundred GovTech startups[1] (Girard & Fonlladosa, 2019, p. 51), and Germany has more than three hundred GovTech startups[2] (Kilian, 2021, p. 7).

However, there seem to be more activities that promote cooperation between startups and public agencies in Germany than in France. Multiple initiatives such as the GovTech Campus (GovTech Campus, n.d.) or GovTecHH (Senatskanzlei Hamburg, n.d.) promote GovTech in Germany, whereas no governmental activities of this kind could be identified in France during preliminary research. In the logic of most different approaches, this discrepancy is expected to deliver additional insights into the possible factors contributing (or not) to the development of GovTech (cf. Anckar, 2008).

Finally, the author's linguistic capabilities allow the analysis of documents from both countries and can offer beneficial insights into the subject. For these reasons, a comparative approach between Germany and France is adopted.

3.3. Realist Review

This thesis' units of observation – the selected documents – are analysed through the realist review method. The realist review method, also called realist synthesis, is a method, which Pawson et al. (2005, p.1) in their landmark article title "a new method of systematic review". In contrary to traditional systematic reviews, which are often seen as being too inflexible and too specific (Rycroft-Malone et al., 2012, p.2), realist reviews are more flexible and heterogenous (Pawson et al., 2004, p. 13). For instance, grey literature is seen as a valuable source (Pawson et al., 2005, p. 29). Clear steps guide the researcher in its undertaking and the RAMESES publication standards ensure the quality of the methodological application (Wong et al., 2013).

The realist review method is suitable and necessary to achieve the research goal for multiple reasons. First, the aim of a realist review can be summarised as finding an answer to "what works for whom in what circumstances, in what respects and how?" (Berg & Nanavati, 2016, p. 2). When trying to understand what factors influence the development of GovTech in two countries, this is exactly what is done. Further, realist reviews' iterative, flexible, and open nature is necessary to analyse a recent phenomenon such as GovTech. Due to the recency of GovTech, not much literature or policy documents

[1] Here, 'GovTech startups' define technology startups with at least one public actor among their clients.
[2] In this case, 'GovTech startup' is conceptualized as a startup offering digital and innovative solutions that (1) are made for public sector organizations, (2) are used by public sector organizations, (3) show clear and direct applicability in public sector organizations.

are available. Moreover, the openness and flexibility of the method make it possible to use additional grey literature as units of observation. This is required in a context of scarcity of academic literature. Finally, the theory-driven approach of this method makes it possible to analyse the GovTech phenomenon from a collaborative governance perspective. For these reasons, a realist review method is fundamentally necessary to answer the set research question.

3.4. Data Collection

Qualitative data is examined to analyse the factors contributing to the development of GovTech. The data consists of French and German policy documents, strategy papers, consultancy firm reports and other official public documents. The limited number of academic literature on the subject makes a broad selection of document types essential in order to gather the necessary information to answer the research question. These documents were retrieved from various websites from consultancy firms and governments through desk research and snowballing sampling. All documents are publicly available. Following the realist review method (cf. Wong et al., 2013), the inclusion and exclusion criteria are formulated in *Table 1*. These criteria guide the data collection. The final selection is composed of 8 French documents (totalling 296 pages) and 12 German documents (totalling 254 pages). The list of German documents can be accessed in Appendix A and the list of French documents in Appendix B.

	Inclusion criteria	**Exclusion criteria**
1	Policy papers, strategy papers, consultancy reports, official public documents	Scientific articles
2	Documents addressing GovTech and state/startup collaboration	Documents addressing other topics
3	Documents from France and Germany	Documents from countries other than Germany and France
4	Documents in French, German or English	Documents in other languages than French, German or English
5	Documents published between 2017 and 2022	Documents published before 2017

Table 1. Inclusion and exclusion criteria.

3.5. Data Operationalisation

It is necessary to operationalise the central concepts to conduct the analysis. The following concepts of the research question need to be operationalised: *GovTech*, the *development* of GovTech, and the meaning of *influence*. The five variables of the analytical framework were previously conceptualised in the theory section and are summarised at the end of this section.

First, the concept of *GovTech* needs to be operationalised. GovTech means the active collaboration between public sector actors and innovative startups/SMEs. When startups/SMEs and the state collaborate on any subject, one can speak about GovTech. According to the Cambridge Dictionary, a startup can be defined as "a small business that has just been started" (Cambridge Dictionary, 2022b) and an SME as "a company that is neither very small nor very large" (Cambridge Dictionary, 2022a).

Therefore, the formulation '*development* of GovTech' in the research question means an increase in the number of collaborations between public sector organisations and startups/SMEs. Further, the thesis aims at identifying factors *influencing* this development. *Influencing* can either mean 'supporting' the development – this means increasing the number of GovTech collaborations – or it can mean 'hampering' the development – this means preventing the increase of GovTech collaborations.

The initial goal was to determine how GovTech developed in the set timeframe (2017-2022). The amount of GovTech collaborations would have been measured in the set period in both countries for each year to assess the development of GovTech collaborations. However, during the analysis, a data issue emerged. Detailed information about collaborations between the state and private companies is not freely accessible online, making it difficult to retrieve the exact number of GovTech collaborations. This makes it impossible to measure the amount of GovTech collaborations in France and Germany in the set timeframe. This led to a considerable change in the research strategy, which is detailed in the following sub-section.

Finally, the five theoretical factors expected to influence the development of GovTech need to be operationalised. The operational definition by Ansell and Gash (2008) developed in the second chapter is used and translated into the theory-driven coding scheme in *Figure 2*.

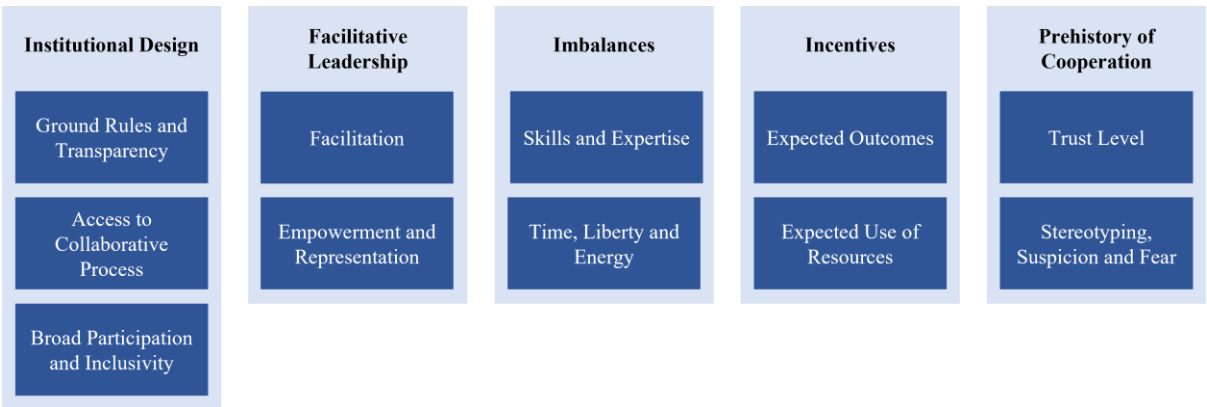

Figure 2. Theory-driven coding scheme. Adapted from Ansell and Gash (2008).

3.6. Methods of Data Analysis

The data issue led to considerable changes in the research strategy. As a result, the planned longitudinal approach must be rejected. This leads to a situation where the temporal aspect of the main research question cannot be answered. Further, the third and fourth empirical sub-questions asking for: *'How did GovTech develop in France between 2017-2022?'* and *'How did GovTech develop in Germany between 2017-2022?'* cannot be answered. The three questions are adapted as follows to still maximise the insights from the selected documents:

Revised central research question:

What are the factors influencing the development of GovTech in France and Germany?

This revised central research question makes up the new foundation of the explorative analysis and will be answered in the final part of this work.

Revised sub-question 3:

What do the selected documents say about factors influencing the development of GovTech in France and Germany?

The revised third sub-question will guide the analysis and identification of factors influencing the development of GovTech in the selected documents in a comparative way.

Revised sub-question 4:

What measures did Germany and France take to promote the development of GovTech?

The revised fourth sub-question will guide the analysis and identification of measures implemented by the French and German government to promote the development of GovTech in a comparative way.

These revised questions and the other two unchanged sub-questions will guide the analysis. However, before analysing potential factors influencing the development of GovTech, programme theories need to be articulated. Programme theories on possible mechanisms (here: factors influencing the development of GovTech) are established based on preliminary readings. These are presented in the analysis chapter. The three dimensions of *Institutional Design*, *Facilitative Leadership* and *Imbalances* being the most present in the selected documents, the focus of the analysis will be on these. Following the theory-driven coding scheme in *Figure 2*, data is extracted from the selected documents to evaluate the programme theories. According to the iterative style of the realist review method, the coding scheme can be refined along with the analysis. The final coding scheme can be retrieved in Appendix C, including inductively added codes, keywords, and examples. The coding and extraction process is performed by hand. For transparency and reliability reasons, the hand-written notes and codes can be accessed upon request. The programme theories will be refined, conclusions drawn, and policy

recommendations made to conclude the analysis. However, one must be aware of certain limitations of the applied method. For instance, intra-coder reliability issues, which define issues emerging from the inconsistent manner by which the researcher codes, can arise (Given, 2008, p. 445).

Further, realist reviews' subjective and interpretative nature can lead to reproducibility issues (Wong et al., 2010, p. 7). Specific measures are taken to reduce the probability of any issues. First, the codes are laid out and complemented by examples in *Table 4* (Appendix C). This allows for verification by anyone who is interested in doing so. Further, to avoid misunderstandings or subjective perspectives, the codes and their interpretations are discussed and refined with fellow students. Moreover, the language barrier can lead to coding issues when translating the original documents into English. However, the native language skills in both languages of the researcher and his expertise in the subject should not only limit those issues but rather represent an advantage for this project. Other issues and limitations of this thesis are discussed in the final chapter.

4. Analysis

The first sub-question has been answered in Chapter 2. This chapter now aims to provide necessary information to answer the three empirical sub-questions and eventually the main research question. The GovTech phenomenon is first examined to achieve this. Its main characteristics are analysed and concrete examples of GovTech collaborations are provided. Subsequently, the focus will be on the factors and measures influencing the development of GovTech in France and Germany. The selected documents are analysed through the analytical framework by Ansell and Gash (2008) to identify relevant factors.

4.1. GovTech as a Phenomenon

This part of the analysis aims to answer the second sub-question: *What is GovTech as a phenomenon?* Concrete examples of GovTech collaborations are presented and the main characteristics of GovTech are introduced to achieve this. Following the realist review method, a programme theory for this sub-question is set up from preliminary research and verified in this section.

Programme theory 1:

In a context of state digitisation and diversity of needs within public sector organisations, GovTech collaborations, through their innovative potential and their strong adaptability, have the ability to respond to individual and technical needs of public sector organisations.

GovTech is defined as the close collaboration of private sector startups and innovative small and medium enterprises (SMEs) with public sector organisations to "deliver technological products and services, often using new and emerging technologies" (Filer, 2019, p. 4). This definition mirrors the reality of many countries' current digitisation and modernisation strategies. For instance, in Germany, one could cite the Cyber Innovation Hub of the German military, whose explicit goal is to bridge the German military to the startup scene in order to enhance innovation (cf. Cyber Innovation Hub, n.d.-a). The development of a VR gliding simulator to teach recruits how to fly or of an AI solution for early crisis detection are examples of how the Cyber Innovation closely collaborates with startups (Cyber Innovation Hub, n.d.-b). In France, this innovation approach to digitisation and modernisation is also a reality. For instance, the previously mentioned example of the secure messaging service *Tchap* was developed by the Interdepartmental Digital Directorate (DINUM) and the National Agency for Information System Security (ANSSI) in collaboration with the startup *Element*. The startup had the technical skills to provide an Android, iOS and web client for the open and secure communication protocol *Matrix*, which made the collaboration between the state and the startup necessary (Element, n.d.). Many more examples of GovTech collaborations exist in France (Girard & Fonlladosa, 2019, pp.

23-53) and Germany (Kilian, 2021, pp. 22-29). Governments on all levels – local, regional and national – recognised the added value of GovTech and its benefits, which led to the recent emergence of multiple activities promoting its development worldwide. In Germany, for instance, there is the *GovLab Arnsberg* on a local level (cf. GovLab Arnsberg, n.d.), *GovTecHH* or *BaWü meets GovTech* on a regional level (cf. Senatskanzlei Hamburg, n.d.; Staatsministerium Baden-Württemberg, 2021) and the *GovTech Campus* on a national level (GovTech Campus, n.d.).

These examples show that through their characteristics – for instance, their agility, their adaptivity and their technical skills – startups and young SMEs have the capacity to solve problems and issues which public agencies could not solve by themselves or with traditional IT companies. As the IT-Planungsrat (2021, p. 4) summarizes in its report:

> "Collaboration with startups as external innovators is particularly exciting, because three scarce resources come together in startups: They combine talent, solution ideas and external capital (venture capital). Startups are founded with the approach of optimizing at least one aspect of a product or service compared to existing ones on the market. Startups have a high solution focus; they usually concentrate on solving exactly one problem effectively and efficiently [and] are often particularly efficient and quick […]. In doing so, they bring new perspectives to existing challenges and look for good solutions without bias. After all, startups are pioneers for agile working methods and user-oriented solution development."[3]

These results confirm the first programme theory of the thesis. Due to characteristics specific to startups and SMEs, GovTech collaborations have the capability to respond to modern needs of public agencies. Combining these results to the conceptual foundations of GovTech from the theory chapter, an answer to the second sub-question can be given. The second sub-question asked: *What is GovTech as a phenomenon?* It can be answered that GovTech, which defines the collaboration between the state and startups/SMEs, can have tremendous advantages for public agencies because of the new skillsets, methods, and solutions it can bring to public sector organisations. Further, GovTech can be characterised as a phenomenon since these types of collaborations multiply all around the world simultaneously to initiatives trying to promote its development.

4.2. Factors Influencing the Development of GovTech

This part of the analysis has the goal to answer the last two revised sub-questions of the thesis, namely:

[3] Each citation from the documents is provided in the original language in Table 5 (Appendix D).

(1) *What do the selected documents say about factors influencing the development of GovTech in France and Germany?*
(2) *What measures did Germany and France take to promote the development of GovTech?*

From the analytical framework by Ansell and Gash (2008), the derived coding scheme (see Appendix C) and preliminary readings, three more programme theories were established and tested in this analysis section. These are stated in the corresponding sub-sections and allow the identification of the main factors influencing the development of GovTech. After identifying these individual factors, a closer look at potential French and German measures is taken to answer the second question. As discussed in the methods section, only the three dimensions *Institutional Design, Facilitative Leadership* and *Imbalances* were closely analysed since they are most present in the selected documents. However, in the final part of this section, other less influential factors identified during the analysis are also presented.

4.2.1. Institutional Design

With regards to the *Institutional Design* dimension of the analytical framework, it is expected that procurement rules do have a strong influence on GovTech collaborations. This translates into the second programme theory of this thesis:

Programme theory 2:
Procurement rules being too complex, rigid, and not adapted for startups to access public tenders, the simplification of procurement law allows the necessary flexibility for startups to access collaborative processes.

This programme theory is evaluated here. The analysis showed that another factor deriving from the *Institutional Design* plays a significant role. Not only the complexity and rigidity of the procurement rules influence GovTech collaborations but also the technical access to the state. This is detailed below.

Procurement framework

One of the most significant issues emerging from the German and French *Institutional Design* and limiting startups' access to collaborative GovTech processes is the public procurement framework. “Public procurement refers to the process by which public authorities, such as government departments or local authorities, purchase work, goods or services from companies.” (European Commission, n.d.). This process is fraught with difficulties for startups. For distinct reasons, among other to avoid

corruption, procurement laws in Germany and France are strict and limit the discretion of individual civil servants. Participation criteria such as a 'minimum number of sales in the past', 'references in the public sector' or 'proof of creditworthiness' limit the access to public markets. Startups being companies with generally only a few sales in their early years of existence, their access to public tenders can be challenging (Bitkom e.V., 2020, p. 2; IT-Planungsrat, 2021, p. 7). In a survey performed by Roland Berger & PUBLIC (2019, p. 19), over 60% of the studied French GovTech startups stated that it is 'difficult' or 'extremely difficult' to respond to public tenders. Furthermore, Bitkom Research survey (n.d.) revealed that 31% of the interrogated startups are excluded from public tenders because of eligibility criteria. These rules and institutional structures limit the collaboration between the state and startups.

However, the procurement framework offers possibilities to include innovative SMEs and startups in collaborative processes. For example, France and Germany offer so-called *Innovation Partnerships* and recommend tendering in lots as well as using functional procurement rather than product procurement (Ministère de l'Économie, des Finances et de la Relance, 2019, pp. 17 – 41; IT-Planungsrat, 2021, p. 9). These instruments could help ease the access of startups and SMEs to procurement processes. However, the identified issue here is that public procurement officers lack knowledge about these instruments or are afraid to face legal consequences in case of an improper application. Therefore, these instruments are not used much, leading to a situation where innovative startups and SMEs are still excluded from the collaborative process and where GovTech cannot strive.

Germany and France introduced different measures to remedy these two factors hampering the development of GovTech ('stringency of procurement framework' and 'lack of knowledge about innovative procurement tools'). In France, the first dimension of the issue – the stringency of public procurement rules – is counteracted by the decree *n° 2021-1634 du 13 décembre 2021*[4] (J.O., 2021), which increases the threshold under which advertising and competition rules are not needed to 100.000 EUR for innovative products and services. This means startups and SMEs do not need to comply with the strict procurement rules for tenders valued under 100.000 EUR. The second dimension – the non-application of available instruments – is compensated through different guides intended for public procurement officers. For instance, the guide *Guide pratique de l'achat innovant* by the Ministry of Economy and Finance (Ministère de l'Économie, des Finances et de la Relance, 2019) gives extensive tips and suggestions on how to shape public tenders in favour of young and innovative companies. Guides for startups and SMEs such as the *Guide pratique pour les TPE-PME: « Se développer grâce aux marchés publics »* (Ministère de l'Économie, des Finances et de la Relance, 2018) are also provided to help startups and SMEs participate in public tenders.

In Germany, the first dimension of the procurement issue is not counteracted by any measure. Only the mentioned instruments, such as the *Innovation Partnership,* guarantee the access of innovative

[4] Preceded by a three-year test phase by the *decree n° 2018-1225 du 24 décembre 2018* (J.O., 2018).

startups and SMEs to the public sector. However, the second dimension of the procurement issue is compensated through the extensive program KOINNO, which stands for *Competence Centre for Innovative Procurement*. KOINNO offers advice, training, information material and events for both public procurement officers and startups/SMEs to overcome difficulties in the procurement process. These policies and measures in Germany and France actively help in reducing the hampering effect of procurement rules on the development of GovTech in France and Germany.

All in all, it was shown that the access of startups/SMEs to collaborations with the state is limited by strict procurement rules and by the inefficient use of existing instruments. These have a hampering effect on the development of GovTech. Therefore, the first programme theory can be confirmed but needs to be supplemented by the role educational measures and active support play in the development of GovTech. An additional programme theory supplementing the initial programme theory could state:

Programme theory 2b:

Innovative procurement rules being not well applied, educational measures and active support could help both procurement officers and startups/SMEs to use more innovative procurement tools and to engage in more GovTech collaborations.

Technical access

The analysis showed that another particularity of the French and German *Institutional Design* limits the access of innovative startups and SMEs to the state. Closed IT structures lead to a situation where predominantly traditional IT suppliers and big firms have technical access to the state. For instance, because they know the IT infrastructure and technical procedures well, they are longstanding suppliers of specific software packages or because they have long-lasting maintenance contracts with the state. As the report from the IT-Planungsrat (2021, p. 7) explains: "Proprietary software, lack of interfaces, data, standards and documentation make collaboration difficult and unattractive for startups." As a matter of fact, when innovative startups and SMEs do not have the possibility to create a digital solution adapted to the state's IT infrastructure or have no access to relevant data, there is no reason for them to collaborate with the state.

However, in the context of collaborative governance, the state actively tries to improve the accessibility of all stakeholders to the collaborative process. This issue of interoperability and lacking standards is long known in Europe, and there is a positive trend towards a more open government (Wirtz & Birkmeyer, 2015, p. 382). For instance, Germany and France have laws and strategies to actively push towards more open governments and interoperability in public administration systems.

In France, in the context of the strategy for public administration digitisation *Tech.Gouv. Accélérer la transformation numérique du service public* (Direction interministérielle du numérique, 2021), the programme 'DATA' has the objective to make available dozens of highly requested application

programming interfaces (API) to interested stakeholders. These APIs are then publicly available on the website api.gouv.fr. “An […] API enables companies [and the state] to open up their applications’ data and functionality to external third-party developers […]. This allows services and products to communicate and leverage each other’s data and functionality” (IBM, 2021). APIs allow startups and SMEs to code and produce solutions that fit the public administration's IT infrastructure. Supplementary data from the government are made public through the mission ‘Etalab’ and are freely accessible under data.gouv.fr (Tonon, 2020, p. 34). Further, the Health Data Hub was created in the sector of HealthTech, which encompasses GovTech startups from the health sector, and guarantees simplified access to medical data for involved stakeholders (Choose France, 2017, p. 6). These measures simplify the collaboration between startups/SMEs and the state.

In Germany, similar measures were set up to establish interoperability and openness. For instance, the Second Open Government Law – and its attached implementation strategy – plan to make all federal administration data sets and administrative procedures accessible via APIs until the end of 2024 (BundDEV, n.d.). Further, the Digital Strategy of the German government sets the goal to achieve full interoperability by the end of 2024 (McKinsey & Company & Hertie School Centre for Digital Governance, 2021). Finally, several APIs are already accessible via https://bund.dev/.

These measures reduce the complications generated by the technical specificities of the *Institutional Design* in France and Germany. Further, they facilitate the cooperation between the state and startups/SMEs. Therefore, they contribute to the development of GovTech. The findings showed that closed IT systems and the lack of technical access to the state could hamper the development of GovTech. However, the publication of APIs and data as measures to increase government openness and interoperability can help counter these issues. No programme theory was developed for this aspect since the theory did not allow such expectations. A possible programme theory could state:

Programme theory 2c:

Closed IT-systems and the lack of technical access to the states information can be countered through the publication of specific data and APIs, which lead to more open governments and allow startups to access collaborative work with the state.

4.2.2. Facilitative Leadership

From the dimension of *Facilitative Leadership*, it is expected that strong political communication in favour of GovTech collaborations does contribute to the development of GovTech. This expectation translates into the third programme theory of this thesis.

Programme theory 3:

The phenomenon of GovTech collaboration still being recent, strong political communication in favour of GovTech leads to a more positive attitude towards GovTech on the part of civil servants and startups.

This belief came from the strong French communication strategy known under the name of 'French Tech' and 'Startup Nation', whose goal is to enhance entrepreneurial activities (Saint-Martin & Quijoux, 2020) and which set the goal to achieve 25 French 'unicorns'[5] until the end of 2025. This objective was reached at the beginning of 2022 (Les Echos Start, 2022). However, the analysis showed that the lack of strategic communication is not a factor hampering the development of GovTech. Further, the possible benefit of such a measure on the development of GovTech could not be proven. Therefore, the programme theory can be rejected.

Instead, the assessment of the French and German documents showed that *Facilitative Leadership* measures bringing startups/SMEs and public administrations together, facilitate the exchange between them and can pave the way for future GovTech collaborations. This is necessary because of the differences between public agencies and startups. As Norbert Herrmann, Startup Affairs manager at the Berlin Senate Chancellery, explains: "It's about two different languages, two different cultures, two different expectations, especially when it comes to speed. In order to cooperate, I think both sides have to approach and show understanding for each other" (Institut für den öffentlichen Sektor, 2021b, p. 22). These differences lead to a situation where both sides do not get the opportunity to get together. This is where facilitation measures come into play. Various formats, initiatives and measures can bring both sides together and incentivize them to collaborate.

In Germany, many different initiatives emerged in recent years. The main initiative was created by the Federal Ministry of the Interior (BMI), the State of Hessen and the City of Hamburg under the name *GovTech Campus*. The GovTech Campus has the explicit goal to bring startups and the state closer together to shape excellent conditions for collaboration. This is done through different formats, which force the actors to learn from each other (Co-learning formats), generate innovative ideas together (Co-Ideation formats) and create innovative solutions together (Co-Creation formats) (GovTech Campus, n.d.). As Markus Richter, State Secretary and Commissioner for Information Technology, stresses: "Cooperation with startups has great potential for the digitization of administration. The GovTech Campus is ideal for this: We bring founders, companies, science as well as state and administration to one table" (Fraunhofer FOKUS, 2021). Multiple other initiatives on state level facilitate the collaborative process in different ways. For instance, the initiative GovTecHH provides personalised assistance for collaborations between startups and public agencies in Hamburg (Senatskanzlei Hamburg, n.d.).

[5] Startups valued at over US$1 billion.

In France, these measures are not as widespread. In fact, there is not one single initiative like those in Germany. It is recommended by the report of Roland Berger & PUBLIC (2019, p. 95) to "facilitate […] the development of the GovTech sector by creating opportunities for the exchange of experience and networking" and a similar project to the ones in Germany, which is open to a broader palette of stakeholders, is planned by the French government (Direction interministérielle du numérique, 2021, p. 14).

To summarise, it was shown that strong political communication does not facilitate the collaboration between the state and startups as expected. Concrete measures which bring startups and public agencies together do, however, contribute to the development of GovTech. The revised programme theory could state:

Revised programme theory 3:

The phenomenon of GovTech being recent and startups being vastly different to public sector organisations, measures bringing startups/SMEs and public agencies together lead to both getting to know each other and contribute to the development of GovTech.

4.2.3. Imbalances

From the dimension of *Imbalances*, it was expected that the lack of knowledge of civil servants – mainly in the technical sphere – limits the possibility of cooperation with innovative startups and therefore hampers the development of GovTech. This expectation translates into the fourth programme theory.

Programme theory 4:

Civil servants often lack the technical skills to understand modern technologies while startups are often pioneers in this segment. Therefore, the communication between civil servants and startup is complicated, which leads to situation where both sides do not see the potential benefits of collaboration.

The analysis confirmed this supposition. However, this issue must be situated in a broader context of knowledge *Imbalance* between innovative startups/SMEs and public sector organisations. The analysis showed that the relationship between startups and government agencies is characterised by a substantial *Imbalance* in knowledge about the other side.

On the one side, startups/SMEs often do not comprehend the needs and demands of public agencies. Therefore, they cannot create a solution adapted to them. The lack of this knowledge also limits the creation of startups and the generation of novel ideas in the GovTech sector. Also, the limited technical access of startups/SMEs to the state limits their understanding of how the state and its agencies function

in a technical sense. One of the analysed documents underlines: “Startups often lack knowledge about the needs and requirements of public clients” (IT-Planungsrat, 2021, p. 6).

On the other side, public agencies often do not know what startups and SMEs (could) offer. Kilian stresses in his report, that “the universe of available GovTech solutions is opaque and complex” (Kilian, 2021, p. 5). In general, public agencies are not aware of the innovative potential of startups and SMEs. This means that, sometimes, civil servants do not comprehend how innovative companies could help produce better services or processes. In academic literature, these situations are called ‚blind spots‘ and characterise situations where “public managers [are] ‘blind’ to information or opportunities that lie outside their fields of vision. This leads them to repeatedly rely on known solutions instead of integrating new information or knowledge that could lead to innovative solutions” (Wegrich, 2019, p. 15). Different measures can counteract these knowledge *Imbalances*.

In France, the current public administration digitisation strategy plans the so-called *Lab GouvTech,* which will aim to identify potential GovTech solutions that could solve agencies' problems (Direction interministérielle du numérique, 2020, p. 24). Further, there is the digital marketplace *Catalogue GouvTech* where most French GovTech solutions and companies are listed and accessible to civil servants. If a suitable solution is found, the civil servants can contact the provider and engage in the procurement process.

In Germany, such a marketplace for GovTech solutions is only provided by a private company (cf. GovMind GmbH, n.d.). McKinsey & Company & Hertie School Centre for Digital Governance (2021, p. 46) recommend introducing such a marketplace modelled on international equivalents (cf. Australian Government, n.d.; GOV.UK, n.d.). A few German individual initiatives follow the same scouting goal as the French *Lab GouvTech*. For instance, the *techDetector* programme of the Federal Ministry for Economic Cooperation and Development identifies and visualises innovative technologies which could contribute to its mission of sustainable development aid (Bundesministerium für wirtschaftliche Zusammenarbeit und Entwicklung, 2021, p. 6). Further, events organised in the form of pitching events contribute to more knowledge on both sides. For instance, *GovUp.NRW* is a reverse pitch event where public agencies present their issues in front of startups (cf. Ministerium für Wirtschaft, Innovation, Digitalisierung und Energie des Landes Nordrhein-Westfalen, 2021) and *Ideenwettbewerb hybrides eGovernment* is a pitching event where startups present their potential solutions or expertise in front of representatives from public agencies (cf. Hessische Ministerium für Wirtschaft, Energie, Verkehr und Wohnen, 2021).

To summarise, it can be said that knowledge *Imbalances* lead to a situation where neither startups/SMEs nor public agencies can grasp the benefits of GovTech collaborations. The lack of knowledge has a strong hampering effect on the development of GovTech. Therefore, the programme theory can be confirmed but does not limit itself to technical knowledge. A revised programme theory could state:

Revised programme theory 4:

Civil servants lacking the knowledge of what is technically possible and ignoring what innovative startups/SMEs can offer, and startups ignoring what public administration needs, bringing both sides together to get to know each other and to discuss potential solutions has a positive impact on the development of GovTech.

4.2.4. Further Factors

The analysis also uncovered other factors influencing the development of GovTech, which were less prevalent in the analysed documents. For the sake of completeness, these additional factors are summarised here.

The first additional factor is the 'lack of financial resources' for both actors. Engaging in collaborative work necessitates financial resources. For instance, the location for collaboration or the supplementary civil servants engaging in collaboration need to be funded. In Germany and France, dedicated budgets are demanded to engage in more GovTech collaboration (IT-Planungsrat, 2021, p. 9; Roland Berger & PUBLIC, 2019, pp. 88-90). The second factor is the experienced 'time constraints' for both the state and startups/SMEs. In fact, most startups do not have the time to engage in lengthy and complex tenders or in long-lasting negotiations with civil servants. At the same time, civil servants do not have the time to engage in scouting activities to find fitting GovTech solutions. These two factors ('Lack of financial resources' and 'Time constraints') can be attributed to the *Incentives* dimension of the analytical framework by Ansell & Gash (2008). The third factor is the 'cultural differences between startups/SMEs and public agencies'. The different work cultures may collide and lead to complications during the collaborative process. For example, the risk-aversion in public agencies might not match the risk-loving attitude of startups, and the fast-paced startup environment might not fit the usual pace within the administration. Finally, there can be issues of trust. The phenomenon of GovTech being recent, there can be a lack of trust on both sides. Startups could stereotype the public sector and believe that everything is red tape and too bureaucratic. Public agencies could be suspicious and might even fear collaboration with startups. For instance, they might believe that an engaged project might not be finalised. The last two factors could be attributed to the dimension *Prehistory of Cooperation* of the analytical framework.

4.3. Comparison and Concluding Remarks

After analysing the numerous factors and measures influencing the development of GovTech in France and Germany, it is now possible to answer the two empirical last sub-questions of this thesis. The sub-questions being of a comparative nature, Germany and France are compared while answering the two sub-questions.

The third sub-question of this thesis asked: *What do the selected documents say about factors influencing the development of GovTech in France and Germany?* The analysis showed that both Germany and France face the same problems regarding the development of GovTech. The same hampering factors were found in both countries. First, the issues resulting from a strict and not well-known procurement framework became clear when analysing the French and German *Institutional Design*. Further, the difficulty for startups to access the state on a technical basis was recognised in both countries. *Leadership* issues were also identified in Germany and France, where startups and government agencies do not have the opportunity to get together and engage in GovTech collaborations. Moreover, both countries are confronted with strong knowledge *Imbalances* where startups/SMEs rarely know what government agencies need/expect and where public organisations do not know what innovative startups/SMEs can offer. Finally, additional factors such as 'the lack of financial resources' or 'time constraints' were identified in both countries. Overall, in France and Germany, the same factors influencing the development of GovTech were identified.

The fourth and last sub-question asked: *What measures did Germany and France take to promote the development of GovTech?* Germany and France set up several measures to sensitise startups and the state on how to use existing innovative procurement tools to counter the problems emerging from the public procurement framework. Contrary to Germany, France also changed the procurement law to make access to the state easier for innovative startups and SMEs. Additionally, to avoid further technical disadvantages for young and innovative companies, Germany and France introduced several measures to publish technical data and state information over the last few years. In Germany, the lack of opportunities for startups and the state to get together is dealt with through many different initiatives having the concrete goal of bringing both sides to the same table. These are available at all levels of government. However, in France, no such measures exist until now. Furthermore, Germany and France take a different approach to counteract persisting knowledge *Imbalances*. Whereas France bets on need/offer transparency through a digital marketplace where innovative companies can list their innovative solutions, Germany organizes events where both sides can present their solutions as well as their issues and needs. Although the measures slightly differ depending on the country, they mainly follow the same goal and have an effect on the same issues. The initial expectation that France and Germany distinguish themselves in the number of initiatives in place to promote the development of GovTech must be rejected.

To summarise, the identified issues are the same in both countries. The concrete implementation and design of the measures counteracting these issues can take different forms and shapes depending on the country. However, the keynote of the measures supporting the development of GovTech stays the same in both France and Germany.

5. Conclusion

This concluding chapter first recapitulates the findings of this thesis based on the four sub-questions to provide an answer to the central research question. From there, the strengths and limitations of the thesis are discussed. Then, suggestions for further research are given before finishing the chapter with a brief discussion on practical implications and potential policy recommendations.

5.1. Answer to the Research Question

The answers to this thesis's four sub-questions help in answering the central research question. The first sub-question was of theoretical nature and asked: *How does theory underpin possible factors influencing the development of GovTech?* The theory chapter answered this question and showed that the concept of *GovTech* had many parallels to the concept of *collaborative governance*. From there, it was concluded that theoretical frameworks of collaborative governance could be applied to GovTech. The analytical framework by Ansell and Gash (2008) was chosen for this study. From their framework, the three factors *Facilitative Leadership*, *Institutional Design* and *Imbalances* were used in the analysis. These theoretical insights helped to choose the lens for a more in-depth analysis of the documents and to deductively generate the coding scheme for the analysis.

The second sub-question asked: *What is GovTech as a phenomenon?* Answering this question allowed to understand what the whole phenomenon of GovTech was about, which was necessary to investigate more details in the following sub-questions. It was shown that GovTech, which defines the collaboration between the state and startups/SMEs, brings new skill sets, techniques and solutions to public sector organisations. Since these types of collaborations multiply all around the world at the same time as initiatives trying to promote its development, GovTech can be characterised as a phenomenon, which ought to be analysed.

The third sub-question asked: *What do the selected documents say about factors influencing the development of GovTech in France and Germany?* It was shown that multiple factors do influence the development of GovTech. For instance, procurement rules, lacking leadership initiatives, or knowledge *Imbalances* have a negative effect on the development of GovTech. No differences between France and Germany were identified.

However, multiple measures counteracting these hampering factors and supporting the development of GovTech were identified while answering the fourth sub-question, which asked: *What measures did Germany and France take to promote the development of GovTech?* For instance, measures such as the ‘simplification of procurement rules’, the ‘sensitisation about innovative procurement instruments’ or ‘concrete initiatives bringing startups/SMEs and the state together’, actively support the development of GovTech. The measures differ slightly depending on the country,

but the keynote and their aims stay the same. The initial expectation supposing that France has less initiatives supporting the development of GovTech compared to Germany can be rejected.

Answering the four sub-questions helps to answer this thesis's revised central research question: *What are the factors influencing the development of GovTech in France and Germany?* The analysis showed that multiple factors negatively influence the development of GovTech. Under these hampering factors, one can count the 'stringent and inflexible public procurement framework', the 'lack of technical access to the state', the 'lack of possibilities for startups/SMEs and the state to get together' and the 'lack of knowledge about the needs of public agencies and the possibilities of startups'. Further, additional factors such as the 'lack of financial resources' or 'time constraints' were identified. There are, however, measures in place to counteract these issues. These measures can be seen as factors having a positive and supporting influence on the development of GovTech. The identified supporting measures consist of 'the simplification of procurement rules', 'the sensitisation about innovative procurement instruments', 'meetup opportunities for startups/SMEs and the state' and 'the introduction of different initiatives where both sides get to know and learn from each other'. Most of these factors can be assigned to the three theoretical dimensions *Facilitative Leadership*, *Institutional Design* and *Imbalances* of the analytical framework. The comparative approach between Germany and France did not yield the expected additional insights. In fact, both countries face the same issues regarding the development of GovTech.

Additionally, the shape of the applied measures slightly differs depending on the country of reference. However, the basic idea and goal of the different measures are the same across both countries. To conclude, it can be answered that numerous factors are hampering the development of GovTech in France and Germany. These are similar in both countries. However, there are measures in place to support the development of GovTech and counteract the persisting hampering factors. These measures can take different shapes and forms across Germany and France but follow the same aim. Unfortunately, the temporal aspect of the initial research question had to be left out because of the faced data issue.

5.2. Strengths and Limitations

Some limitations must be considered when reflecting on the achievements of this research. First, to complete the methodological limitations pointed out in the methods section, the findings of this thesis cannot be generalised and applied to other countries than France and Germany. This is due to the qualitative nature and the selective case selection of the study. However, in qualitative studies, one rather speaks about transferability than generalizability (Maxwell, 2009, p. 246). This means that the findings of the thesis do not have the goal of being applied to other countries but "invites readers of [the] research to make connections between elements of a study and their own experience" (Barnes et al., 2005, p. 2).

Further, according to Babbie (2020, p. 115), every method has strengths and weaknesses. The chosen realist review and the analysis of primarily grey literature can present a few issues. The subjective and interpretative nature of the realist review can lead to reproducibility issues (Wong et al., 2010, p. 7), and relying on grey literature from actors in the economic sphere could lead to biased results. Lastly, the effect of the identified factors on the development of GovTech could not be proven and the causality was not tested. Further, no correlation could be identified as planned because of lacking data. This issue is due to the newness of the GovTech phenomenon, which does not allow an in-depth analysis of causal or correlational relationships yet and induced the change of research strategy in this thesis.

Nevertheless, this thesis has strengths which outbalance the limitations. In capturing an emerging phenomenon of public administration, this thesis lays a foundation for future academic work in this field and contributes to the development of GovTech. In other words, the main strength of this thesis lies in its novel contribution to research. Capturing the recent and emerging phenomenon of GovTech, which is strongly present in public administration practice, fills a research gap and allows a better understanding of an emerging phenomenon. Furthermore, the exploratory nature of the thesis allowed to understand which factors have an influence or not on the development of GovTech and can help fellow researchers to better grasp the phenomenon. The newly generated knowledge can support practitioners in understanding the dynamics of GovTech better and helps in promoting its development. Another strength of the thesis lies within the applied procedure to analyse the phenomenon. Using the analytical frameworks of collaborative governance to analyse the GovTech phenomenon is novel and can be extended to future research on this matter.

5.3. Suggestions for Further Research

Based on the findings, future research could go in mainly two directions. First, further research could expand the documents to be analysed to other world areas. Many international and supranational organisations such as the European Union, the Nordic Council of Ministers or the Development Bank of Latin America have produced remarkable knowledge about GovTech (cf. CAF - Development Bank of Latin America, 2020; Joint Research Centre, 2022; Nordic Council of Ministers, 2021). This could be used in research to gather additional insights on the subject. Hence, it could reveal more factors influencing the development of GovTech around the world.

Secondly, further research could consider the temporal development of GovTech collaborations. The issue faced in this thesis concerning the lack of data about the number of collaborations between the state and startups/SMEs might disappear in the future. Governments understand the necessity to measure such phenomena and currently pave the way for indicators measuring the amount of GovTech collaborations. For instance, the German organization KOINNO will implement an index measuring the number of startups in public tenders in the upcoming months (cf. Theurer, 2022). The use of this

additional information will make causal and quantitative studies possible and would open the door for additional knowledge on GovTech.

5.4. Practical Implications and Policy Recommendations

This thesis showed the benefits of close cooperation between the state and innovative startups/SMEs on state modernisation and public service delivery. Further, the thesis identified the main factors influencing the development of GovTech in France and Germany. Both hampering factors and supporting measures were uncovered in the two countries. The identification of these factors can be vastly valuable for public sector managers. In fact, the generated knowledge can be used to further develop GovTech in their own country, state, region or city. Since the phenomenon of GovTech is expanding exponentially, this thesis's insights can guide future policies.

From the findings, two concrete policy recommendations can be extracted for German and French policymakers. First, German policymakers should implement a digital marketplace where startups/SMEs can list their innovative solutions. This helps startups to become known by public agencies and helps public administration to identify innovative solutions/providers.

Secondly, French policymakers should implement more initiatives to bring together startups/SMEs and the state. This is necessary for both to discover potential benefits of GovTech collaborations and can incentivise them to engage in joint work. To conclude, it can be acknowledged that France and Germany already have a broad palette of measures for such a recent phenomenon. Therefore, a concluding recommendation for both countries would be to pursue their efforts.

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Appendix

A: Selected Documents in German

	Title	Publisher	Publication date	Source type	Link
1	7 Punkte für mehr Startups in der öffentlichen Vergabe	Bitkom e.V.	2020	Position paper	https://www.bitkom.org/sites/main/files/2020-03/7-punkte-fur-mehr-startups-in-der-offentlichen-vergabe_get-started-by-bitkom.pdf
2	Digitalisierung mit Startups Fünf vergaberechtliche Empfehlungen für öffentliche Auftraggeber zur Zusammenarbeit mit der Gründerszene	Institut für den öffentlichen Sektor - KPMG	2021	Policy paper	https://publicgovernance.de/media/PolicyPaper_Startups_Beschaffer.pdf
3	GovTech in Deutschland - Eine sytematische Marktbetrachtung	GovMind GmbH	2021	Report	https://govmind.tech/wp-content/uploads/2021/06/20210607-GovMind-GovTech-in-Deutschland.pdf
4	Mehr Zusammenarbeit mit externen Innovator*innen/ Startups wagen	IT-Planungsrat	2021	Report	https://www.it-planungsrat.de/fileadmin/beschluesse/2021/Beschluss2021-51_AG_Externe_Innovatoren_AL1_Abschlussbericht.pdf
5	Digitalisierung als Innovationstreiber in der Entwicklungszusammenarbeit	Bundesministerium für wirtschaftliche Zusammenarbeit und Entwicklung	2021	Position paper	https://www.bmz.de/resource/blob/85952/3bbab71f0132a9ef5b8b208c877799e5/168_Impulspapier_Digitalisierung_RZ_web.pdf

6	Hessen: Ideen für hybrides E-Government gesucht	Kommune21	2021	Press release	https://www.kommune21.de/meldung_37294_Ideen+f%C3%BCr+hybrides+E-Government+gesucht.pdf
7	"Zwei verschiedene Sprachen und Kulturen" - Wie öffentliche Verwaltung und Startups zusammenkommen	Institut für den öffentlichen Sektor - KPMG	2021	Policy paper	https://publicgovernance.de/media/PG_Sommer_21_Digital_durch_die_Krise.pdf
8	Und es geht doch! Wie die Skalierung digitaler Innovationen in der Verwaltung gelingt	Hertie School Centre for Digital Governance & McKinsey & Company	2021	Study	https://www.mckinsey.de/~/media/mckinsey/locations/europe%20and%20middle%20east/deutschland/news/presse/2021/2021-11-29%20-%20und%20es%20geht%20doch/studieund%20es%20geht%20dochupdate.pdf
9	GovUp.NRW	Amt des Beauftragten für Informationstechnik (CIO) Nordrhein-Westfalen	2022	Web page	https://www.govup.nrw/
10	Deutschland + 2022: Strategien für die Digitalisierung in Bund, Ländern und Kommunen	Behörden Spiegel	2022	Policy paper	https://www.digitaler-staat.online/wp-content/uploads/2022/02/Deutschland_Plus_2022.pdf
11	Ausschreibungen Startup-freundlich gestalten	KOINNO	n/a	Guide	https://www.koinno-bmwk.de/fileadmin/user_upload/publikationen/Startup-freundliche_Ausschreibungen.pdf
12	Startup-Einheit GovTecHH	Stadt Hamburg	n/a	Web page	https://digital.hamburg.de/digitale-stadt/govtechh-11008

Table 2. Selected documents in German.

B: Selected Documents in French

	Title	Publisher	Publication date	Source type	Link
1	Faire de la France l'un des pôles de la HealthTech les plus compétitifs et innovants	Choose France - Gouvernement français	2017	Strategy paper	https://investinfrance.fr/wp-content/uploads/2017/08/France_relance_Healthcare_court_Fr.pdf
2	Guide pratique pour les TPE-PME : « Se développer grâce aux marchés publics »	Ministère de l'Économie, des Finances et de la Relance	2018	Procurement guide	https://www.economie.gouv.fr/files/files/2022/guideTPE-PME.pdf
3	Décret n° 2018-1225 du 24 décembre 2018 portant diverses mesures relatives aux contrats de la commande publique	République française	2018	Decree	https://www.legifrance.gouv.fr/jorf/id/JORFTEXT000037852355
4	Guide pratique de l'achat public innovant	Ministère de l'Économie, des Finances et de la Relance	2019	Procurement guide	https://www.economie.gouv.fr/files/2020-08/guide-pratique-achat-public-innovant_0.pdf
5	Tech.Gouv - Accélérer la transformation numérique du service public. Stratégie et feuille de route 2019-2022.	Direction interministérielle du numérique	2020	Strategy paper	https://www.numerique.gouv.fr/uploads/Plaquette_TechGouv_mi2021.PDF
6	Vers des États en mode startup ? Les startup govtech et la transformation de l'action publique	Direction des Achats de l'État - Ministère de l'Économie, des Finances et de la Relance	2020	Policy paper	https://www.economie.gouv.fr/igpde-editions-publications/larticle_n7

7	La GovTech, nouvelle frontière de la souveraineté numérique	IFRI - Institut français des relations internationales	2021	Report	https://www.ifri.org/sites/default/files/atoms/files/tonon_govtech_nov2020.pdf
8	GovTech en France: état des lieux et perspectives	Roland Berger	2019	Report	https://www.rolandberger.com/fr/Insights/Publications/GovTech-en-France-%C3%A9tat-des-lieux-et-perspectives.html#:~:text=Le%20march%C3%A9%20potentiel%20des%20Govtech,tech%2C%20d%C3%A9fense%2C%20ressources%20humaines.

Table 3. Selected documents in French.

C: Coding Scheme

Category	Sub-category	Keywords French	Keywords German	Typical examples
Institutional Design	Ground Rules and Transparency	Transparence, clarté, règles, processus	Transparenz, Klarheit, Regeln, Prozesse	"Grundlegend fehlt es an Transparenz darüber, wie häufig Startups in öffentlichen Beschaffungsprozessen erfolgreich sind." (IT-Planungsrat, 2021, p. 6)
	Access to Collaborative Process	Droit des marchés publics, appels d'offres, critères d'attribution, valeur seuil	Vergaberecht, Ausschreibungen, Vergabekriterien, Schwellenwert	"Um Startups veritable Wettbewerbschancen in diesem Feld einzuräumen, müssen daher die Mengenanforderungen an die Projektreferenzen abgesenkt sowie die Wirtschaftlichkeitskriterien verhältnismäßig angesetzt werden." (Bitkom e.V., 2020, p. 2) "Als größtes Hindernis für eine Zusammenarbeit mit Startups wird vielfach das Vergaberecht benannt." (Institut für den öffentlichen Sektor, 2021a, p. 1)
	Broad Participation and Inclusivity	Égalité, droits, compétitivité	Gleichheit, Rechte, Konkurrenzfähigkeit	"Les PME françaises et européennes doivent pouvoir mettre en avant leurs solutions à armes égales avec les grandes entreprises aux moyens commerciaux plus développés." (Direction interministérielle du numérique, 2021, p.22)
	Technical Access *(inductively added)*	Normes, interfaces, API, accès aux données	Standards, Schnittstellen, API, Zugang zu Daten	"Proprietäre Software, fehlende Schnittstellen, Daten, Standards und Dokumentation machen die Zusammenarbeit schwierig und unattraktiv für Startups." (IT-Planungsrat, 2021, p. 7)

Category	Sub-category	Keywords French	Keywords German	Typical examples
Facilitative Leadership	Facilitation	Réseau, échange, rassemblement	Netzwerk, Austausch, Zusammenkommen	"Es geht um zwei verschiedene Sprachen, zwei verschiedene Kulturen, zwei verschiedene Erwartungshaltungen, insbesondere beim Thema Schnelligkeit." (Institut für den öffentlichen Sektor, 2021b, p. 22) "Wir vernetzen die Hamburger Verwaltung mit GovTech-Lösungen und begleiten den gesamten Kooperationsprozess" (Senatskanzlei Hamburg, n.d.)
	Empowerment and Representation	Aide, soutien	Hilfe, Unterstützung	"Lancement du GIO [...], nouveau portail et service d'accompagnement pour aider les entreprises innovantes dans leurs démarches juridiques françaises" (Choose France, 2017, p. 8)
Imbalances	Skills and Expertise	Compétences techniques	Technische Kompetenzen	"Les enjeux technologiques sont insuffisamment appréhendés et mal compris." (Roland Berger & PUBLIC, 2019, p.77)
	Time, Liberty and Energy	Temps, longues procédures, appels d'offres, incertitude	Zeit, lange Verfahren, Ausschreibungen, Ungewissheit	"Les startups ont besoin d'une prise de décision rapide : 'une startup ne peut pas attendre un an pour signer un contrat.'" (Roland Berger & PUBLIC, 2019, p.18) "Les appels d'offres sont longs et complexes" (Roland Berger & PUBLIC, 2019, p.77)
	Knowledge *(inductively added)*	Connaissance de la demande, connaissance de l'offre/possibilités techniques	Wissen über die Nachfrage, Wissen über das Angebot/technische Möglichkeiten	"Bei den Startups fehlt es häufig an Wissen über die Bedarfe und Anforderungen öffentlicher Auftraggeber, sowie den Ablauf öffentlicher Beschaffungsprozesse." (IT-Planungsrat, 2021, p. 6) "Das Universum an verfügbaren GovTech-Lösungen war undurchsichtig und komplex." (Kilian, 2021, p. 5)

Category	Sub-category	Keywords French	Keywords German	Typical examples
Incentives	Expected Outcomes	Gain, proposition de valeur, raison de participer	Gewinn, Wertversprechen, Grund zur Teilnahme	N/A
	Expected Use of Resources	Coûts financiers, soutien financier, charges administratives	Finanzielle Kosten, finanzielle Unterstützung, Verwaltungsaufwand	"240 M€ pour l'industrie 4.0 dont 40 M€ en 2020 [pour] [p]rojets industriels réalisés par les petites entreprises et entreprises de taille intermédiaire" (Choose France, 2017, p. 7)
Prehistory of Cooperation	Trust Level	Confiance, scepticisme, compréhension	Vertrauen, Skepsis, Verständnis	"Es muss Vertrauen und Verständnis füreinander aufgebaut werden." (Kilian, 2021, p. 5)
	Stereotyping, Suspicion and Fear	Aversion pour le risque, peur, inquiétudes	Risikoaversion, Angst, Sorgen	"L'échelle de l'intervention publique n'est pas compatible avec la taille des startups et le risque de non réalisation ou de déploiement partiel est réel" (Roland Berger & PUBLIC, 2019, p.77)

Table 4. Coding scheme.

D: Translation Table

English translation	Original	Source
"Collaboration with startups as external innovators is particularly exciting, because three scarce resources come together in startups: They combine talent, solution ideas and external capital (venture capital). Startups are founded with the approach of optimizing at least one aspect of a product or service compared to existing ones on the market. Startups have a high solution focus; they usually concentrate on solving exactly one problem effectively and efficiently [and] are often particularly efficient and quick […]. In doing so, they bring new perspectives to existing challenges and look for good solutions without bias. After all, startups are pioneers for agile working methods and user-oriented solution development."	„Die Zusammenarbeit mit Startups als externe Innovator*innen ist besonders spannend, da in Startups drei knappe Ressourcen zusammenkommen: Sie verbinden Talent, Lösungsidee und externes Kapital (Wagniskapital). Startups werden gegründet mit dem Ansatz mindestens einen Aspekt eines Produkts oder Dienstleistung zu optimieren im Vergleich zu bestehenden am Markt. Startups haben einen hohen Lösungsfokus, sie konzentrieren sich zumeist darauf genau ein Problem wirksam und effizient zu lösen […]. Dabei bringen sie neue Sichtweisen auf bestehende Herausforderungen mit und suchen unvoreingenommen nach guten Lösungen. Schließlich sind Startups Vorreiter für agile Arbeitsmethoden und die nutzerorientierte Lösungsentwicklung."	IT-Planungsrat (2021, p. 4)
"Proprietary software, lack of interfaces, data, standards and documentation make collaboration difficult and unattractive for startups."	„Proprietäre Software, fehlende Schnittstellen, Daten, Standards und Dokumentation machen die Zusammenarbeit schwierig und unattraktiv für Startups."	IT-Planungsrat (2021, p. 7)
"It's about two different languages, two different cultures, two different expectations, especially when it comes to speed. In order to cooperate, I think both sides have to approach and show understanding for each other."	„Es geht um zwei verschiedene Sprachen, zwei verschiedene Kulturen, zwei verschiedene Erwartungshaltungen, insbesondere beim Thema Schnelligkeit. Um zu kooperieren, müssen meiner Meinung nach beide Seiten aufeinander zukommen und Verständnis füreinander zeigen."	Institut für den öffentlichen Sektor (2021b, p. 22)
"facilitate […] the development of the GovTech sector by creating opportunities for the exchange of experience and networking"	"faciliter le développement de la filière GovTech en créant des opportunités pour l'échange d'expérience et le 'réseautage'"	Roland Berger & PUBLIC (2019, p. 95)

“Startups often lack knowledge about the needs and requirements of public clients”	„Bei den Startups fehlt es häufig an Wissen über die Bedarfe und Anforderungen öffentlicher Auftraggeber“	IT-Planungsrat (2021, p. 6)
“the universe of available GovTech solutions is opaque and complex”	"[d]as Universum an verfügbaren GovTech-Lösungen [ist] undurchsichtig und komplex."	Kilian (2021, p. 5)

Table 5. Translation of used citations.