Master thesis

"Open government: Who participates and why?"

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OPEN GOVERNMENT: WHO PARTICIPATES AND WHY?

Abstract

By fostering stronger cooperation between the public sector and its citizens, the internet has been proposed by many as a revolution for political participation. “Open innovation” and “crowdsourcing” platforms are more and more common in the private sector, however the usage of external knowledge in the public sector is still in its infancy. In order to foster the diffusion of “open government” initiatives in the public sector, it is necessary to understand why citizens engage. There still persists a lack of literature on the topic of citizen engagement in open government initiatives in the public sector. In this work reasons for participation were derived from the free/libre open source software (FLOSS) and crowdsourcing literature and tested in the context of open government. The results of a survey with 168 participants revealed that people differentiate between different types of open government projects, whereas socio-economic characteristics appear to have no influence on the willingness to participate in open government projects; the motivational reasons to participate differ depending on the type of open government project.

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1 Introduction

The internet has changed the world; nearly everything is just one click away. Unsurprisingly also our communication has changed through the internet. In the book "Here comes everybody: the power of organizing without organizations" Shirky (2008) explains that the internet is natively good at group forming and therefore shifted our communication from a bidirectional to a more group oriented one (ibid.). Especially the drastically lower transaction costs when communicating with a huge group of people fostered this development. These changes in our communication forms did not only affect the way we talk to friends, it also influenced the way firms interact with customers (ibid.).

Moreover, the process how innovations got developed and commercialized changed through the internet. In the beginning of the twentieth century nearly all inventions were developed and commercialized internally, under the paradigm of closed innovation (H. Chesbrough, 2003). In contrast, today´s innovation processes in the private sector are not exclusively performed within the borders of an enterprise anymore (H. W. Chesbrough, 2003; Dahlander & Gann, 2010; Lichtenthaler, 2008). External sources like suppliers, customers and end-users are getting integrated into the innovation process. Examples show that many well-known enterprises, such as IBM, 3M, DuPont, Lego, Boeing and Procter & Gamble (P&G) have opened their innovation processes for the environment (Dahlander & Gann, 2010; Dodgson et al., 2006; Lee et al., 2012; Lichtenthaler, 2008). Correspondingly the scientific literature has picked up this development; terms like co-creation, commons-based peer production, crowdsourcing or open innovation are common in scientific papers today (Hilgers, 2012).

The reasons for the opening of the innovation process are diverse: Increasing complexity of today's products, globalization effects, higher technology intensity and greater technology fusion. All of these reasons demand a higher degree of knowledge leveraging and therefore

foster cooperation (Gassmann, 2006). Companies need to include knowledge from external sources in their innovation process; especially small and medium enterprises are not capable of binding all necessary sources of knowledge to their company. Nowadays a company on its own may not be capable of managing the amount of knowledge needed to develop high tech products in a period of time which is short enough to remain competitive. The challenge is to integrate external knowledge into their own innovation processes in an effective and efficient manner (Laursen & Salter, 2006).

In order to illustrate the impact of online collaboration a second example will be given: Free/libre open source software (FLOSS). In simple words FLOSS is "software where users can inspect the source code, modify it, and redistribute modified or unmodified versions for others to use" (von Krogh et al., 2012, p. 2). Today FLOSS is used by millions of people and in many cases it is at least comparable to proprietary software in functionality, usability and design. Many talented developers are voluntarily working for FLOSS projects to create software like Linux, Mozilla Firefox or Apache. Another example of successful online collaboration is the online encyclopaedia Wikipedia. Today Wikipedia is under the ten most frequently accessed websites worldwide (Rafaeli & Ariel, 2008). All these examples show that collaboration with an undefined crowd of people can be useful and successful. The term undefined crowd involves the idea that no specific target group is defined a priori. The characteristics of the participants are unknown and everyone is welcome to contribute.

In the context of the public sector, the idea of collaboration with volunteers through the internet is called "open government". The literature as well as the practice show that the concept of open government is of interest for the public sector (Lathrop & Ruma, 2010; Obama, 2009). It was often proposed that the internet will dispense from the need for representative democracy. Everybody should be involved in the government. But is the open government concept capable of starting a new era of democracy? Obama himself promised

that open government "will strengthen our democracy and promote efficiency and effectiveness in government" (Obama, 2009). In order to strengthen the democracy, open government needs to motivate a substantial part of the society to participate. Whereas open innovation projects normally only have to motivate a certain target group, open government initiatives have to motivate people from all sub-groups of the society in order to increase public trust and strengthen the democracy. In this thesis, I will examine whether certain groups of the society favour specific kinds of open government projects and what motivates citizens in general to participate in open government initiatives. With a better understanding of the motivation of participants future projects could be developed more precisely. This again might lead to the attraction of more participants which will foster better outcomes. The literature called for more research regarding the motivation of citizens to contribute to open government initiatives (Hilgers, 2012, p. 653).

In the following, I will firstly define the term open government as well as its aims. An understanding of the aims is necessary to comprehend why a broad participation is needed to ensure successful open government projects. Due to a lack of literature regarding the motivation of citizens to participate in open government projects, the literature about motivation to participate in other fields of online collaboration, like FLOSS, will be used to derive the most common explanations for participation. In the methodology part the reader will be introduced to the questionnaire. This includes not only the explanation of its development, but also the discussion of how a high reliability could be maintained. The analysis will show that the reasons to participate dependent on the type of open government project. Furthermore, it will be presented that socio-economic characteristics do not influence people's willingness to participate. In this context it will also be shown which reasons for participation in open government initiatives equal the ones for FLOSS projects.

2 Approaches and theory of open government

2.1 Definition of open government

No universal accepted definition of open government exists; also the definitions of related terms like "citizensourcing" (Lukensmeyer & Torres, 2008), "eDemocracy", "eParticipation", "eGovernment" (Collins, 2009; OECD, 2003), "Collaborative Public Management" (McGuire, 2006), "Citizen Engagement" (Hickley, 2008; OECD, 2004), "Wiki government" (Noveck, 2009) or "government 2.0" (O'Reilly, 2009) are mostly imprecise. For instance, Tim O'Reilly describes "government 2.0" as follows:

> *"Much like its predecessor, Web 2.0, "government 2.0" is a chameleon, a white rabbit term, that seems to be used by people to mean whatever they want it to mean."*
> (O'Reilly, 2005)

However, all terms mentioned above have in common that they focus on interaction between the public authority and citizens; mainly through the internet. They differ on the degree of interaction and the methods used to achieve this interaction. Hilgers (2012, p. 640) defines open government as the act of integrating external knowledge into the political-administrative process. Although it is not exclusively bound to online interaction, the internet has made collaboration between citizens and the public administration possible on a large scale (Collins, 2009). Open government can be seen as a new interactive value chain and cooperation between the public administration and citizens through systematic integration of external actors into the process of governing (Hilgers 2012; Noveck 2009; Götze & Pedersen 2009; Lathrop & Ruma 2010). The government becomes more open, actively seeks for collaboration and co-creation with its citizens, shares its resources and tries to improve transparency as much as possible and can therefore be called a participatory government (Tapscott, 2005).

I selected the term "open government" out of the group of possible terms, which describes online collaboration between the public administration and its citizens, because it has the broadest definition. Nevertheless all the terms mentioned above can be seen as generally interchangeable.

In contrast, "open data" is a term which often appears in the context of open government, but is not interchangeable with open government. The term refers to the idea that almost all government data shall be freely accessible. In order to give citizens the possibility to contribute to the government in a meaningful way, it is necessary to provide them with the information needed to engage in open government projects. This concept of open data does not cover the interaction of the public sector with its citizens, only the provision of further information is meant by open data. The open data approach can therefore be seen as a precondition for open government (Chan, 2013; Lathrop & Ruma, 2010).

The involvement of citizens in government decisions did not develop through the internet. The internet lowered the costs for participation and enabled a broader mass of people to engage, but the underlying logic behind this phenomenon was already discussed in the seventies. At that time Robert Dahl (1977, p. 17) encouraged political scientists "to give serious and systematic attention to possibilities that may initially seem unrealistic, such as […] creating randomly selected citizen assemblies parallel with the major standing committees of the Congress to analyse policy and make recommendation." Nine years later Crosby et al. (1986) developed the concept of "citizen panels", which describes how citizens could be more efficiently integrated in the policy making process. Randomly selected citizens should examine the impact of selected policies and give advice. The whole system should be comparable to the US jury system. This example shows that integration of citizens is not a new concept.

2.2 Differentiation of open government and direct democracy

There is one important difference between open government and direct democracy: Open government focuses on the collaboration between citizens and the public administration, respectively the government, but the decision makers remain the same as in a representative democracy. By contrast, in a direct democracy the power to decide switches to the citizens (Altman, 2011). Therefore, direct democracy can be seen as a counterpart to the representative democracy (Altman, 2011). Whereas in a direct democracy the citizens have the power to decide, in a representative democracy they can only make suggestions, which then have to be approved by the elected appointees. Most literature sees open government as a complement or an improvement for representative democracy, not as an alternative (Lathrop & Ruma, 2010). This is because open government projects are non-binding, but they can nevertheless help to diminish the effects of the principal-agent problem. In a representative democracy citizens as principals delegate the act of governing to elected representatives (agents) (Strøm, 2000). The advantage for the citizens is time saving, because they only need to inform themselves once for the election and the rest of the time the elected representative will make the decisions for them. The elections give citizens the opportunity to control "their" agents in a time efficient manner.

Both representative and direct democracies have advantages and disadvantages. Open government can improve a representative democracy by increasing the transparency and therefore diminish the principal-agent problem. As Heckmann (2011, p. 1) wrote: "Open government is about improving transparency and thereby accountability in all public affairs." In this sense open government can be easily combined with the principles of a representative democracy as it can improve the opportunities of citizens to influence the decision making process without being continuously forced to be up to date.

2.3 Sub-types of open government

According to Hilgers (2012) three sub-types of open government exist: Citizen ideation and innovation, collaborative administration (citizensourcing), collaborative democracy. The differentiation is based on two dimensions:

1. The degree of innovation expected from the results of the task.
2. The domain of the task (political or administrative).

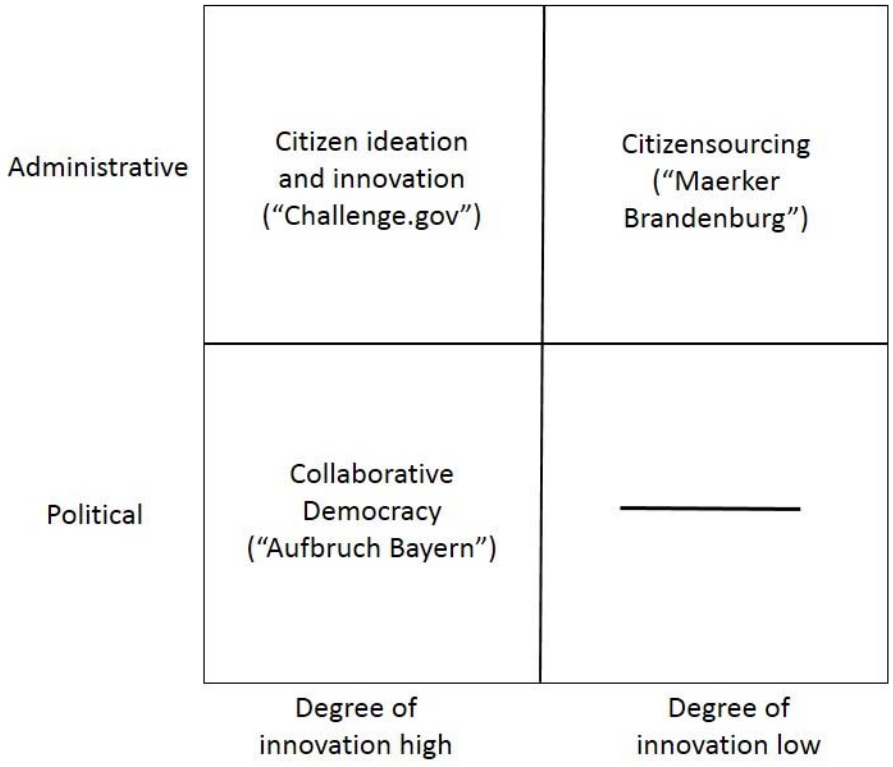

Figure 1: Sub-types of open government (adapted from Hilgers (2012))

2.3.1 Citizen ideation and innovation

Citizen ideation and innovation can be seen as the counterpart to open innovation in the private sector. It is about gathering external knowledge, mostly from citizens, to improve achievements of the public administration. One example is the platform "challenge.gov", where governmental institutions can post problems and expect possible solutions from citizens. For instance the NASA wanted to find new sources for weather observations and

awarded a prize of $ 6.000 for the best idea (NASA, 2013). In other tasks participants were asked to develop an application for mobile phones or to engineer a robot for future Mars missions. The prize varies depending on what the institution is willing to offer. An alternative platform is “innocentive.com”. The same basic principle applies; companies or institutions post problems in order to get solutions from the crowd. The difference is that “Innocentive” demands agency commission for successfully solved problems. As studies about open innovation portals demonstrate, this kind of knowledge acquisition can be highly beneficial (Reichwald et al., 2009). “Innocentive” has a success quota of 30% (Reichwald et al., 2009, p. 116). Interestingly, an average of 74 hours passed before the right or best answer was posted (ibid.), demonstrating that solutions were already available. The advantages of these platforms are saved resources, which can be utilized to fulfill other work and therefore increase the overall welfare. Open innovation is in most cases only successful when someone already has an answer at hand. If more in depth research is required, open innovation platforms appear to be less promising.

Another advantage of these platforms is that they overcome the “local search bias” (Hilgers & Ihl, 2010). This describes the phenomenon that individuals, as well as enterprises, often tend to use only knowledge sources they are already familiar with. They do not take into account other sources of information (Lüthje et al., 2005). Jeppesen and Lakhani (2010) have shown, that the best answers were often provided by people, who were not closely related to the field the question originated from. These platforms allow the questioner to reach a broad mass of potential problem solvers, without limiting the pool of answers from the outset.

2.3.2 Collaborative administration (citizensourcing)

The second category, collaborative administration or citizensourcing, includes all kinds of open government projects, which allow the collaboration of citizens and the public administration, but do not imply that an innovative or new idea results from the collaborative

process. The citizens support the public administration in daily tasks. Typical for this category are complaint systems. One example is “fixmystreet.com”. People in the UK can inform the road maintenance depot about potholes and other issues. This saves the institution manpower and provides more information about the situation of the infrastructure, and hopefully delivers a faster response to the posted issue.

Another project that fits into this category is “peertopatent.org”. On this platform citizens have the possibility to review pending patent applications. This cooperation can lead to a decrease of the workload of the patent office. The reviewer can inform the U.S. patent office if the patent application contains already patented or published knowledge (peertopatent.org, 2013). Today also the European, the Australian and the United Kingdom patent office are testing this form of collaboration.

A third example is “Texas border watch”. On this website the live camera view of the Mexican border is shown. Citizens are requested to report smuggling or illegal border crossings to the local authorities. In a one year pilot period about 221.000 registered users reported over 8.000 criminal offences (Hilgers, 2012).

2.3.3 Collaborative democracy

The two categories above focus on collaboration between the public administration and citizens. Collaborative democracy, however, bundles all open government initiatives which try to improve the participation of citizens in a more political context (Hilgers, 2012). Open government initiatives which belong to the type of collaborative democracy, often look for answers to normative questions for future developments of the society. The answers cannot be right or wrong, because a discussion within the society is needed to find an answer acceptable for the majority of the society. An example is the decision between the Scandinavian model of the welfare state and the American model. None of the models has considerably more advantages than the other, but the society has to decide which to choose.

Examples of collaborative democracy initiatives are “participatory budgeting” projects. Participatory budgets are nowadays relatively popular. The internet-platform “Buergerhaushalt.org” listed 70 participatory budgets in Germany for the year 2012 (Buergerhaushalt.org, 2013). In these proceedings citizens can make suggestions about the assets in the upcoming financial year. Depending on the process the citizens can make recommendations for the whole budget or only for selected domains.

A second example for collaborative democracy are projects like “Aufbruch Bayern”, where citizen can make suggestions about future developments in certain policy fields. In “Aufbruch Bayern” citizens were encouraged to report projects in the fields of family, education and innovation which were believed to be beneficial for the future of the German state Bavaria. The project which received the most positive feedback in each category from the community got a financial funding from the state government of Bavaria.

Table 1 gives an overview about examples for each of the three categories.

Citizen Innovation	Collaborative Administration	Collaborative Democracy
Galileo-masters.eu (Website searching for new application fields for the Galieo satellite navigation system)	Collaborative Patent Review (USA, United Kingdom, Australia)	Participatory Budgeting (New York City (USA); Berlin (Germany), Hamburg (Germany), Munich (Germany), Porto Alegre (Brasil), Sevilla (Spain))
Challenge.gov (Central platform for cooperation with U.S. federal agencies)	Platforms for Complaints (e.g.: Maerker Brandenburg, FixMyStreet.com) (Hamburg (Germany), San Francisco (USA), Boston (USA), German States, United Kingdom, USA)	Ideation Contests (e.g.: Suggestions for more family-friendly policies) (USA, European Union, Germany, German States)
Software and App Development Projects (Germany, USA, Munich (Germany), Vienna (Austria), Washington D.C. (USA), New York City (USA))	Reports of Cases of Corruption (e.g.: http://ipaidabribe.com (India, Kenia, United Kingdom, USA)	Interactive Legislation Projects (USA, New Zealand, European Union, Germany, German States (Lower Sachony))
Vancouver.uservoice.com (Suggestions, discussions and voting for a more environmental friendly Vancouver)	Microtasking (e.g.: Describing photos from the surface of the mars) (USA, Finland, Vancouver (Canada))	Interactive Urban Planning Projects (Hamburg (Germany), Bremen (Germany), Essen (Germany), Ulm (Germany), Stuttgart (Germany), Melbourne (Australia))

Table 1: Open government projects (partially adapted from Hilgers (2012) and Sohn and von Kortzfleisch (2012))

2.4 Open government aims

The aims of open government are to "ensure the public trust and establish a system of transparency, public participation, and collaboration. [This] openness will strengthen our democracy and promote efficiency and effectiveness in government" (Obama, 2009). This quotation of Barack Obama gives a short overview of the most important aims of open government. In the following the aims will be explained in more detail.

2.4.1 Transparency

Transparency is a precondition for every functioning democracy (Heckmann, 2011, p. 1; Hilgers, 2012). The literature argues that open government platforms increase transparency by enhancing the online accessibility of documents and current statuses of processes. Online accessibility shall become a standard for all documents used by the public administration. Today only explicitly marked documents are available online for everyone in most countries (Benkler, 2011; Hilgers, 2012). Under the concept of open government all documents shall be available online, only documents which contain personal information or are security related will not be publically available. Monitoring the actions of politicians and the public administration becomes less costly for citizens through the increased accessibility of documents and statuses of processes (McDermott, 2010). People can better review whether the elected representatives act to the benefit of their voters.

It is also a precondition for participation and collaboration (Hilgers, 2012, p. 641). Only if citizens know what the government is working on, they have the opportunity to influence political decisions. Nowadays it is easier than ever before for the state to provide citizens with information about the political situation and upcoming policies.

2.4.2 Participation

Open government aims at increasing public participation in the political-administrative process. Advocates of the open government approach argue, that with the new possibilities of online communication citizens can more actively engage in the decision-making process of the government and the public administration than ever before (di Gennaro & Dutton, 2006; Hilgers, 2012; Lathrop & Ruma, 2010). New internet platforms make it easier for citizens to articulate their opinions and interact with the public administration and parliamentarians. Furthermore, these platforms should also increase the acceptance of political decisions, because citizens are more likely to accept decisions if they can comprehend who and how

many people support a decision. Among others, Ann Macintosh (2008) highlighted the fact that higher participation rates are nearly always desirable for a democracy.

2.4.3 Policy enhancement

The use of open government initiatives may improve the implementation and outcome of policies (McDermott, 2010). Improved outcomes can be more service orientation in the public administration or completely new approaches for tackling problems like climate warming or unemployment.

The usage of open government initiatives can be beneficial, because, for example, potholes are repaired more speedily and the re-structuring of parks can take into account the needs of the users. The law making process can focus more on issues which concern the citizens.

It is often argued that citizens or customers do not have the knowledge or the expertise to contribute in a meaningful way. Philip Tetlock (2005) showed in his book "Expert Political Judgement" that in most cases experts do not predict the future better than ordinary people who are experts in another field. Experiments proved that the general way of thinking is more important than the actual fact knowledge. There is no evidence that experts score higher when predicting the future than people with a good educational background, who are not experts in that specific field. This argument strongly supports open government as a tool for recruiting citizens as advisors for the public administration and the government. Further evidence comes from the private sector. Poetz and Schreier (2012) showed that ideas from open innovation platforms are as valuable as ideas from professionals. They found out that ideas from customers are more innovative than from professionals, but quid pro quo the ideas from professionals were more feasible. Similar results were provided by Kristensson et al. (2004). Additionally Poetz and Schreier (2012, p. 245) state that "even more interestingly, it is found that user ideas are placed more frequently than expected among the very best in terms of novelty and customer benefit".

2.4.4 Public trust

Open government initiatives can increase the public trust and decrease the disillusionment with politics (Heckmann, 2011). The more the citizens are involved in the decision making process, the more they comprehend the decisions and the more their trust in the system is increased. Berman (1997) for example has shown that increased citizen involvement can reduce public cynicism towards the government. If people can see what their taxes are used for, they less likely assume that the government or other entities are corrupt or misspend the money. Transparency is an important part of trust creation. As the "Edelman Trust Barometer 2012" shows only around 20% of the population believe that the government is able to tackle essential problems as the financial crisis or other important problems (Edelman, 2012). Only 16% believe that the government is communicating honestly and frequently (ibid.). These result signal that the communication between the government and its citizens has to be improved as people need to trust their government and institutions.

2.4.5 Civic education

As the OECD stated in 2004, open government initiatives can be used to experience and understand collective decision-making (OECD, 2004). Understanding the processes of collective decision making is important as the proceedings revealed by the increased transparency need to be interpreted correctly. Transparency alone does not allow the citizens to understand why specific decisions were made by the public authorities. Open government projects can be helpful by teaching an understanding of the processes. As Barber states:

> *"The politically edifying influence of participation has been noted a thousand times since first Rousseau and then Mill and de Tocqueville suggested that democracy was best taught by practicing it"* (Barber, 1984, p. 235).

2.5 Interdependencies of aims

Not all the aims are equally important. Figure 1 below displays how the aims are related. As one can see transparency is necessary for citizens to engage at all. Citizens can only engage if they have information and know about future decisions and plans of the public administration.

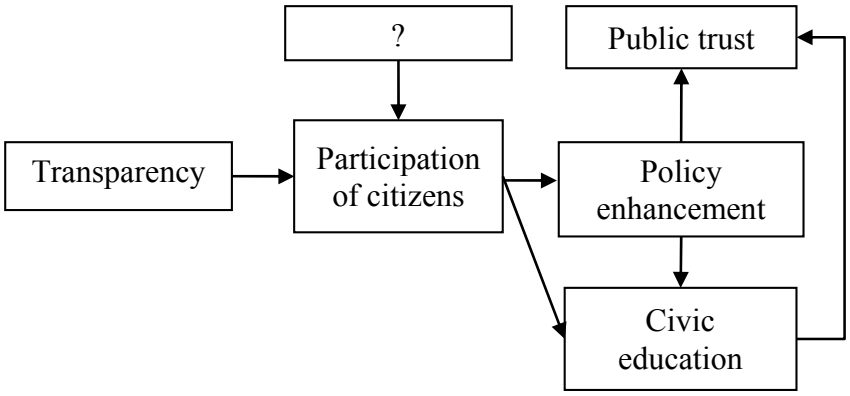

Figure 2: Interdependencies of aims (own research)

Therefore transparency can be seen as a precondition for all the other aims. Transparency is necessary but not sufficient for participation. In order to achieve more participation of citizens transparency is necessary (Weber et al., 2003), but as Evans and Campos (2013) state, transparency alone does not guarantee participation and better outcomes. When no-one uses the careful designed platforms and nobody delivers ideas to the public administration, nothing will change. In order to make open government a success, it is necessary to ensure that people engage. When we have a greater understanding of why some people engage in certain projects and in others do not, the public administration could consider these insights in new projects. Whereas the literature has researched why people engage in FLOSS and open innovation projects intensively, relatively little is known why citizens engage in open government projects. What factors are influencing the decision to participate in open government projects beside the existence of transparency? To answer this question the next chapter is focussing on participation in online collaboration in general.

2.6 Participation in online collaboration

The previous chapters have shown how open government can improve political involvement of citizens. In order to do that general acceptance as well as participation of citizens is required. When the motives of participants are clear, open government projects can be developed more precisely to improve motivation (Leimeister et al., 2009). With this knowledge incentives can be implemented which directly target the beforehand researched motives to increase the chance of participation. As a consequence, we need to understand what motivates people to participate in open government projects. In the following I will firstly describe what motivation is. Afterwards it will be explained what the literature states about the motivation of participants of open government initiatives, FLOSS and open innovation projects.

2.6.1 Motivation and amotivation

This chapter cannot provide a full overview of the topic of motivation in general. It will shortly explain the most important aspects, which are necessary to understand why people engage in open government initiatives.

The psychological literature differentiates between motives and motivation. “In the field of motivation psychology, a motive is seen as an individual’s psychological disposition” (Leimeister et al., 2009). Some motives are inherent, others evolve during the socialization process of a person (Rosenstiel & Nerdinger, 2011). Motives are relatively stable over the lifespan and do not automatically lead to certain actions. Typically an activator is needed to initiate a behaviour (ibid). Motivation is a combination of a person with specific motives and a situation which gives certain incentives which trigger a certain behaviour (ibid.).

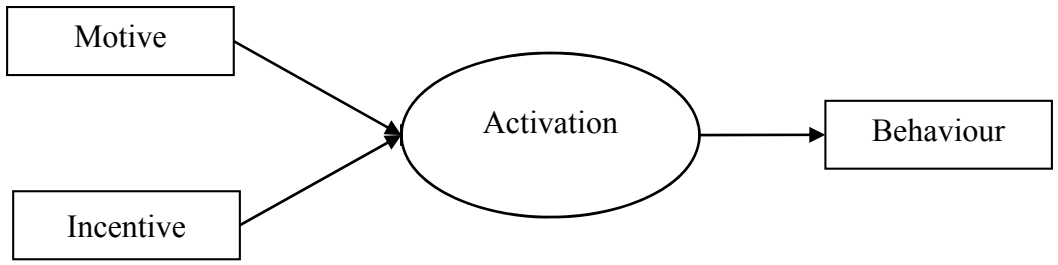

Figure 3: Motive-Behaviour-Systems (adapted from Rosenstiel and Nerdinger (2011))

Motivation of individuals can be grouped in many ways, but the by far most often used distinction in the context of FLOSS development and online collaboration is the one "between intrinsic and extrinsic motivation in self-determination theory (SDT)" (von Krogh et al., 2012, p. 9). According to Deci and Ryan (1985), a motivation is intrinsically motivated if the task is performed for fun or the interest in the task itself. Extrinsically motivated are people, who perform a task to obtain something for their task (ibid.).

In contrast to motivation, which implies that people act in a certain way, amotivation is a psychological effect, which hinders people taking action in order to deal with a situation. Deci and Ryan (1985) wrote about why people sometimes do not engage, even if they are interested. "'Amotivation' as defined by Deci and Ryan (1985) refers to the relative absence of motivation, that is not caused by a lack of initial interest, but rather by the individual's feeling of incompetence and helplessness, when faced with the activity" (Dörnyei, 2001, p. 144). According to Vallerand (1997) four sources of amotivation exist:

1. People can be amotivated, because they think they lack the necessary abilities to perform the task ("capacity-ability beliefs").
2. People can be amotivated, because they believe that their ideas will not be properly implemented ("strategy beliefs").

3. People can be amotivated, because they have the perception the costs for reaching the outcome are too high ("capacity-effort beliefs").
4. People can be amotivated, because they have the impression that their solution is only a drop in the ocean ("helplessness beliefs").

After that very general introduction about motivation and amotivation, the next step is to apply these concept in the context of online collaboration.

2.6.2 Reasons for participation in open government projects

The only study directly focusing on motivation of participants of open government projects was conducted by Hutter et al. (2011). They focused in their research on the motivation of participants of the collaborative democracy project "Aufbruch Bayern". In this project citizens were invited to submit ideas about beneficial projects for Bavaria in the fields of family, education and innovation. Everyone was invited to discuss these ideas, to vote for them and the most popular idea in each field received at the end a funding by the state government. They discovered, that the three main reasons to participate were "interest in politics", "interest in the platform/community" and "need for improvement" (Hutter et al., 2011, p. 10). One of the shortcomings of the study is that it only researched the motivation of participants. As Weber et al. (2003) have mentioned, interest in politics is a bad predictor for political participation. The number of citizens who regard themselves as politically interested by far exceed the number of people, who are actually willing to participate and engage in political activities. Political interest is a necessity, but on its own, not sufficient. It is necessary to include people who would not engage in such a project, in order to identify the differences in their motivation compared to the motivation of the people willing to engage.

2.6.3 Reasons for participation in FLOSS projects

The literature about motivation to participate in FLOSS projects is a good starting point for researching the motivation of participants of open government projects, as at least for

"Aufbruch Bayern" Hutter et al. (2011, p. 1) have shown that "citizens' motives to engage in open government platforms largely resemble the motive categories of innovative users, like open-source programmers or consumers to participate in co-creation projects". Nevertheless these results are based on only one project and further research is needed.

The main drivers for participation in FLOSS projects according to the literature are the following: In the literature, motivational factors for contributing to FLOSS projects have been explored extensively. Recently, von Krogh et al. (2012) published an overview of the literature researching the motives to engage in FLOSS projects (Table A1 in the appendix shows an overview). Von Krogh et al. (2012) added a third category to extrinsic and intrinsic motivation; it is called internalized extrinsic motivation. The argument is that "some motivations are by definition extrinsic, but developers could internalize them, so that they are perceived as self-regulating behaviour rather than external impositions" (von Krogh et al., 2012, p. 11).

Ten reasons for participation in FLOSS projects were frequently identified: Ideology, pro-social behaviour (altruism), kinship, fun, reputation, reciprocity, learning, own use, career and pay.

- Ideology; means that people contribute to FLOSS projects because they are convinced that everyone should have the possibility to have access to the source code, and the possibility to modify it. Hertel et al. (2003) found that people who participate for social reasons contribute more, and their contributions receive a higher rate acceptance.
- Pro-social behaviour (Altruism); Altruism is the principle or practice of unselfish concern for or devotion to the welfare of others (von Krogh et al., 2012, p. 63). Nevertheless, until today no universal accepted definition of altruism exists (Hutter et

al., 2011; Miller, 2002). According to Krebs (1970) an altruistic act has three characteristics:

1. The aim is not a personal advantage.
2. The act has to be done voluntarily.
3. The aim is to help someone else.

A debate is ongoing whether altruistic behaviour can contain self-interests as long as the main aim is to help someone else. If one follows the definition of Krebs (1970), a possible personal advantage needs to be excluded from the aims before a task can be defined as altruistic. It is difficult to assess whether the main aim of a person is helping others or personal advantage. To solve this problem a different concept is often used. Pro-social behaviour is a concept which is broader than altruism, because it covers all kinds of behaviours which lead to a positive social outcome, regardless of the motivation of the actor (Eisenberg et al., 2007). An act can be described as pro-social as long as the outcome is beneficial for the society, even when the motivation of the performing person was not completely unselfish. The concept of pro-social behaviour is less prone to failure and therefore a practical alternative to altruism.

- Kinship; describes the motivation of contributing to a community to which one belongs, in order to help this community without expecting economic rewards (von Krogh et al., 2012). Community identification is part of this concept, as it is the attempt to be part of a group. Lakhani and Wolf (2005), as well as Hertel et al. (2003) and Hars and Ou (2002), identified a relationship between kinship and the resources invested into FLOSS development. As altruism kinship has also some methodological problems and is therefore integrated into the concept of pro-social behaviour as well.
- Fun; people are motivated to contribute to FLOSS because they enjoy programming. Luthiger and Jungwirth (2007) state that enjoyment is one of the most influential factors when explaining the amount of time spent on FLOSS projects. However, the

importance of fun as motivation differs depending on the task. Lakhani and Von Hippel (2003) have shown that fun has a greater impact on motivating people to engage in programming for open source projects, than it has on motivating people to provide technical support to other users of open source projects.

- Reputation; can be split into two sub-categories: The reputation within the community and the reputation to externals (von Krogh et al., 2012). The first signals to potential new employers the skills of the programmer. The latter is "concerned with anticipated reactions to the contributors by significant others, such as friends and relatives, and prestige awarded" (von Krogh et al., 2012, p. 65). Especially students hope to enhance their job prospects by contributing to FLOSS projects. Von Krogh et al. (2012) also added an extra category "career" to their overview. From my point of view "career" fits into the category reputation, because reputation is a more general term than career. Nevertheless I did not put career as a sub-category of reputation in table A1, because career is solely extrinsic whereas reputation could also be internalized extrinsic, especially if reputation by friends or family is considered.
- Reciprocity; describes the rationality of people to contribute to FLOSS, because they hope to gain something in return, mostly additional contribution to the source code.
- Learning; is found in most studies as a driver for participation. People contribute to FLOSS projects in order to improve their programming skills and increase their human capital. Contributing to FLOSS projects is therefore beneficial to the career in more than one way; existing skills are developed and highlighted to potential employers.
- Own-use; describes the motivation of participants to start FLOSS development, because they try to solve their own problems. Sometimes no software exists that suits their needs, so they start developing their own software. Shah (2006) wrote that development for personal use is one of the top motivators to start contributing to

FLOSS projects; however, subsequently the importance of personal gain decreases and fun becomes more and more important as the project matures.

- Money; Lakhani and Wolf (2005) state that 40% of the contributors are getting paid for their work. In certain areas, such as the Linux kernel development, at least 70% of the contributors are contributing during their work time (Kroah-Hartman et al., 2009). According to the data, money is an important motivational factor. Additionally, paid workers contribute more than volunteers (Hars & Ou, 2002; Hertel et al., 2003; Lakhani & Wolf, 2005).

This overview does not show which of these reasons is the most prominent. Due to the fact that not all studies tested for every motivational reason, one can only conclude, that at least every item appeared more than once. Lakhani and Wolf (2005, p. 11) tried to answer the question, which of the factors is the most prominent one. They found out, that the most important motivational reason is own-use. The second most important factor, according to their study, is fun. The third most stated reason for participation is ideology; nevertheless, there is an on-going debate in the literature which factor has the greatest influence. For example Kaufmann et al. (2011) found proof that intrinsic motivation dominates extrinsic motivation. In contrast, Pilz and Gewald (2013) concluded that "extrinsic motivation (e.g. payment, signalling, human capital advancement or action significance by external values etc.) dominates its intrinsic complement (e.g. skill variety, task identity or direct feedback from the job etc.)" (Pilz & Gewald, 2013, p. 584). In context of this thesis it is only important to identify factors from the literature that influence participation; not to which degree they influence participation.

Furthermore, the table does not differentiate between motivational factors for beginning a task and continuing afterwards. As Rotman et al. (2012) have shown, two critical points in time exist when researching motivation. The first one is prior to the beginning of a task; the

question is: What motivates people to take up a task? Secondly: What motivates people to carry on? Motivation can differ significantly, depending on how the task was perceived at the beginning, rather from how it may develop later on during the process.

Summarizing one can say that the factors which motivate people participating in FLOSS projects differ depending on the task performed and can change over time. Nevertheless, ideology, pro-social behaviour, fun, reputation, reciprocity, learning, own use, career and pay seem to play an important role for a majority of participants at least at one point in time.

2.7 Research questions

It has been shown that open government can be a viable tool for strengthening the representative democracy and solving upcoming challenges for the society. However, the scientific literature cannot explain who is going to participate and why. This thesis is going to tackle these problems. In order to do so five sub-questions need to be answered:

The first question is whether citizens see a difference between the three theoretical concepts of citizen ideation and innovation, collaborative administration and collaborative democracy. As pointed out above, the literature differentiates between three types of open government projects; but are citizens aware of the difference between these kinds of initiatives? If they perceive them as different, then the motivation to engage in them might differ. On the one hand people could think of open government projects as one big entity, which would give the citizens the possibility to interact with the government or the public administration. On the other hand citizens could distinguish between projects which are bound to specific problems, and projects which invite them to articulate their general opinion towards future political developments. Furthermore projects that are initiated by the public administration may be viewed more promising than the ones from the government or vice versa.

> ***Q1**: Does the willingness to participate in open government projects depend on the type of the open government project (citizen ideation and innovation, collaborative administration and collaborative democracy)?*

Due to the fact that one might expect that citizens differentiate between the three types of open government initiatives, the first hypothesis is:

> ***H1**: The willingness to participate in open government projects depends on the type of the open government project (citizen ideation and innovation, collaborative administration and collaborative democracy).*

The second question is whether citizens differ in their motivation, depending on the type of open government project (citizen ideation and innovation, collaborative administration and collaborative democracy). If a significant difference between the willingness to participate in these three projects is identified, it would be interesting to research why people give preference to a particular project. In this context it does not make sense to formulate a hypothesis, as the literature does not allow assumptions about which motivational reasons are more important. Therefore the second question is:

> ***Q2**: Do the motivational reasons to participate in open government initiatives differ depending on the type of open government project (citizen ideation and innovation, collaborative administration and collaborative democracy)?*

In order to answer this question it is necessary to firstly identify the motivational reasons that motivate citizens to engage in different types of open government projects. The three associated sub-questions are:

> ***Q2a**: Which are the motivational reasons to engage in citizen ideation and innovation projects?*
>
> ***Q2b**: Which are the motivational reasons to engage in collaborative administration projects?*

> ***Q2c**: Which are the motivational reasons to engage in collaborative democracy projects?*

Afterwards it is possible to compare the results and conclude to what degree the reasons differ.

If the reasons to engage differ, then also the reasons to refuse an engagement in open government projects might differ. Again, due to the fact that the literature does not allow further assumptions about the expected results, no hypothesis is formulated. Therefore the questions is:

> ***Q3**: Do the amotivational reasons to refuse an engagement in open government projects differ depending on the type of open government project.*

Once more the amotivational reasons shall be researched for each sub-type before the results will be compared.

> ***Q3a**: Which are the amotivational reasons to refuse an engagement in citizen ideation and innovation projects?*
>
> ***Q3b**: Which are the amotivational reasons to refuse an engagement in collaborative administration projects?*
>
> ***Q3c**: Which are the amotivational reasons to refuse an engagement in collaborative democracy projects?*

The fourth research question is focussing on the characteristics of participants. As stated in the part about political participation, researchers have identified that especially older, well-educated males engage in traditional forms of political participation (Verba et al., 1995). Nevertheless new forms of political participation, like non-institutionalised, show partially other correlations (Marien et al., 2010). Therefore it is reasonable to research what relationships between socio-economic characteristics and engagement in open government projects exist. The results of e-petitions on the German parliament studies have shown that

different groups of the society are more likely participate than others (Riehm, 2009). E-petitions are comparable to some open government projects; most likely to collaborative democracy initiatives. Both address the government and can be seen as an instrument to inform the politicians about current political issues of their citizens. Whereas collaborative democracy is a top down initiative, in contrast e-petitions originate from citizens and are therefore bottom-up projects. Both types focus on communication via the internet and therefore it seems reasonable to use the results of the studies about e-petitions as a starting point. A study, conducted on behalf of the German parliament, revealed that people who are older than sixty, well-educated and male are typical petitioners (Riehm, 2009, p. 43). When taking into consideration also other types of political participation, like collections of signatures, writing letters to editors of newspapers or politicians and/or participation at demonstrations, the 40 – 59 age group are the most active. Furthermore there is also a relationship between education, sex and participation (ibid.). Fulltime workers are politically active above average; which is interesting because one might assume that people who fit into that category have other priorities in their leisure time. The question is whether we can expect a similar outcome from open government projects.

> ***Q4:*** *Does the willingness to participate in open government projects differ depending on the socio-economic characteristics?*

In order to answer Q4 socio-economic characteristics need to be further defined. The literature about political participation implies that certain groups of the society are more likely to engage. Due to that additional sub-questions and sub-hypotheses are formulated

> **Q4a**: *Does the willingness to participate in open government projects differ depending on the gender?*
>
> **H4a**: *Males participate more often in open government projects.*

Q4b: *Does the willingness to participate in open government projects differ depending on the level of education?*

H4b: *The more educated a person is, the more likely he/she will engage in open government projects.*

Q4c: *Does the willingness to participate in open government projects differ depending on the age?*

H4c: *Older people are more likely to engage in open government projects.*

Q4d: *Does the willingness to participate in open government projects differ depending on the employment status?*

H4d: *Fulltime employed people are less likely engage in open government projects.*

The last research question is whether politically disappointed people less likely engage in open government projects. In order to reach the aims of open government a broad range of citizens need to be included, especially citizens who are dissatisfied with the current situation. It is therefore necessary to investigate whether those people would be willing to contribute to open government initiatives. The scientific literature distinguishes between normal disappointment of politics and political alienation. Political alienation is a concept that describes the phenomenon that people within the society are dissatisfied with the current situation without reason (Arzheimer, 2002). They are not dissatisfied with a decision due to a particular reason; they are more generally disappointed from everything that is in some way connected to politics. Especially in Germany the concept of political alienation has been popular for decades[1]. The German expression for political alienation "Politikverdrossenheit" was selected in 1992 as term of the year (Duden, 2013). Nevertheless it is unclear what

[1] See for instance: Arzheimer(2002), Maier (2000) or Niedermayer et al. (2013). I chose German literature because the concept of political alienation is especially important to the German society and literature.

exactly is covered by this term (Arzheimer, 2002). Can shrinking voter turnout be interpreted as general alienation of the citizens from the democracy? Are citizens who criticize the political output "good democratic citizens" as defined by Almond and Verba (1963) or alienated from the democratic culture? Furthermore the term political alienation is unspecific, because citizens can be dissatisfied with the whole democratic system or only with parts of it, like political parties, institutions or politicians. In my thesis I will not differentiate between disappointments due to specific reasons or political alienation in general. The main issue is whether the citizens are dissatisfied with the output of the political system. I will not analyse whether their disappointment is justified or not, which is one possible differentiation between the concepts of good democratic citizens or citizens who are politically alienated. Due to that the fifth research question does not differentiate between political alienation and simple dissatisfaction:

> ***Q5****: Are people who are dissatisfied with the current political situation less likely to engage in open government projects?*
>
> ***H5****: People who are dissatisfied with the current political situation less likely engage in open government projects.*

Figure 1 below illustrates the research model.

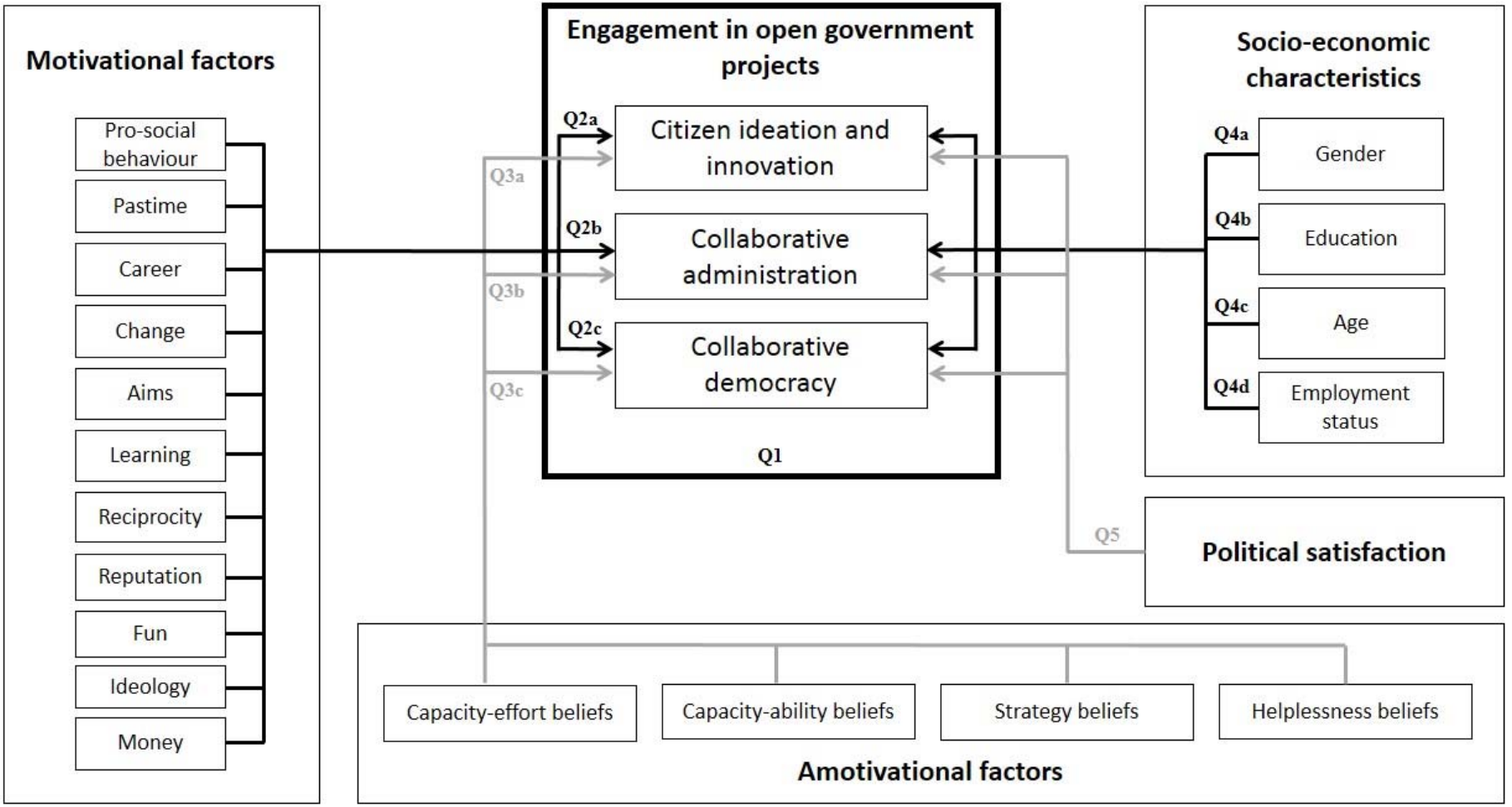

Figure 4: Research model (own research)

3 Research methodology, model and operationalization

The aim of the study is to better understand why people engage in open government projects. Based on prior research in the field of online collaboration I assume that motivational factors and socio-demographic factors are influencing the decision to participate. The study has a Y-centred research design as the aim is to explain the variance of participation as good as possible (cf. Ganghof, 2005). The research questions will be answered with the results of an online questionnaire with 161 participants conducted in October 2013. In order to find a relationship between the socio-demographic values and engagement I followed the approach of Kaufmann et al. (2011) and used non-parametric statistics (Wilcoxon rank-sum test/ Mann-Whitney test; Kruskal-Wallis test; Wilcoxon sign-rank test; Jonckheere-Terpstra test) because normal distribution could not be ensured for the data (cf. appendix table A6). In the following I will describe the structure of the questionnaire, the questions used and the reliability analysis.

The questionnaire consists of two parts. One about socio-economic characteristics and political satisfaction and one with motivational statements for each of the three types of open government: citizen ideation and innovation ("Challenge.gov"), collaborative administration ("Maerker Brandenburg") and collaborative democracy ("Aufbruch Bayern"). The first part about socio-economic characteristics and satisfaction with the political system contained questions about age, level of education, current employment status, sex as well as the current place of residence of the participants. Participants were asked whether they are members of a political party, if they have voted in the last general election and whether they hold an honorary office. The satisfaction with the political system was measured via statements, where participants chose to which extent they agreed. The agreement was measured on a 5-point Likert scale. To ensure the validity, the statements were adapted from the questions used to measure political alienation in Austria 1993, which were also reviewed by Andreas

Schedler (1993) afterwards. I chose this rather old text as a template, because the amount of available well elaborated questionnaires, which measure political dissatisfaction, is very low (Arzheimer, 2002). Only 3.7% (n = 176 publications) of the literature reviewed by Arzheimer (2002, p. 154) used their own operationalization for political alienation.

Most of the other studies which measured political alienation, used existing measures, like for instance voter turnout (ibid.). Even in 2013 the number is not significantly higher (Niedermayer et al., 2013). The fact that the questions used were accessible to me and had at least been reviewed once, made them appropriate as a template for my research. I used the questions for political satisfaction, as well as performance and political alienation. I included the criticisms from Schedler (1993) of the original questions and adapted them to fit into the German context; additionally I added "I am content with the work of the public administration", because the satisfaction with public administration is of interest when researching the motivation for participation in open government initiatives.

I tested the reliability of the scale for political disappointment with an exploratory factor analysis (EFA), a confirmatory factor analysis (CFA) and Cronbach's alpha. The EFA revealed one important factor (Factor1 = Eigenvalue 3.57). For the identification of the important factor I used the Kaiser's criterion (Eigenvalue > 1) (Kaiser, 1960). All but one statement used (S1, S2, S3, S5, S6, S7) load high into this factor (factor loading > 0.50). I chose 0.5 as important for the factor loading, due to the fact that my sample size is between 100 and 200 (Stevens, 1992). Only the question regarding the satisfaction of the survey participants with the coalition government of CDU/CSU and FDP, led by Angela Merkel (2009-2013) (S7), does not load as important into that factor. Retrospectively, this seems reasonable due to the fact that this question is the only one obviously affected by the political orientation of the participants. People who are politically closer to other parties than CDU or FDP, are more likely to disagree with this question, even if they are not generally

disappointment by politics. The performed Kaiser-Meyer-Olkin measure of sampling adequacy (KMO)(Kaiser, 1970) showed with 0.90 a very good result, indicating that the sample size is suitable for a factor analysis (cf. appendix table A2). Table 2 below shows the results of the exploratory factor analysis.

	Political alienation	
Statement	Item	Factor loadings
S1	"Politics often fail in critical questions."	**0.83**
S2	"Political parties in Germany are doing a good job."	**0.83**
S3	"Politicians in Germany acquit themselves well."	**0.80**
S4	"I was content with the coalition government of CDU/CSU and FDP led by Angela Merkel (2009-2013)."	0.12
S5	"I am contented with the work of the public administration."	**0.70**
S6	"Generally, I am contented with the democracy, the political parties and the whole political system in Germany."	**0.76**
S7	"I am dissatisfied with all established political parties."	**0.70**
	Eigenvalue	3.579

Table 2: Summary of the exploratory factor analysis results for political alienation (N = 161) (own research)

The CFA, which was conducted to double-check the results, showed similar results (cf. appendix A3 and A4). The confirmatory factor analysis is a special kind of structural equation modelling (SEM) to test the fit of a theoretical model. All factors have standardized factor loadings higher than 0.65 with p-values below 0.01. The model fit in general is good (chi^2 = 8.04; df = 9; p = 0.53). In this context non significance is desirable as the H_0 hypothesis states the fit of the model. Therefore a significance level of 53% does not allow rejecting H_0. Even the root-mean-square-error of approximation (RMSEA) indicates with 0.00 a good model fit. Cronbach's alpha yields results around 0.88 (cf. appendix table A5). The measurement of political disappointment can therefore be seen as reliable.

In the next part of the questionnaire each participant received a short example of the three categories; citizen ideation and innovation ("Challenge.gov"), collaborative administration ("Maerker Brandenburg"), and collaborative democracy ("Aufbruch Bayern"). They were required to state to what extent they agree to certain statements. The statements measure participants' attitudes towards ideology, fun, reputation, pro-social behavior, reciprocity, learning, own use, career and pastime for each type of open government initiative. The categories were identified by von Krogh et al. (2012) as important for developers to participate in FLOSS projects. As explained above, no comparable elaborated framework for open government exists. That is why I adapted the framework created by von Krogh et al. (2012). Instead of altruism and kinship I used pro-social behavior. As explained in the theory part pro-social behavior is easier to measure and less error-prone. The statements were adopted from multiple sources, because no single study provided a questionnaire focusing on all relevant factors of motivation. I used and adapted statements from Alexy and Leitner (2011), Leimeister et al. (2009) and Kaufmann et al. (2011) to increase the validity. In the majority of cases two questions were used for each motivational concept.

The table below displays all of the statements and their respective categories. The statements were identical for all types of open government projects; only the name of the project was changed. The acceptance of the statements were measured with a 5-point Likert scale. In order to identify acquiescence I used negatively formulated statements (Schumann, 2006). Acquiescence describes the phenomenon that people agree to a statement independently from its content. The order of the statements was randomly selected for each participant to avoid non-random errors.

Motivational factor		Question
Ideology	S8	I strongly believe that citizens in a democracy should participate in open government initiatives such as "Aufbruch Bayern".
	S9	I am of the opinion that a participation in open government initiatives, such as "Aufbruch Bayern", is a civic duty.
Pro-social behaviour	S10	Participation in an open government project, such as "Aufbruch Bayern", would support democracy.
Fun	S11	Participating in open governments initiatives, such as "Aufbruch Bayern", would be enjoyable.
Reputation	S12	Participation in an open government project, like "Aufbruch Bayern", enhances my reputation.
	S13	Participation in an open government project, like "Aufbruch Bayern", would NOT enhance my reputation.
Reciprocity	S14	My expectation would be that after participating in open government initiatives, such as "Aufbruch Bayern", I would receive something in return.
Learning	S15	Participation in an open government project, like "Aufbruch Bayern", would be a learning opportunity.
	S16	Participation in an open government project, like "Aufbruch Bayern", increases my knowledge.
Aims	S17	Participation in an open government project, like "Aufbruch Bayern", increases my chances of fulfilling my aims.
Change	S18	Participation in an open government project, like "Aufbruch Bayern", enables me to change the environment.
Career	S19	Participation in an open government project, like "Aufbruch Bayern", makes me more attractive to employers.
	S20	Participation in an open government project, like "Aufbruch Bayern", increases my chances in the job market.
Pastime	S21	Participation in an open government project, like "Aufbruch Bayern", enables me to pass time in a meaningful way.
	S22	Participation in an open government project, like "Aufbruch Bayern", avoids boredom in a meaningful way.
Money	S23	My willingness to participate in open government initiatives, such as "Aufbruch Bayern", would increase if there were monetary rewards.

Table 3: Statements about motivation (own research)

The reliability analysis of the motivational statements exhibits satisfactory results. As mentioned before most motivational factors were measured with two statements. In order to test whether the statements are measuring the same underlying construct I conducted a

correlation analysis and an exploratory factor analysis. The Shapiro-Wilk test for normal distribution revealed that some items are not normally distributed (cf. appendix table A6). I decided not to use Pearson's r for the correlation analysis, because the assumption of normal distribution is violated. Instead I applied Spearman's rank correlation coefficient. The complete results are recorded in table A7-A9 of the appendix. The correlation analysis revealed correlations ($rho > 0.5$, $p < 0.05$) between the statements S8 and S9 (ideology), S12 and S13 (reputation), S15 and S16 (learning), S19 and S20 (career), S21 and S22 (pastime). As next step I tested the reliability of the measurements with a factor analysis. I did the factor analysis with all items and checked eigenvalues and factor loadings. Not included were items, which correlate only with themselves, and items that have a strong multicollinearity or singularity (Field, 2005, p. 641). I applied the principal factor analysis and not the maximum likelihood method as one assumption for maximum likelihood is normal distribution (Field, 2005). Factor rotation was applied to be able to distinguish between factors at a higher level (Field, 2005, p. 634). I used orthogonal factor rotation, as this method provides as little factor correlation as possible. Table 4 shows the results of the factor analysis for the motivational statements in Aufbruch Bayern. The results of the analyses for Maerker Brandenburg and Challenge.gov are comparable. The KMO result with 0.53 was considered as acceptable.

To improve the interpretation I build up indices for all categories, where sufficient congruence was found, instead of using the factor values. This means that statements S8 and S9 were merged (ideology) as well as S13 and S14 (reputation), S16 and S17 (learning), S20 and S21 (career) and S22 and S23 (pastime).

Statement	Variable	Learning	Career	Pastime	Ideology	Reputation
S16	With a participation in an open government project, like „Aufbruch Bayern", my state of knowledge would increase.	0.8406				
S15	With a participation in an open government project, like „Aufbruch Bayern", I would learn something.	0.8543				
S20	With a participation in an open government project, like „Aufbruch Bayern", my chances at the job market will increase.		0.8329			
S19	With a participation in an open government project, like „Aufbruch Bayern", I am becoming more attractive for employers.		0.8365			
S21	With a participation in an open government project, like „Aufbruch Bayern", I am able to pass time in a meaningful way.			0.7978		
S22	With a participation in an open government project like, „Aufbruch Bayern", I am able to avoid boredom in a meaningful way.			0.8013		
S8	I am convinced that citizens in a democracy should participate in open government initiatives, such as "Aufbruch Bayern".				0.7481	
S9	I am of the opinion that a participation in open government initiatives, such as "Aufbruch Bayern", is a civic duty.				0.7309	
S12	With a participation in an open government project, like „Aufbruch Bayern", my reputation would increase.					0.6793
S13	With a participation in an open government project, like „Aufbruch Bayern", my reputation would NOT increase.					0.6903
	Eigenvalues	1.67412	1.48065	1.4046	1.16065	1.06153

Table 4: EFA for motivational factors in Aufbruch Bayern (own research)

To understand why people engage in open government projects it is also useful to comprehend what they fear and what deters them from participation. Therefore I included four statements to test for the concept of amotivation, developed by Deci and Ryan (1985): capacity-ability beliefs, strategy beliefs, capacity-effort beliefs, helplessness beliefs. Table 5 shows the statements used:

Statement	Amotivational concept	Statement
S24	Capacity-effort beliefs	I believe that open government initiatives such as "Aufbruch Bayern" are too expensive.
S25	Helplessness beliefs	Open government initiatives such as "Aufbruch Bayern" are too complex for me.
S26	Strategy beliefs	I do not think that my ideas will be implemented correctly.
S27	Capacity-ability beliefs	I do not have sufficient knowledge to participate in such open government initiatives such as "Aufbruch Bayern".

Table 5: Amotivational statements (own research)

In addition to the statements, the participants were questioned as part of the survey, if they would engage in such a project. Furthermore, they were asked, if they knew this or similar a project before. A 4-point Likert scale was used to measure whether the participants of the survey were prepared to engage in one or more of the three presented open government initiatives. The reason for choosing the 4-point scale was to compel the participants to make a decision. In a real project there is only the choice of engagement or non-engagement. Indecisiveness equates to no engagement until an active decision to engage is made.

The retest reliability for the whole questionnaire was tested with the 15 pre-test participants. The timeframe between the two tests was three weeks. The results showed an adequate result of 84%. For the retest reliability the questions regarding previous knowledge about open

government projects were excluded, because the knowledge of the participants has changed after the first test. All single item constructs have results greater than 80%.

In the following the distribution of the questionnaire will be explained. A pre-test was conducted at the beginning of October 2013, the main phase took place from 20th of October until the 7th of November. The questionnaire was available under https://de.surveymonkey.com/s/HDNBR9C. The survey was only available in German, due to the fact that my research is focusing on Germany. This was done as political participation is strongly influenced by political culture and history (Almond & Verba, 1963). In order to get a homogeneous group regarding the political culture I decided to constrain the study to one country. An additional reason was that it was important to include the views of the older generation of Germany, who may not comprehend English well enough to complete surveys in English. Comparing two questionnaires in different languages could have distorted the results due to translation errors and different interpretations of questions; therefore I decided to publish the questionnaire in German only. The study is not representative for all German citizens. For a representative survey the sample should share all important characteristics that influence the researched items with the population (Hollaus, 2007). Due to the fact that it is unclear which factors influence participation in open government initiatives, this is not possible. Another method to get a reliable survey is to use a random sample (Schumann, 2006). This is not feasible for my master thesis as well. It appears to be acceptable not to conduct a representative study due to the fact that gathering demographic data of study participants allows me to test which groups are over- or underrepresented. I am aware that such a self-selected sample may not be ideal, but it seems to be the best possible solution in this context.

4 Results

The survey provided 161 valid responses. Table 6 shows the basic socio-economic characteristics of the sample, in comparison to the distribution of these characteristics in Germany 2011/2012. Whilst the values cannot be compared on a one to one basis, the conclusion that students as well as well-educated persons are overrepresented can be drawn. In contrast, citizens with a "Hauptschul"[2] or "Realschul" graduation as well as people below the age of twenty are underrepresented.

	Survey sample	**Germany[3]**	
Gender[4]			
Men	55.28 %	48.92 %	
Women	44.72 %	51.08 %	
Age[5]			
Under 20	4.97 %	Under 18	16.52 %
20-29	27.33 %	18-29	13.99%
30-39	6.21 %	30-49	28.44%
40-49	14.91 %		
50-59	16.77 %	50-64	20.46 %
Above 60	29.81 %	Above 65	20.60 %
Employment status			
Fulltime	29.81 %	30.40%[6]	
Part-time	8.07 %	15.78 %[7]	
Retired	27.95 %	20.60 %[8]	
Students	20.50 %	3.11 %[9]	

[2] I used the German words because the translations are imprecise. Meant are pupils who left the school after the 9th respectively the 10th grade.
[3] As basis for the calculation I used 80,5 million citizens (Statistisches Bundesamt, 2011b)
[4] Source for Germany: (Statistisches Bundesamt, 2011a)
[5] Source for Germany: (Statistisches Bundesamt, 2011b)
[6] Source: (Institut für Arbeitsmarkt- und Berufsforschung, 2013: Data for 2011 used)
[7] Source: (Institut für Arbeitsmarkt- und Berufsforschung, 2013: Data for 2011 used)
[8] Source: (Tagesschau, 2012)
[9] Source: (Statistisches Bundesamt, 2013a)

Unemployed	6.21 %	3.60 %[10]
Other	7.46 %	26.51 %[11]
Education status[12]		
No graduation	5.59 %	3.80 %
"Hauptschulabschluss"	8.07 %	35.60 %
"Realschulabschluss"	16.15 %	22.10 %
"Abitur"	21.74 %	27.30 %
Bachelor	16.77 %	7.80 %
Master/ Diplom/ Magister	26.71 %	
PhD	4.97 %	1.10 %
Voted on last general election[13]		
No	21.74 %	28.50 %
Yes	78.26 %	71.50 %
Honory work[14]		
No	78.75 %	64.00 %
Yes	21.25 %	36.00 %

Table 6: Socio-economic characteristics of the dataset (own research)

4.1 Research question 1 (Q1)

The first research question (Q1) was whether the willingness to participate in open government projects depends on the type of the open government project (citizen ideation and innovation, collaborative administration and collaborative democracy). Figure 5 gives a first impression of the distribution. As one can see the participation in "Maerker Brandenburg" seems to be considerably higher than in the other two projects.

[10] Source: (Spiegel.de, 2013)
[11] "Other" includes for example school student and children under the age of 6
[12] It is important to consider that the Federal Office of Statistics (Statistisches Bundesamt) differentiate between "common school education" and "professional education". This means that the Federal Office of Statistics counts citizens with e.g. a master degree twice, once in "Abitur" and a second time in "master degree" because in Germany it is necessary to have "Abitur" or a similar graduation to gain access to university. Source: (Statistisches Bundesamt, 2013b)
[13] Source: (Bundeswahlleiter, 2013)
[14] Source: (Bundesministeriums für Familie Senioren Frauen und Jugend, 2009)

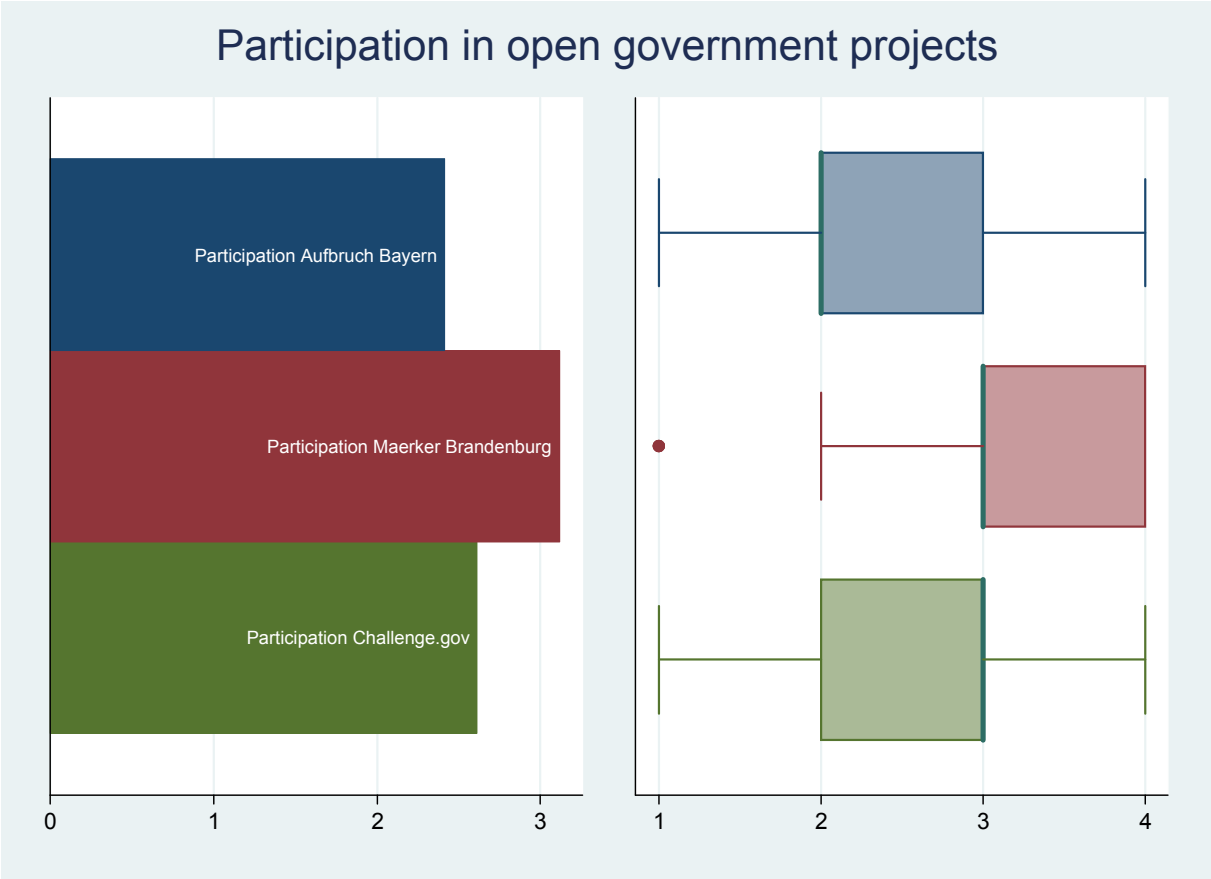

Figure 5: Participation in open government projects (own research)

To confirm this first impression, a Friedman test and post-hoc Wilcoxon rank-sum test with Bonferroni correction was conducted. The Friedman test "is used for testing differences between experimental conditions when there are more than two conditions and the same participants have been used in all conditions" (Field, 2005, p. 557). The Wilcoxon sign-rank test is used to compare two scores from the same participants (Field, 2005, p. 534). The Friedman test revealed no significant difference between willingness to participate in the three projects (Friedman (X^2) = 179.0876, Kendall = 0.3731, p-value = 0.1436). However, the three Wilcoxon sign-rank tests showed that a significant difference in participation between "Aufbruch Bayern" and "Maerker Brandenburg" ($z = -7.80$, $p < 0.01$, $r = -0.42$) as well as "Challenge.gov" and "Maerker Brandenburg" ($z = -5.069$, $p < 0.01$). Only between "Aufbruch Bayern" and "Challenge.gov" no difference was found ($z = -1.615$, $p > 0.1$). This result exposes that citizens indeed differentiate between different types of open government initiatives, but "Aufbruch Bayern" and "Challenge.gov" are perceived as similar. Hypothesis

1 can be accepted, as people's willingness to engage in open government projects depends on the type of the project.

4.2 Research question 2 and 3 (Q2 & Q3)

Now that it has been proven that people differentiate between different types of open government projects, the question is: Do the motivational reasons to participate differ between different projects? Table 7 displays the motivational and amotivational factors, separated by the willingness to participate in open government projects. Applying Mill's methods, the reasons for participation can only be motivational factors which differ significantly between the group of potential participants and non-participants. If for example the mean of the statements about ideology are not significantly different, ideology cannot be the decisive reason for the decision in favour or against a participation.

What we can see in all three projects is the fact that citizens who would participate perceive the projects as more enjoyable than people who would not engage (grey accentuations) (fun: "Aufbruch Bayern": $z = -3.235$, $p = 0.0012$; "Maerker Brandenburg": $z = -3.846$, $p = 0.0001$; "Challenge.gov": $z = -3.203$, $p = 0.0014$).

Only in "Aufbruch Bayern" the two groups significantly differed in their perception of their capacity-abilities. People who do not want to participate view open government projects as more resource consuming (dark green accentuations). The analysis revealed that this effect is only significant for "Aufbruch Bayern" ($z = 2.335$, $p = 0.0195$) and not for "Maerker Brandenburg" ($z = 1.079$, $p = 0.2808$) or "Challenge.gov" ($z = 1.643$, $p = 0.1004$). Another motivational factor that influenced the decision to participate in "Aufbruch Bayern" is, to what degree people believe that they can actually change their environment. One can see that people who would participate believe that the project has a stronger impact on the environment than people who would not participate (change: $z = -3.154$, $p = 0.0016$). For "Maerker Brandenburg" ($z = -0.889$, $p = 0.3739$) and "Challenge.gov" ($z = -1.421$, $p =$

0.1554) the perception of the chance to change the environment seems to be less important with respect to the willingness of people to participate in such projects. The last factor which influences the decision whether to participate or not in “Aufbruch Bayern” concerns their attitude towards civic duties. People who would participate in “Aufbruch Bayern” believed that good citizens should participate in these kinds of projects (ideology z = -2.500, p = 0.0124) (purple accentuations). The same applies to “Challenge.gov” (z = -2.727, p = 0.0064). “Challenge.gov” has two additional factors that influence participation significantly; people who do not want to engage perceive these kinds of open government projects as too complicated (helplessness beliefs z = 2.613, p = 0.0090) and believe that they do not have the knowledge to contribute in a meaningful way (capacity-ability beliefs z = 2.545, p = 0.0109) (yellow and blue accentuations).

People who would engage in “Maerker Brandenburg” believe significantly stronger that their suggestions will be applied correctly, in contrast to participants who answered that they would not engage in projects of that type (strategy beliefs z = 2.196, p = 0.0281) (orange accentuations).

	Obs.	Mean	Std.		Obs.	Mean	Std.
"Aufbruch Bayern"							
Participation=Yes				Participation=No			
Democracy	64	3.531	1.069	Social responsibility	97	3.433	1.207
Fun	64	3.344	0.996	Democracy	97	3.320	1.204
Social responsibility	64	3.313	1.082	Learning	97	3.237	1.193
Strategy beliefs	64	3.094	1.094	Strategy beliefs	97	3.093	1.191
Ideology	64	3.078	0.985	Capacity-effort beliefs	97	2.969	1.194
Change	64	3.031	1.181	Pastime	97	2.845	1.202
Learning	64	3.023	1.249	Helplessness beliefs	97	2.835	1.320
Pastime	64	2.781	1.191	Fun	97	2.804	1.057
Reputation	64	2.664	1.043	Capacity-ability beliefs	97	2.753	1.315
Reciprocity	64	2.656	1.087	Money	97	2.732	1.287

Aims	64	2.625	1.106	Ideology	97	2.691	1.069
Money	64	2.563	1.296	Reciprocity	97	2.680	1.263
Capacity-effort beliefs	64	2.547	1.097	Reputation	97	2.536	1.078
Career	64	2.539	1.131	Career	97	2.495	1.169
Helplessness beliefs	64	2.500	1.168	Change	97	2.454	1.051
Capacity-ability beliefs	64	2.438	1.167	Aims	97	2.454	0.902

"Maerker Brandenburg"

Participation=Yes				Participation=No			
Change	130	3.585	1.160	Change	31	3.452	1.091
Social responsibility	130	3.115	1.111	Social responsibility	31	3.323	1.301
Ideology	130	3.100	1.061	Democracy	31	3.258	1.154
Learning	130	3.073	1.233	Strategy beliefs	31	3.226	0.990
Democracy	130	3.069	1.208	Reciprocity	31	3.065	1.289
Reciprocity	130	3.031	1.181	Aims	31	3.000	1.571
Aims	130	2.946	1.228	Learning	31	2.935	1.078
Pastime	130	2.942	1.277	Capacity-effort beliefs	31	2.806	1.352
Fun	130	2.908	1.000	Pastime	31	2.806	1.321
Strategy beliefs	130	2.730	1.133	Money	31	2.774	1.334
Money	130	2.654	1.225	Ideology	31	2.710	1.146
Reputation	130	2.631	1.092	Helplessness beliefs	31	2.516	1.029
Capacity-effort beliefs	130	2.523	1.209	Career	31	2.387	1.315
Capacity-ability beliefs	130	2.492	1.301	Reputation	31	2.290	0.892
Helplessness beliefs	130	2.446	1.246	Fun	31	2.161	0.820
Career	130	2.308	1.180	Capacity-ability beliefs	31	1.935	1.031

“Challenge.gov“

Participation=Yes				Participation=No			
Change	85	3.341	0.933	Capacity-effort beliefs	76	3.237	1.187
Social responsibility	85	3.329	1.238	Learning	76	3.204	1.084
Fun	85	3.318	1.082	Helplessness beliefs	76	3.132	1.147
Learning	85	3.294	1.045	Capacity-ability beliefs	76	3.092	1.246
Democracy	85	3.153	1.210	Change	76	3.066	1.193
Reciprocity	85	3.047	1.262	Social responsibility	76	3.000	1.347

Ideology	85	3.035	1.099	Pastime	76	2.987	1.205
Strategy beliefs	85	3.000	1.113	Aims	76	2.882	1.222
Capacity-effort beliefs	85	2.941	1.209	Career	76	2.868	1.253
Aims	85	2.918	1.136	Reciprocity	76	2.842	1.233
Reputation	85	2.876	1.063	Reputation	76	2.757	1.079
Money	85	2.835	1.111	Democracy	76	2.750	1.097
Pastime	85	2.829	1.297	Fun	76	2.750	1.156
Career	85	2.741	1.245	Strategy beliefs	76	2.724	1.091
Helplessness beliefs	85	2.671	1.179	Money	76	2.684	1.246
Capacity-ability beliefs	85	2.600	1.104	Ideology	76	2.566	1.195

Table 7: Motivation by willingness to participate (own research)

4.3 Research question 4 (Q4)

The first sub-question of research question 4 (Q4a) is whether the gender influences the willingness to participate. No indication was found that the willingness to engage depends on the gender. The Wilcoxon rank-sum test showed the following results: “Aufbruch Bayern” ($z = -1.513$, $p > 0.05$), “Maerker Brandenburg“ ($z= -0.166$, $p > 0.05$), “Challenge.gov” ($z = 0.232$, $p > 0.05$). Hypothesis H4a has to be rejected because men do not engage more likely than women.

The second sub-question (Q4b) is whether the level of education influences the willingness to participate. Similar to the one-way independent ANOVA, the Kruskal-Wallis test compares scores from different participants (typically more than two) in order to find a significant difference (Field, 2005). However a significant result does not tell us which sub-groups differ significantly. To answer this question, a Wilcoxon rank-sum or a Mann-Whitney test as post-hoc analysis is useful (with Bonferroni correction). No relationship between the level of education and “Aufbruch Bayern” ($H(6) = 3.583$, $p > 0.05$) or “Maerker Brandenburg” ($H(6) = 2.116$, $p > 0.05$) or “Challenge.gov” ($H(6) = 2.841$, $p > 0.05$) could be found. Hypothesis H4b has to be rejected, because more educated citizens do not tend to engage more likely.

For the analysis of sub-question Q4c, I used the Jonckheere-Terpstra test, as this method is designed to test for trends. For “Aufbruch Bayern” the results show a significant weak negative trend ($J = 4437$, $z = -2.029$, $p < 0.05$, $r = -0.156$). This means that the older citizens get, the less likely they are willing to engage. The test showed no trend for “Maerker Brandenburg” ($J = 4981.5$, $z = -0.233$, $p > 0.05$) and “Challenge.gov” ($J = 4900.5$, $z = -0.482$, $p > 0.05$). Also hypothesis H4c has to be rejected, because older people do not more likely participate in open government projects. In fact for “Aufbruch Bayern” the opposite effect could be found.

The last sub-question (Q4d) is whether the employment status influences the willingness to participate. Here again the Kruskal-Wallis test was used. For the analysis of employment I dropped all sub-groups with ten or less observations (pupils and housewives). For the remaining groups (unemployed, full-time employed, student, part-time employed, pensioner) the Kruskal-Wallis test revealed no significant difference in their willingness to engage in “Aufbruch Bayern” ($H(4) = 7.18$, $p > 0.05$). Also for “Maerker Brandenburg” ($H(4) = 1.034$, $p > 0.05$)) and “Challenge.gov” ($H(4) = 0.920$, $p > 0.05$) no correlation between the type of employment and the willingness to engage could be found. These results show that hypothesis H4d has to be rejected.

4.4 Research question 5 (Q5)

Political disappointment (Q5) seems to have no effect on the willingness to engage in any kind of open government project (Kruskal-Wallis: “Aufbruch Bayern” $H(4) = 6.321$, $p > 0.05$; “Maerker Brandenburg“ $H(4) = 2.567$, $p > 0.05$; ”Challenge.gov” $H(4) = 2.851$, $p > 0.05$). People who voted on the last general election will not engage more regularly in open government projects (Wilcoxon rank-sum: “Aufbruch Bayern” $z = 0.074$, $p > 0.05$; “Maerker Brandenburg“ $z = 0.533$, $p > 0.05$; ”Challenge.gov” $z = -0.303$, $p > 0.05$)

The analysis showed barely any evidence to confirm that certain groups of the society are more likely engage in open government projects than others. The only relationship found is between age and willingness to participate in "Aufbruch Bayern". Young people have a higher willingness to engage in these kinds of projects. Nevertheless this relationship could only be found in the case of "Aufbruch Bayern". This indicates that older citizens do not refuse online participation in general. People who are dissatisfied with the current political situation are not less likely to engage in open government projects. This is important for the realization of the aims of open government projects because open government projects have the chance to reduce the dissatisfaction of citizens only when dissatisfied people participate.

An interesting fact is that people who have already taken part in similar projects, are significantly more likely engage in open government projects again (cf. figure 6 and table 8)[15]. People who had never experienced online co-operation with the government or public administration are more skeptical about open government. Existing projects seem to be well implemented because most people who know about them, have a positive opinion about these projects. Nevertheless, one has to mention that approximately only 25% of the participants were aware of any kind of open government possibilities before.

Wilcoxon rank-sum test results	
"Aufbruch Bayern"	z = -2.971, p = 0.0030
"Maerker Brandenburg"	z = -2.767, p = 0.0057
"Challenge.gov"	z = -1.809, p = 0.0704

Table 8: Wilcoxon rank-sum test: known/unknown (own research)

[15] In this context the probability of doing a type I error when rejecting the H0 hypothesis for "Challenge.gov" of 7% seems to be acceptable

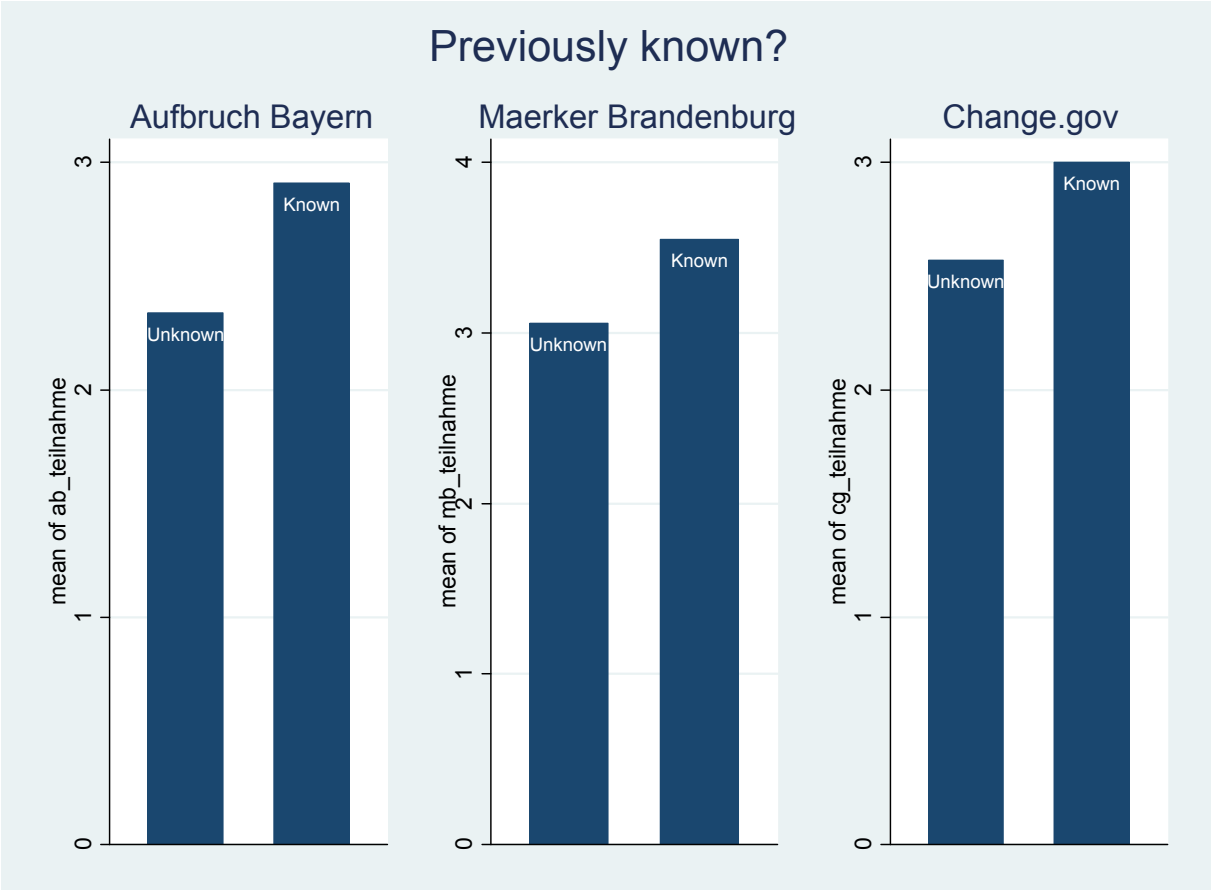

Figure 6: Previously known? (own research)

5 Conclusion and discussion

5.1 Conclusion

The main question of this thesis was: Who participates in open government initiatives and why? After I have shown that open government is a topic of interest, a classification for open government projects, proposed by Hilgers (2012), was presented. An online survey with 168 participants from Germany revealed that citizens indeed differentiate between different types of open government projects (Q1) and supported hypothesis 1. No evidence could be found that suggests that socio-economic characteristics influence the willingness to engage in open government projects (Q4), as all of the hypotheses H4a –H4d had to be rejected. Even citizens who were dissatisfied with the current political situation are not less likely to engage in open government projects (Q5) because also hypothesis H5 was rejected. It could be shown that people who already knew about a project are more willing to participate than people who have never heard of open government before. Existing projects appear to be well implemented;

people have reacted positively to them. Summarizing one can say that all groups of the society which are using the internet are in general willing to use open government projects of any kind. In contrast to other types of political participation no trend concerning the fact that older or higher educated persons are using the services more extensively could be identified.

The results of research questions 2 and 3 show that also the motivational factors to participate in open government projects differ between different types of open government project. The motivational reasons to participate differ depending on the task. However, similar to the results from the studies about motivation to participate in FLOSS development fun seems to at least one important factor for citizens to contribute. This is of interest as in traditional types of political participation enjoyment as a reason to participate is nearly completely disregarded within the scientific literature. Further research in that direction would be helpful, because maybe the desirable increase in political participation can be achieved by providing the citizens with the opportunity to contribute and to have fun at the same time. Especially for collaborative democracy projects, like “Aufbruch Bayern”, the perception of the amount of resources needed to contribute seems to influence the decision to contribute. To foster participation two approaches are possible; the amount of resources can be lowered or, if only the perceived amount of resources is high, a better communication is necessary. The main factors not to contribute to citizen ideation and innovation projects are that these kinds of open government projects are seen as too complicated and people believe that they do not have the knowledge to contribute in a meaningful way. The main amotivational reason not to engage in collaborative administration projects is the believe that the own ideas will not be put into practice correctly.

5.2 Discussion and further implications

The last point which needs to be discussed in this thesis is: What shall we do with these results? As Wijnhoven (2012) has mentioned, every information service needs a viable

business model for a successful and sustainable existence. Open government projects can be seen as a special type of information service, especially in the context of new public management, where the public administration is seen as a service provider for its citizens. A sustainable business model does not mean that the service itself needs to earn a monetary profit. Especially in the context of the public administration non-monetary values can justify a funding of monetary loss-making services. In general one can say that in order to realize a successful open government project it should be ensured that:

1. All the political actors should promote and support participation in the form of open government projects. If citizens feel that their contribution to open government projects is really meaningful to political actors, they will be more motivated to engage in such projects.
2. Depending on the type and topic of the open government projects, participants with specific backgrounds and from specific groups of the society should be addressed in order to ensure a successful outcome of the project.
3. The services are easy to use in order to ensure that all parts of the society can contribute.
4. The processes are transparent and comprehensible for the citizens.
5. A continuous process is refining the service all the time to guarantee that the points 1 to 4 are always optimally implemented.

Further research should examine which specific actions should be taken to realize these general points. For example it should be investigated how an open government project can be organized to provide a fair voting system for suggestions without making the registration process too complicated for older citizens.

Valid for all types of open government is that in the conceptualization phase developers should focus on the ease of use of the platform and a clear communication to explain which impact a possible engagement could have on the society.

Especially for collaborative democracy projects, like “Aufbruch Bayern”, the possible chances of success when participating need to be highlighted. It seems that many citizens do not participate because they asses their chances that their idea will be implemented as too low.

When developing a collaborative administration platform like “Maerker Brandenburg” the focus should be on convincing the citizen that the institution, which processes the suggestions, will carefully examine every suggestion and give precise feedback why certain ideas or parts of it cannot be implemented. This managerial implication is based on the fact that possible participants are more likely to engage if they believe that their ideas and suggestions will be implemented correct and with caution.

When implementing a new citizen ideation platform as “Challenge.gov” it is important to lower the inhibition threshold to participate by encouraging possible participants to contribute solutions or ideas, even if they are not perfectly elaborated. It seems that people are of the opinion that only experts in the field in question have the qualifications to contribute to these projects. The public administration should encourage people and make it easy for them to start contributing.

Lastly, it is time to mention some shortcomings of this study: Firstly the sample is not representative. Furthermore the study only focusses on Germany. It might be of value to know to what degree cultural factors influence motivational factors. A further point of future research affects the categorization of open government projects. This study reveals that citizens differentiate between different types of open government projects. I chose only one

possible categorization method. A systematic research approach is necessary to identify how many types exist.

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Appendix

	Intrinsic				Internalized Extrinsic				Extrinsic	
	Ideology	Pro-social behaviour	Kinship	Fun	Reputation	Reciprocity	Learning	Own use	Career	Pay
Bergquist and Ljungberg (2001)						☒				
Benkler (2002)				☒						☒
Hars and Ou (2002)		☒	☒		☒		☒	☒	☒	
Hemetsberger (2002)	☒	☒	☒	☒	☒	☒	☒	☒	☒	
Lerner and Tirole (2002)					☒				☒	
David et al. (2003)	☒					☒	☒	☒		
Haruvy et al. (2003)		☒								
Hertel et al. (2003)	☒		☒	☒	☒			☒	☒	☒
Lakhani and Wolf (2005)	☒		☒	☒	☒	☒	☒	☒	☒	☒
Lakhani and Von Hippel (2003)	☒			☒	☒	☒		☒		
von Hippel and von Krogh (2003)				☒			☒	☒		
Ye and Kishida (2003)							☒			
Zeitlyn (2003)			☒							
Ghosh (2005)	☒	☒			☒		☒	☒	☒	☒
Lattemann and Stieglitz (2005)					☒			☒		☒

	Intrinsic				Internalized Extrinsic				Extrinsic	
	Ideology	Pro-social behaviour	Kinship	Fun	Reputation	Reciprocity	Learning	Own use	Career	Pay
Roberts et al. (2006)				☒	☒		☒	☒	☒	☒
Schofield and Cooper (2006)		☒	☒					☒		
Stewart and Gosain (2006)	☒	☒			☒		☒			
Bitzer et al. (2007)		☒						☒		
Luthiger and Jungwirth (2007)				☒						☒
Okoli and Oh (2007)					☒					
Osterloh and Rota (2007)		☒						☒		
Riehle (2007)									☒	
Wu et al. (2007)		☒					☒	☒	☒	
Yu et al. (2007)	☒	☒			☒	☒	☒		☒	
David and Shapiro (2008)	☒		☒			☒	☒	☒		
Ke and Zhang (2008)		☒								
Oreg and Nov (2008)		☒			☒		☒			
Spaeth et al. (2008)					☒		☒			
Xu et al. (2009)	☒			☒	☒		☒	☒		
Alexy and Leitner (2011)										☒

Table A 1: Motivation to participate in FLOSS development (von Krogh et al., 2012)

Table A 2: Kaiser-Meyer-Olkin measure of sampling adequacy of political alienation (own research)

Statement	Item	KMO
S1	"Politics often fail in critical questions."	0.90
S2	"Political parties in Germany are doing a good job."	0.89
S3	"Politicians in Germany acquit themselves well."	0.89
S4	"I was content with the coalition government of CDU/CSU and FDP led by Angela Merkel (2009-2013)."	0.61
S5	"I am contented with the work of the public administration."	0.93
S6	"Generally, I am contented with the democracy, the political parties and the whole political system in Germany."	0.92
S7	"I am dissatisfied with all established political parties."	0.92
	Overall	0.90

Table A 3: Confirmatory factor analysis of political alienation (own research)

Statement	Standardized Coef.	Std. Err	z	P>z	[95% Conf.	Interval]
			Measurement			
S1	0.8436778	0.0283829	29.72	0	0.7880483	0.8993073
S2	0.8414148	0.0286759	29.34	0	0.785211	0.8976185
S3	0.8060813	0.0327362	24.62	0	0.7419195	0.8702432
S5	0.6967289	0.045054	15.46	0	0.6084246	0.7850331
S6	0.7613051	0.0379368	20.07	0	0.6869504	0.8356597
S7	0.6958506	0.0452053	15.39	0	0.6072498	0.7844513
			Variance			
e.S1	0.2882077	0.0478921			0.2080941	0.3991642
e.S2	0.2920212	0.0482566			0.2112287	0.4037159
e.S3	0.3502329	0.0527762			0.2606696	0.4705691
e.S5	0.5145689	0.0627809			0.405127	0.6535757

e.S6	0.4204146	0.0577629	0.3211641	0.5503369
e.S7	0.515792	0.0629123	0.4061175	0.6550847

Table A 4: Goodness-of-fit statistics for CFA of political alienation (own research)

Fit statistic	Value	Description
		Likelihood ratio
chi2_ms(9)	8.037	model vs. saturated
p>chi2	0.530	
chi2_bs(15)	542.289	baseline vs. saturated
p> chi2	0.000	
		Population error
RMSEA	0.000	Root mean squared error of approximation
90% CI, lower bound	0.000	
upper bound	0.082	
pclose	0.779	Probability RMSEA <= 0.05
		Information criteria
AIC	2467.005	Akaike's information criterion
BIC	2522.470	Bayesian information criterion
		Baseline comparison
CFI	1.000	Comparative fit index
TLI	1.003	Tucker-Lewis index
		Size of residuals
SRMR	0.019	Standardized root mean squared residual
CD	0.909	Coefficient of determination

Table A 5: Cronbach's alpha for political alienation (own research)

Item	Obs.	Sign	item-test correlation	item-rest correlation	average inter-item correlation	alpha
S1	161	+	0.8582	0.7866	0.5794	0.8732
S2	161	+	0.8542	0.7809	0.5814	0.8741
S3	161	+	0.8294	0.7457	0.5935	0.8795
S5	161	+	0.7728	0.6673	0.6212	0.8913
S6	161	+	0.8117	0.7209	0.6022	0.8833
S7	161	+	0.7723	0.6666	0.6215	0.8914
Test scale					0.5999	0.8999

Table A 6: Shapiro-Wilk test results (own research)

Statement	Variable	Obs.	W	V	z	Prob>z
	Participation Aufbruch Bayern	161	0.993	0.884	-0.281	0.611
	Participation Maerker Brandenburg	161	0.970	3.705	2.980	0.001
	Participation Challen.gov	161	0.998	0.226	-3.386	1.000
	Aufbruch Bayern					
S10	Pro-social behaviour	161	0.987	1.663	1.157	0.124
S18	Change	161	0.992	1.024	0.054	0.478
S17	Aims	161	0.983	2.145	1.736	0.041
S11	Fun	161	0.996	0.448	-1.828	0.966
S14	Reciprocity	161	0.984	1.968	1.540	0.062
S25	Helplessness beliefs	161	0.988	1.426	0.807	0.210
S24	Capacity-effort beliefs	161	0.994	0.708	-0.784	0.784
S27	Capacity-ability beliefs	161	0.990	1.290	0.579	0.281
S26	Strategy beliefs	161	0.990	1.217	0.447	0.327
S23	Money	161	0.987	1.586	1.049	0.147
S15+S16	Learning	161	0.980	2.480	2.066	0.019
S19+S20	Career	161	0.969	3.829	3.055	0.001
S21+22	Pastime	161	0.974	3.255	2.686	0.004
S12+S13	Reputation	161	0.981	2.410	2.002	0.023
S8+S9	Ideology	161	0.991	1.104	0.226	0.411

Maerker Brandenburg						
S10	Pro-social behaviour	161	0.999	0.130	-4.648	1.000
S18	Change	161	0.974	3.233	2.670	0.004
S17	Aims	161	0.993	0.920	-0.190	0.576
S11	Fun	161	0.989	1.341	0.668	0.252
S14	Reciprocity	161	0.990	1.286	0.572	0.284
S25	Helplessness beliefs	161	0.982	2.261	1.857	0.032
S24	Capacity-effort beliefs	161	0.978	2.689	2.251	0.012
S27	Capacity-ability beliefs	161	0.977	2.811	2.352	0.009
S26	Strategy beliefs	161	0.995	0.607	-1.137	0.872
S23	Money	161	0.984	2.014	1.593	0.056
S15+S16	Learning	161	0.991	1.084	0.185	0.427
S19+S20	Career	161	0.963	4.561	3.453	0.000
S21+22	Pastime	161	0.986	1.739	1.260	0.104
S12+S13	Reputation	161	0.976	2.957	2.467	0.007
S8+S9	Ideology	161	0.992	0.974	-0.060	0.524
Challenge.gov						
S10	Pro-social behaviour	161	0.995	0.669	-0.914	0.820
S18	Change	161	0.993	0.850	-0.371	0.645
S17	Aims	161	0.994	0.779	-0.567	0.715
S11	Fun	161	0.995	0.619	-1.093	0.863
S14	Reciprocity	161	0.992	0.996	-0.009	0.504
S25	Helplessness beliefs	161	0.995	0.600	-1.163	0.878
S24	Capacity-effort beliefs	161	0.996	0.473	-1.705	0.956
S27	Capacity-ability beliefs	161	0.993	0.926	-0.174	0.569
S26	Strategy beliefs	161	0.994	0.778	-0.571	0.716
S23	Money	161	0.996	0.533	-1.431	0.924
S15+S16	Learning	161	0.967	4.121	3.222	0.001
S19+S20	Career	161	0.984	1.977	1.551	0.060
S21+22	Pastime	161	0.983	2.085	1.672	0.047
S12+S13	Reputation	161	0.989	1.324	0.639	0.261
S8+S9	Ideology	161	0.979	2.606	2.180	0.015

Table A 7: Spearman's rank correlation coefficients - Aufbruch Bayern (own research)

	S10	S13	S16	S15	S18	S17	S20	S19	S21	S22	S12	S11	S8	S9	S14	S24	S25	S27	S26
S10	1																		
S13	0.0889	1																	
S16	0.2844*	-0.0766	1																
S15	0.2952*	-0.0875	**0.8397***	1															
S18	0.1537	-0.0037	0.2670*	0.2500*	1														
S17	0.0033	-0.0089	0.2809*	0.1867*	0.3205*	1													
S20	0.0654	0.3373*	0.0363	0.0105	0.052	0.0926	1												
S19	0.023	0.3041*	-0.0046	-0.0201	0.0477	0.0875	**0.8053***	1											
S21	0.3051*	0.0469	0.0952	0.1068	0.1488	0.1634*	0.1105	0.1144	1										
S22	0.2000*	0.1354	-0.0465	-0.0564	-0.0505	-0.0478	0.1455	0.1471	**0.7038***	1									
S12	0.0181	**0.5911***	-0.1526	-0.1361	0.0481	0.0368	0.2025*	0.1555*	-0.0059	-0.0682	1								
S11	0.1279	0.0491	0.1182	0.1444	0.2006*	0.0912	0.2021*	0.1955*	0.1022	0.1172	-0.0442	1							
S8	0.0588	0.0806	0.2115*	0.2545*	0.2681*	0.115	0.0229	0.0518	-0.0108	-0.0473	0.0931	0.2598*	1						
S9	0.0532	0.2141*	-0.0041	-0.0086	0.1168	0.1707*	0.1155	0.1622*	0.0101	0.0202	0.2443*	0.1881*	**0.6350***	1					
S14	0.024	0.0033	-0.0524	-0.0536	-0.0662	0.0887	0.1299	0.1042	0.0665	0.1218	-0.0347	0.0447	-0.1061	0.0542	1				
S24	-0.1978*	0.0264	-0.2039*	-0.1777*	-0.118	-0.1469	0.0978	0.1316	-0.0746	-0.001	0.1107	-0.0952	-0.2265*	0.0415	0.0296	1			
S25	-0.0592	-0.142	0.1171	0.0416	0.0433	0.0229	0.0436	0.0606	-0.013	0.0223	-0.0512	-0.147	-0.1141	-0.1987*	-0.1205	0.0787	1		
S27	-0.0962	-0.0339	-0.0119	0.0278	-0.0918	-0.1877*	0.0573	0.0571	-0.1138	-0.041	-0.1063	0.0295	0.0389	0.1151	0.0458	0.2340*	-0.0618	1	
S26	0.1134	0.0454	0.0468	0.005	0.1079	0.1674*	0.0284	0.05	-0.0364	-0.0053	0.1303	0.063	0.1640*	0.2280*	-0.0273	-0.0123	0.0024	-0.0171	1
S23	-0.0203	0.0001	0.0824	0.0275	-0.1206	-0.0383	0.1589*	0.1414	0.0517	0.0408	0.0795	0.1053	-0.0111	-0.0671	0.1212	0.0145	0.0557	0.0223	0.1492

* $p < 0.05$

Table A 8: Spearman's rank correlation coefficients – Maerker Brandenburg (own research)

	S10	S13	S16	S15	S18	S17	S20	S19	S21	S22	S12	S11	S8	S9	S14	S24	S25	S27	S26
S10	1																		
S13	0.0004	1																	
S16	0.0555	-0.0981	1																
S15	0.1203	-0.0136	0.8116*	1															
S18	0.2175*	0.081	0.1399	0.0792	1														
S17	0.0598	0.2983*	-0.082	-0.041	0.2501*	1													
S20	0.1525	0.3241*	0.0149	0.0085	0.1775*	0.0622	1												
S19	0.1353	0.2870*	0.081	0.092	0.1840*	0.0808	0.8840*	1											
S21	0.0387	0.0329	0.0092	0.0341	0.0405	0.0765	0.0966	0.0508	1										
S22	0.0541	0.0594	-0.1269	-0.0557	0.0326	0.0776	0.1481	0.1111	0.8638*	1									
S12	-0.0914	0.5285*	-0.1741*	-0.0626	-0.062	0.0721	0.0798	0.0688	-0.0916	-0.0478	1								
S11	0.2400*	0.0663	0.1879*	0.1476	0.1176	0.0294	-0.044	-0.0222	0.1754*	0.0781	-0.0829	1							
S8	0.0585	0.0947	-0.0031	0.0151	0.0405	0.0105	0.1147	0.1276	-0.0044	0.0299	-0.107	0.2310*	1						
S9	0.0222	0.1245	-0.1467	-0.1108	0.0104	0.1682*	0.1856*	0.1966*	0.0831	0.1484	-0.0449	0.1461	0.7428*	1					
S14	0.1167	0.1426	0.0154	0.0207	0.0939	0.0628	-0.0027	0.0064	0.0127	-0.0251	-0.0212	0.0814	0.0225	0.0322	1				
S24	0.0387	0.062	0.0083	-0.0292	0.0104	0.1167	0.1899*	0.1849*	0.0973	0.0726	0.0885	-0.1629*	-0.2109*	-0.0244	0.0935	1			
S25	-0.0668	-0.0575	0.0591	-0.0228	-0.0003	0.0443	0.1592*	0.124	0.0038	-0.0092	-0.1681*	-0.08	-0.0471	0.0138	0.0557	0.2454*	1		
S27	-0.1111	0.0904	0.1266	0.1513	0.0307	0.0454	0.125	0.1977*	0.1459	0.1155	0.0617	-0.0161	-0.1066	-0.0051	-0.0314	0.2948*	0.1231	1	
S26	-0.0392	0.0717	0.0444	0.0494	-0.0286	-0.0185	0.0942	0.1877*	0.0983	0.1139	0.0354	0.0465	0.0728	-0.0169	-0.0676	-0.0655	0.0706	0.1919*	1
S23	0.2522*	0.1782*	-0.111	-0.0559	0.1108	0.0315	0.1223	0.0946	0.15	0.1939*	0.008	0.0715	0.1591*	0.1464	0.1934*	0.028	0.0441	-0.1129	0.0369

* $p < 0.05$

Table A 9: Spearman's rank correlation coefficients - Challenge.gov (own research)

	S10	S13	S16	S15	S18	S17	S20	S19	S21	S22	S12	S11	S8	S9	S14	S24	S25	S27	S26
S10	1																		
S13	0.0378	1																	
S16	0.2626*	0.1387	1																
S15	0.2167*	0.1139	0.8328*	1															
S18	0.0326	0.0497	-0.019	0.0158	1														
S17	0.0907	0.1896*	0.0515	0.1032	0.0969	1													
S20	0.0272	0.1744*	0.1609*	0.1647*	-0.1135	0.1349	1												
S19	0.041	0.1147	0.2078*	0.1730*	-0.1343	0.1046	0.8912*	1											
S21	0.2022*	0.0938	-0.0084	0.0096	-0.0231	0.0636	0.1843*	0.2339*	1										
S22	0.1426	0.1850*	0.0721	0.0866	-0.1031	0.1136	0.2437*	0.3217*	0.8307*	1									
S12	0.0111	0.5293*	-0.0347	-0.0495	0.0676	-0.0241	-0.0322	-0.1038	-0.0705	-0.0463	1								
S11	0.132	0.0948	0.0647	0.0829	-0.0116	0.0756	-0.0955	-0.1091	-0.0747	0.0138	0.0622	1							
S8	0.2062*	0.0863	0.0674	-0.0051	0.0528	-0.0745	0.0329	0.0604	0.0451	0.0487	0.0293	0.2703*	1						
S9	0.1972*	0.1896*	0.0006	-0.0223	-0.0096	0.0218	0.1604*	0.1690*	0.1716*	0.1798*	-0.0365	-0.009	0.6413*	1					
S14	0.0329	0.0135	0.142	0.1386	0.0012	0.1239	0.1503	0.2168*	0.104	0.1154	-0.0375	-0.0621	0.0799	0.1870*	1				
S24	-0.0065	0.0533	0.2357*	0.1800*	-0.0157	0.0807	0.2332*	0.2957*	0.0804	0.1582*	-0.1099	-0.1215	-0.0049	0.1409	0.0404	1			
S25	0.0259	0.098	0.2406*	0.2165*	-0.1544	0.111	0.2520*	0.3204*	-0.0107	0.0343	0.0199	-0.145	0.0463	0.1332	0.1244	0.2127*	1		
S27	-0.0787	0.0597	0.1022	0.0951	0.0241	-0.0412	0.2392*	0.1847*	-0.002	0.0075	0.0122	-0.1268	-0.0695	0.0881	0.1069	0.3204*	0.1268	1	
S26	0.0727	-0.0253	0.0021	-0.0686	0.15	0.123	-0.1992*	-0.1943*	-0.0442	-0.0258	0.1373	0.0853	0.1044	0.0756	-0.0199	-0.0345	-0.2466*	0.0538	1
S23	-0.006	0.0717	0.0156	0.0213	-0.1096	0.0128	0.1546	0.1532	0.2121*	0.2444*	-0.1081	-0.1043	0.0159	0.0604	0.1856*	0.0101	0.0417	0.0243	-0.0907

* $p < 0.05$