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Open government objectives and participation motivations

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ABSTRACT

Open government aims, among others, at improving engagement of citizens in public sector activities. To realize this potential, we need to understand citizens' motivations to engage in the many different variants of open government. This article identifies motivations for open government participation from the free/libre open source software (FLOSS) and crowdsourcing literature. The literature gives two dimensions of open government aims: innovation objectives (high or low) and managerial level (political versus administrative). The results of our survey with 168 participants revealed different motivations for participation in open government projects related to three objectives of open government projects: collaborative democracy, citizen sourcing, and citizen ideation & innovation. We found indications that socio-economic characteristics of citizens do not influence the willingness to participate in open government projects—contrary to findings in other forms of government participation—and therefore open government opens a great potential for enlarged citizen engagement. Our survey also indicates that open government projects with lower ambitions result in more participation than more ambitious projects, which implies that considerable steps need to be taken to realize the full potential of open government.

1. Introduction

Meijer, Curtin, and Hillebrandt (2012) define the openness of government as "…. the extent to which citizens can monitor and influence government processes through access to government information and access to decision-making arenas" (p. 13). This indicates two dimensions of open government: vision or transparency by access to information, and voice or participation by access to decision-making arenas (Curtin & Mendes, 2011; Meijer et al., 2012). Effective participation without access to information is difficult. Although participation itself is a precondition for gaining more access to information, access to information does not necessarily contribute to higher levels of participation. In a follow up on popular trends related to crowdsourcing, some authors and politicians have narrowed "open government" to the idea of collaboration of the public sector with the crowd (Lathrop & Ruma, 2010; Obama, 2009). Those cheerleading open government, for example US president Obama, claim that open government "will strengthen our democracy and promote efficiency and effectiveness" (Obama, 2009). This is closely related to a normative belief that more participation in public decisions is the realization of important democratic values (Macintosh, 2008). Although this argument may be subject to debate, any debate about the contributions of open government to democratic processes needs a more refined view by distinguishing aims and the representative-democracy values of participation in open government.

Advocates of the open government approach argue that with the new possibilities of online communication, citizens can more actively engage in democratic decision-making and 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 political representatives. Furthermore, these platforms could also increase the acceptance of political decisions, because citizens can better comprehend who and how many people support a decision (Meijer et al., 2012). Open government initiatives also can increase public trust and decrease the disillusionment with politics (Berman, 1997; Heckmann, 2011). The use of open government initiatives also may improve the implementation and outcome of policies (McDermott, 2010). Improved outcomes can consist of higher administrative service levels or completely new approaches for large social problems like climate warming or unemployment.

Critical views on open government argue that citizens or customers do not have the knowledge or the expertise to contribute in a meaningful way (Keen, 2007). Openness also can decrease trust (O'Neill, 2002) and make decision-making process less efficient (Prat, 2005). However, Tetlock (2005) argued that in most cases experts do not predict the future better than ordinary people. Poetz and Schreier (2012) showed that ideas from open innovation platforms are as valuable as ideas from professionals. They found that ideas from customers are more innovative than from professionals, although the ideas from professionals

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0740-624X/

were more feasible. Similar results were provided by Kristensson, Gustafsson, and Archer (2004). Meijer et al. (2012), however, state after an extensive literature review that many techno-optimistic articles exist that argue for the positive value of technology for open government, but that the assertions of this kind of work are not yet found to be valid in empirical studies. Currently not that many open government projects exist and are evaluated. This means that open government is still a new idea in its exploration stage.

The aim of this study, therefore, is twofold. First, we analyze if open government projects with different purposes motivate citizens differently for open government initiatives. With a better understanding of the motivation of participants, open government projects could be developed and implemented more effectively (Leimeister, Huber, Bretschneider, & Krcmar, 2009). This again might lead to the attraction of more participants which will foster better outcomes (Hilgers, 2012). Nonetheless, despite substantial research on engaging in Free/Libre Open Source Software (FLOSS) projects and private sector open innovation projects, relatively little is known why citizens engage in open government projects. A key question thus is what motivations influence the decision to participate in open government projects. Second, we study whether certain groups of society feel that they have a better access to decision processes via open government. When specific groups would be overrepresented, this may have negative implications for representative democracy values of such projects. More useful would even be if people with poor access to decision processes would feel better equipped to participate in open government.

In this study, we first define open government aims. Next, the literature about motivation to participate in other fields of online collaboration, like FLOSS, will be used to derive the most common explanations for the motivation of citizens to participate in open government projects. By means of a convenience sample we study if these motivations could be similar for different types of open government projects. Finally, we discuss to what extent the ambitions and potentials of open government can be reached and what is needed to achieve its full potential.

2. Open government ambitions

Heckmann (2011) states that: "Open government is about improving transparency and thereby accountability in all public affairs" and thus can improve the opportunities of citizens to influence political decisions. A possible precondition for this is "open data", which refers to the idea that government data should be freely accessible (Lathrop & Ruma, 2010). Open data, however, does not cover the interaction of the public sector with its citizens, only the provision of further information is meant by open data.

We focus in this study on the participation opportunities enabled by open government. Open government participation has been discussed under different names often indicating different objectives. Often used labels are for instance "citizensourcing" (Lukensmeyer & Torres, 2008), "eDemocracy", "eParticipation", "eGovernment" (Collins, 2009; OECD, 2003), "Collaborative Public Management" (McGuire, 2006), "Citizen Engagement" (OECD, 2004), "Wiki government" (Noveck, 2009) or "government 2.0" (O'Reilly, 2009). In relation to this plethora of labels, O'Reilly states, "*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).

All these labels have in common that they focus on online interaction between the government and citizens. Hilgers (2012) more precisely defines open government as the act of integrating external knowledge into the political-administrative process (Hilgers, 2012; Noveck, 2009; Lathrop & Ruma, 2010). In this view, open government focuses on the collaboration between citizens and 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). Hence, most literature sees open government as a complement or an improvement for representative democracy, not as an alternative (Lathrop & Ruma, 2010).

According to Hilgers (2012) open government participation can have three goals: Citizen ideation and innovation, citizen sourcing, and collaborative democracy. This differentiation, in our perception, is based on two dimensions: 1) the degree of innovation expected from the results of participation, and 2) the domain (political or administrative) of participation. These two dimensions logically would imply a fourth goal for open government: Constituency support. Table 1 gives the dimensions, goals and an example for open government, which are further described below.

Citizen ideation & innovation aim at 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. As studies about open innovation portals demonstrate, this kind of knowledge acquisition can be highly beneficial (Haefliger, Monteiro, Foray, & Von Krogh, 2011). Their successes may be partially explained by their ability to overcome "local search bias" (Hilgers & Ihl, 2010) and thus avoid that individuals or enterprises only use knowledge sources they are already familiar with. 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. If more in depth research is required, open innovation platforms appear to be less promising.

Citizen sourcing aims at citizen support in daily public administrative tasks but do not imply that an innovative or new idea results. Typical for this category are complaint systems like "fixmystreet.com" that allows people to inform the road maintenance depot about potholes and other road maintenance tasks. This saves the institution manpower, provides more information about the infrastructure, and may deliver a faster response to the posted issue. Another example is "peertopatent.org". On this platform citizens have the possibility to review pending patent applications. The reviewer can inform the U.S. patent office if the patent application contains already patented or published knowledge (peertopatent.org, 2013). A third example is "Texas border watch", which is a live camera view of the Mexican border that requests citizens to report smuggling or illegal border crossings to the local authorities. In a one year pilot about 221.000 registered users reported over 8.000 criminal offenses by Texas border watch (Hilgers, 2012).

Collaborative democracy bundles open government initiatives for political decision processes (Hilgers, 2012). Collaborative democracy looks for answers to normative questions for future developments of the society. Examples of collaborative democracy initiatives are "participatory budgeting" projects, like "Buergerhaushalt.org" which 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. A second example of collaborative democracy is "Aufbruch Bayern", where citizens were encouraged to report projects in the fields of family, education and innovation, which were believed to be beneficial for the future of Bavaria. The project with the most positive feedback in each category from the community received a financial funding from the state government of Bavaria.

As a final variant of open government participation, which combines the political domain with low levels of innovation, one can recognize digital communications and interactions between politicians and their constituents with the purpose of receiving support and developing stronger ties between them. Politicians' and parties' websites, blogs and micro blogs facilitate these types of open government participation. This is obviously useful for strengthening the position of politicians but is less effective in increasing citizens' influence on politicians (Hercheui, 2009), and therefore we exclude it here from our study on how open

Table 1
Open government participation classified along domain and innovation ambition.

Domain	*Administrative*	Citizen ideation and innovation. Example "challenge.gov"	Citizen sourcing. Example: "Maerker Brandenburg"
	Political	Collaborative democracy. Example "Aufbruch Bayern"	Constituency support Example: Fan sites and politicians micro blogs
		High degree of innovation Innovativeness	*Low degree of innovation*

government can improve democratic participation in the decision process arenas.

3. Motivations to engage in open government projects

Hutter, Füller, and Koch (2011) studied the motivation for participating in 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 main reasons to participate were "interest in politics", "interest in the platform/community" and "need for improvement" (Hutter et al., 2011). One of the shortcomings of the study is that it only researched the interests in politics as motivation for participation. As Weber, Loumakis, and Bergman (2003) have mentioned, interest in politics is a poor predictor for political participation. The number of citizens who regard themselves as politically interested by far exceeds 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.

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). Motivation is a combination of a person with specific motives and a situation, which gives certain incentives that trigger certain behavior (Ajzen, 1991; Fishbein & Ajzen, 2005; Mclure Wasko & Faraj, 2005). Motives are relatively stable over the lifespan and do not automatically lead to certain actions. Typically an activator is needed to initiate behavior.

The literature about motivation to participate in FLOSS projects is a good starting point for further researching the motivation of participants of open government projects, as at least for "Aufbruch Bayern" Hutter et al. (2011) 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". Von Krogh, Haefliger, Spaeth, and Wallin (2012) give ten reasons for participation in FLOSS projects: Ideology, pro-social behavior (altruism), kinship, fun, reputation, reciprocity, learning, own use, career and pay. These are described here and elaborated with some additional literature where relevant.

- *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.
- *Pro-social behavior* covers all kinds of behaviors which lead to a positive social outcome, regardless of the motivation of the actor (Eisenberg, Fabes, & Spinrad, 2007).
- *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).
- *Fun* or enjoyment is one of the most influential factors when explaining the amount of time spent on FLOSS projects (Luthiger and Jungwirth (2007).
- *Reputation* that can be gained within the community and to externals is an important FLOSS motivator (Von Krogh et al., 2012). The first signals the potential of new employers to identify the skills of the programmer. Especially students hope to enhance their job prospects by contributing to FLOSS projects and therefore Von Krogh et al. Von Krogh et al. (2012) added an extra category "career" to the more general category of reputation.
- *Reciprocity* describes the rationality of people to contribute to FLOSS, because they hope to gain something in return by contributing 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.
- *Own-use* describes the motivation of participants to start FLOSS development, because they try to solve their own problems. Shah (2006) wrote that development for personal use is one of the top motivators to start contributing to FLOSS projects, however, the importance of personal gain decreases and fun becomes more and more important as a project matures.
- *Money* is an obvious motivator. Lakhani and Wolf (2005) state that 40% of FLOSS contributors get paid for this work. In certain areas, such as the Linux kernel development, at least 70% of the contributors are contributing during their work time (Kroah-Hartman, Corbet, & Mcpherson, 2009). Paid workers contribute more than volunteers (Hars & Ou, 2002; Hertel, Niedner, & Herrmann, 2003; Lakhani & Wolf, 2005).

Lakhani and Wolf (2005) found that the most important motivational reason is own-use, second most important factor is fun, and the third most stated reason for participation is ideology. Kaufmann, Schulze, and Veit (2011) found evidence that intrinsic motivation dominates extrinsic motivation. In contrast, Pilz and Gewald (2013) concluded that "extrinsic motivation (e.g., payment, signaling, 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).

Highly relevant for government participation and nonparticipation is amotivation, which is a psychological effect that hinders people taking action. Amotivation is 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). According to Vallerand (1997) four sources of amotivation exist:

1. People may think that they lack the necessary abilities to perform the task ("capacity–ability beliefs").
2. People may believe that their ideas will not be properly implemented ("strategy beliefs").
3. People may have the perception that the costs for reaching the outcome are too high ("capacity–effort beliefs").
4. People can have the impression that their solution is only a drop in the ocean ("helplessness beliefs").

4. Research design

4.1. Research questions and research model

As pointed out above, the literature differentiates between three types of open government projects; but are citizens aware of the differences? If they perceive them as different, then the motivation to engage in them might differ. Thus a first question that we have is:

Q1. *Does the willingness to participate in open government projects depend on the type of open government project aims (citizen ideation & innovation, citizen sourcing, and collaborative democracy)?*

If a significant difference between the willingness to participate in these three projects is identified, this could give substantially nuanced views on what open government projects should or should not offer.

Our second question next asks about the influence of motivational factors on participation, and thus is ….

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

If the reasons to engage differ, then also the reasons to refuse an engagement in open government projects might differ. Therefore the third question is:

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

Researchers have identified that especially older, well-educated males engage in traditional forms of political participation (Verba, Schlozman, & Brady, 1995). Nevertheless new and less institutionalized forms of political participation show partially other correlations (Marien, Hooghe, & Quintelier, 2010). Therefore it is useful to research what relationships between socio-economic characteristics and engagement in open government projects exist. Whereas collaborative democracy is a top down initiative, in contrast e-petitions originate from citizens and are therefore bottom-up projects. 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). 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 is the most active. Furthermore there is also a relationship between education, gender and participation (ibid.). Fulltime workers are politically active above average (Brady, Verba, & Schlozman, 1995); 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.

Q4a. *Does the willingness to participate in open government projects differ depending on the gender?*

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

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

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

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 and probably many of them show high amotivations to participate. It is therefore necessary to investigate whether those people would be willing to contribute to open government

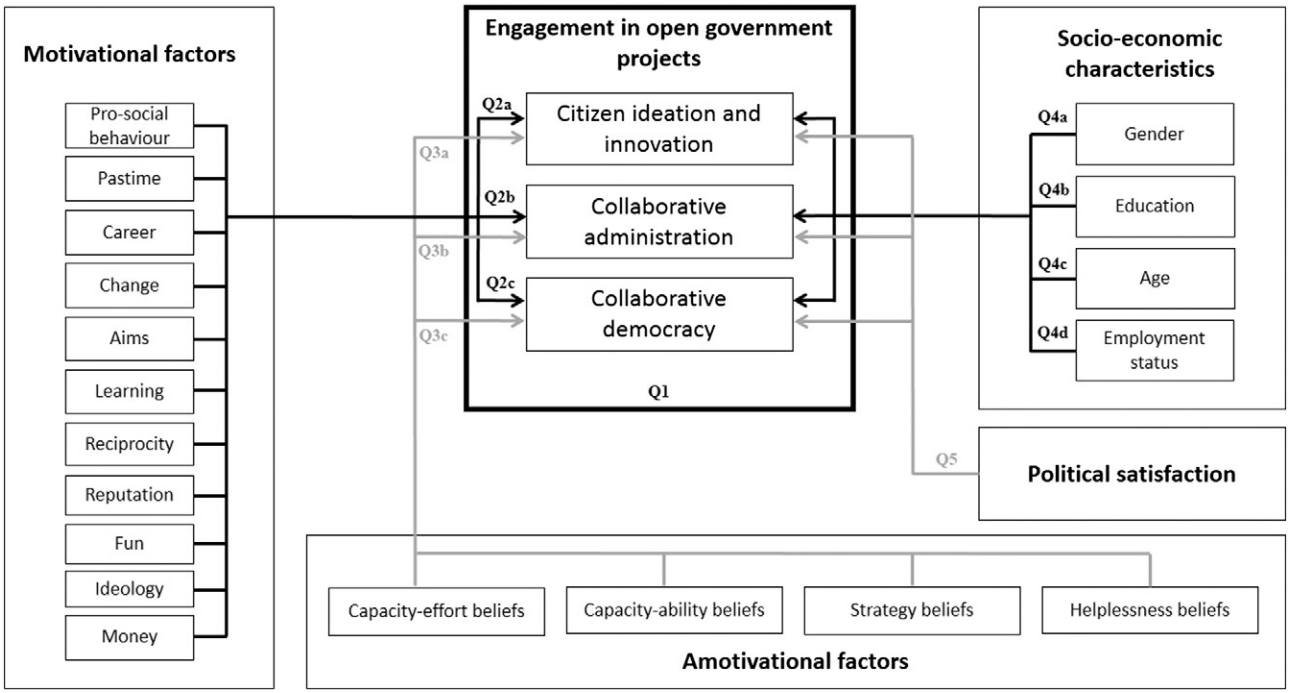

Fig. 1. Research model.

initiatives. 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?*

Fig. 1 illustrates the research model.

4.2. Research methodology and operationalization

Based on the previous literature review, we assume that motivational factors and socio-demographic factors are influencing the decision to participate. We will answer the mentioned research questions with the results of an online questionnaire with 161 participants conducted in October 2013.

Because there is no direct motivation for people to engage in such a survey, especially for people with low political interests, we had to apply convenience sampling. This is far from ideal and may threaten the external validity of our study, but in fact this is not uncommon. Peytchev (2013) found that non-response rates are increasing in recent years resulting in samples that do not allow for proper statistical inferences. Remedies against non-response are overly complex, costly and reduce the data utility (Peytchev, 2013). There is also evidence that attempts of correcting for non-response is not always useful. Schmeets and Janssen (2003) for example tried to correct in multiple ways for non-response bias in political surveys, but these corrections did not substantially change the distribution of political preferences in the sample. Keeter, Miller, Kohut, Groves, and Presser (2000) found for phone surveys that a standard phone survey of 5 days resulted in substantially higher non-response rates (64%) than a rigorous random sample of 8 weeks with multiple attempts of receiving response from the target sample (which result in 40% non response). Yet, the average difference on political survey questions was about 2%, which is a small precision improvement with 4 times more effort. Consequently, we continue with a convenience sample, for which we carefully describe the control variables and differences from census data to further discuss our results. We are aware that such a self-selected sample may not be ideal but this is the most feasible approach in our context.

The survey was administered to a sample of the German population, since our open government projects were in Germany, and provided 161 valid responses. Table 2 shows the socio-economic characteristics of the sample, in comparison to the distribution of these characteristics in Germany 2011/2012. While 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 lower educational levels as well as people below the age of twenty are underrepresented.

In order to find a relationship between the socio-demographic characteristics and engagement, we follow 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 a normal distribution could not be ensured for the data. In the following we describe the structure of the questionnaire, the questions used and the reliability analysis.

The questionnaire consisted 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 sample control variables age, level of education, current employment status, gender as well as the current place of residence of the participants.. 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 with the statements adapted from the questions used to measure political alienation in Austria 1993 (Andreas Schedler (1993). We included the criticisms from Schedler (1993) of these questions and adapted them to fit into the German context; additionally, we 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.

We tested the reliability of the scale for political dissatisfaction with an exploratory factor analysis (EFA), a confirmatory factor analysis (CFA) and Cronbach's alpha. The EFA revealed one important factor (Factor 1 = Eigenvalue 3.57). See Table 3.

For the identification of the factors, we used the Kaiser's criterion (Eigenvalue >1) (Kaiser, 1960). All but one statement (S4) loaded high into this factor (factor loading >0.50). We chose 0.5 as important for the factor loading, because the 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 well on that factor. Retrospectively, this seems reasonable due to the fact that this question is the only one 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 disappointed by politics. The performed Kaiser–Meyer–Olkin measure of sampling adequacy (KMO) (Kaiser, 1970) showed with 0.90 a very

Table 2
Socio-economic characteristics of the dataset.

	Survey sample	Germany[a]	
Gender			
Men	55.28%	48.92%	
Women	44.72%	51.08%	
Age			
Under 20	04.97%	Under 18	16.52%
20–29	27.33%	18–29	13.99%
30–39	06.21%	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%[b]	
Part-time	08.07%	15.78%[c]	
Retired	27.95%	20.60%[d]	
Students	20.50%	03.11%[e]	
Unemployed	06.21%	03.60%[f]	
Other	07.46%	26.51%[g]	
Education status			
No graduation	05.59%	03.80%	
"Hauptschulabschluss"	08.07%	35.60%	
"Realschulabschluss"	16.15%	22.10%	
"Abitur"	21.74%	27.30%	
Bachelor	16.77%	07.80%	
Master/Diplom/Magister	26.71%		
PhD	04.97%	01.10%	
Voted on last general election[h]			
No	21.74%	28.50%	
Yes	78.26%	71.50%	
Honory work[i]			
No	78.75%	64.00%	
Yes	21.25%	36.00%	

[a] Source: http://www.destatis.de/DE/PresseService/Press/Pressekonferenzen/2013/Zensus2011/zensus_pk.html. Accessed 10-11-2013.
[b] Source: http://doku.iab.de/grauepap/2013/tab-az1301.pdf. Accessed 10-11-2013.
[c] Source: idem.
[d] Source: http://www.tagesschau.de/inland/fragrente102.html. Accessed 10-11-2013.
[e] Source: http://www.destatis.de/DE/Publikationen/Thematisch/BildungForschungKultur/Hochschulen/StudierendeHochschulen. File. Accessed 10-11-2013.
[f] Source: http://www.spiegel.de/wirtschaft/soziales/arbeitsmarktbilanz-2012-arbeitslosenzahl-steigt-um-88-000-a-875513.html. Accessed 10-11-2013.
[g] "Other" includes for example school student and children under the age of 6.
[h] Source: http://www.bundeswahlleiter.de/de/bundestagswahlen/. Accessed 10-11-2013.
[i] Source: Gensicke and Geiss, 2010. Hauptbericht des Freiwilligensurveys 2009.

Table 3
Summary of the exploratory factor analysis results for political alienation (N = 161).

Political dissatisfaction		
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 4
Kaiser–Meyer–Olkin measure of sampling adequacy of political dissatisfaction.

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

good result, indicating that the sample size is suitable for a factor analysis. Table 4 below shows the results of the exploratory factor analysis.

The CFA, which was conducted to double-check the results, showed similar results (data available upon request). 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). Cronbach's alpha yields results around 0.88 (see Table 5). The measurement of political dissatisfaction can therefore be seen as reliable.

In the next part of the questionnaire each participant received a short example of all three categories; citizen ideation & innovation ("Challenge.gov"), citizen sourcing ("Maerker Brandenburg"), and collaborative democracy ("Aufbruch Bayern"). They were required to state to what extent they agree to statements that measure participants' attitudes toward ideology, fun, reputation, pro-social behavior, reciprocity, learning, own use, career and pastime for each type of open government initiative. Instead of Von Krogh et al.'s (2012) altruism and kinship we used pro-social behavior, because pro-social behavior is easier to measure and less error-prone (Eisenberg et al., 2007) and kinship is included in prosocial behavior. We used and adapted statements from Alexy and Leitner (2011), Leimeister et al. (2009); Kaufmann et al. (2011) (Alexy & Leitner, 2011; Kaufmann et al., 2011; Leimeister et al., 2009) to increase the content validity. In the majority of cases two questions were used for each motivational concept. Table 6 displays all the statements. The statements were identical for all types of open government projects; only the name of the project was changed. The agreement with the statements was measured with a 5-point Likert scale. To identify acquiescence, we used negatively formulated statements as well. The order of the statements was randomly selected for each participant to avoid non-random errors.

Table 5
Cronbach's alpha for political dissatisfaction.

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 6
Statements about motivation.

Motivational dimension		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 behavior	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.

Most motivational dimensions were measured with two statements. In order to test whether the statements are measuring the same underlying construct The Shapiro–Wilk test for normal distribution revealed that some items are not normally distributed (For details on this analysis see Appendix A). Thus we decided not to use Pearson's r for the correlation analysis and instead we applied Spearman's rank correlation coefficient. The resulting correlation matrices are in Appendices B, C, and D.

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). Next we tested the reliability of the measurements with a factor analysis. We 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). We 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 identify factors at a higher level (Field, 2005). We used orthogonal factor rotation, as this method provides as little factor correlation as possible. Table 7 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

Table 7
EFA for motivational factors in Aufbruch Bayern.

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

interpretation we 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).

Table 8 includes four statements for amotivation, developed by DECI and RYAN (1985): capacity–ability beliefs, strategy beliefs, capacity–effort beliefs, helplessness beliefs.

In addition to these statements, the participants were asked if they would engage in such a project. Furthermore, they were asked, if they knew this or a similar 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 so that they were compelled 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 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%. The 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 focus on Germany. This was done as political participation is strongly influenced by political culture and history (Almond & Verba, 1963). 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 we decided to publish the questionnaire in German only.

Table 8
Amotivational statements.

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".

5. Results

5.1. Research question 1

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 & innovation, citizen sourcing and collaborative democracy). The participation willingness in "Maerker Brandenburg" is considerably higher than in the other two projects. 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.

5.2. Research questions 2 and 3

Table 9 displays data of the motivational and amotivational factors, separated by the willingness to participate in open government projects. What we see about all three projects is that citizens who would participate perceive the projects as more enjoyable than people who would not engage (gray 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 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:

Table 9
Motivation by willingness to participate.

	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

$z = -3.154$, $p = 0.0016$). 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 to participate in "Aufbruch Bayern" concerns their attitude toward 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).

5.3. Research question 4

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" ($z = 0.232$, $p > 0.05$).

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. More educated citizens do not tend to engage more likely.

For the analysis of sub-question Q4c (does willingness to participate depend on age?), we 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" ($J = 4900.5$, $z = -0.482$, $p > 0.05$). 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. For the analysis of employment we 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.

5.4. Research question 5

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 are more likely engaged in open government projects than others. The only relationship found is between age and willingness to participate in collaborative democracy project "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, which is important for the democratic objectives of open government projects.

An interesting fact is that people who have already taken part in similar projects, are significantly more likely engaged in open government projects again (cf. Table 10). 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.

6. Conclusion and discussion

6.1. Conclusion

After having shown that open government is a topic of interest, two dimensions of open government participation have been presented: the domain of participation (political or administrative) and the level of innovation. This resulted in four types of open government participations: citizen ideation or innovation, collaborative democracy, citizen sourcing, and constituency support. We selected the first three for further study, because constituency support does not explicitly contribute to citizen participation in decision-making arenas. An online survey with 168 participants and 161 usable replies from Germany revealed that citizens indeed differentiate between three other types of open government projects. No evidence could be found that suggests that socio-economic characteristics influence the willingness to engage in open government projects. Even citizens who were dissatisfied with the current political situation are not less likely to engage in open government projects. 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. In contrast to other types of political participation no trend concerning the fact that older or higher educated persons would use open government more extensively could be identified.

The motivational factors to participate in open government projects differ between open government projects. The motivational reasons to participate differ depending on the task. Similar to motivation to participate in FLOSS development, fun seems to be at least one important factor for citizens to contribute. This is of interest as in traditional

Table 10
Wilcoxon rank-sum test: open government projects known versus unknown.

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

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 the desired level of political participation can maybe increase by providing 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. The main factors not to contribute to citizen ideation & 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 citizen sourcing projects is the belief that the own ideas will not be put into practice correctly.

6.2. Discussion and further implications

Open government projects can be seen as a special type of information service (Wijnhoven, 2011), which means that similar requirements have to be met. First of all, 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, they will be more motivated to engage in such projects. Some of our evidence demonstrates that this is problematic, which explains a preference for the less ambitious open government project.

Second, 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. Our evidence shows that this may be the case for age, which more easily generates a digital divide problem.

Third, the information processes are transparent and comprehensible for the citizens. Also MEIJER et al. (2012) mention transparency as pre-condition. However, transparency and comprehensibility can be the outcome of participation instead of a pre condition as well, which implies a dynamic mutually reinforcing relationship (Garrett, 2009). These reinforcement relationship, however, are selective, as Garrett found, and may be also have negative consequences from a democratic process perspective as this may further radicalize people (Fernbach, Rogers, Fox, & Sloman, 2013; Wijnhoven & Brinkhuis, in press).

Fourth, a continuous process of open government platform monitoring is needed to guarantee that its objectives are achieved and sustainable. The dynamics of social media and Internet forums has shown that this is not trivial (Wasko, Teigland, & Faraj, 2009).

Next, regarding the three types of open government participation studied here, the following three managerial implications can be drawn. First, 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 assess their chances that their idea will be implemented as too low.

Second, 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 correctly and with caution.

Third, 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, we need to mention some shortcomings of this study: Firstly the sample is drawn from the German population and is not representative in relation to education levels and age groups. We have however argued why in this context such a sample can still produce important research findings. Second, we only used one example of each of the three forms of open government projects. Specific sentiments toward the project or region might have influenced respondents' opinion of the project. Third, we queried respondents' willingness to participate and not their actual participation, which might overestimate their actual intention to do so. This is a common problem in theory of planned behavior-like research, which can be approached by further research. Cultural factors may play an important role as well, because these result in other motivators or amotivators for political engagement that may be more or less present in open government projects.

Appendix A. Shapiro–Wilk test results

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 behavior	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 behavior	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 behavior	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

Appendix B. Spearman's rank correlation coefficients—Aufbruch Bayern

	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

Appendix C. Spearman's rank correlation coefficients—Maerker Brandenburg

	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

Appendix D. Spearman's rank correlation coefficients—Challenge.gov

	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

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