An Integrative Look on Citizen Participation in E-Government

Abstract. E-government historically refers to the use of information and communication technologies to improve the delivery of information and services by government to its users. However, in the last years, both research and practice have tried to identify what will be the "next stage" of e-government. Although some advocate for a continuous improvement of service delivery, others state that e-government should enable a governance shift and enable citizen participation.
In recent years, there has been a profusion of research from diverse research fields about citizen participation (public administration, open government, smart city, …). The goal of this thesis is formalize participation categories, starting from these fields, and to integrate them into an evaluation framework: CitiVoice. Then, this thesis will propose a usable methodology for one specific category of CitiVoice: the Co-Creation of e-government Services.

Keywords. Citizen, Participation, e-Government, Integrative look

1. Introduction

Historically, e-government refers to the application of ICT to improve the delivery of services and information by government to their users (citizens, businesses or other governmental bodies)[1]. However, the governance model in government has consequently also evolved: ICT empowered the citizens, often relegated to passive user status, to have more control in the decision-making process and more impact in the tasks of administrations. Indeed, e-government does not simply enable a better service delivery but also enables citizen participation. As [2] already nicely expressed, there are two streams of research about the role of citizens in e-government. On the one hand, the electronic democratization theorists link e-government to e-participation, and the electronic democratic process. On the other hand, the economics theorists focus on efficient and effective service delivery through electronic means. This tension between the two streams can be found in other seminal articles on e-government [3] [4]. However, the consideration of citizens as participants is not limited to the e-government field but can be found in several research fields such as public administration, open government, e-participation and smart cities.

In this context, my thesis aims to formalize citizen participation categories from these research fields and to provide a usable methodology to enable this participation in the development of e-government services. Therefore, this thesis wishes to answer two research questions (RQ): the high-level RQ of "*How to structure the literature about citizen participation in e-government, taking into account related research fields?*" and the operational RQ of "*What are the most appropriate methods to include the citizens in the co-creation e-government services ?*".

The remaining of the document is structured as follows. The "Related Work and Theory" Section exposes the most important concepts that will be used throughout this thesis. In the same section, I underline the potential relevance of this thesis for research

by identifying research gaps. In the "Methodology" section, the overall methodology that guides this thesis is detailed. In the "Preliminary Results" section, I present the two main outputs of the thesis so far: the CitiVoice Framework structuring citizen participation and the Co-Creation Methodology taking the form of guidelines to include citizens in the development of e-government services. In the "Conclusion" section, I discuss possible implications for research and for practice as well as exposing some leads for further research.

2. Related Work and Theory

2.1. Background

The background evaluation reveals two conceptions of the citizens in e-government: some authors consider **citizens as customers** and some authors consider **citizens as participants**. This role of citizens as participants has often been characterized as "e-participation" in the e-government literature. However, e-participation is often reduced to the democratic participation of citizens in decision-making or policy design through ICT means [5]. In this thesis, I advocate for a reconsideration of other under-investigated forms of participation and a refueling of the e-participation field from different research fields. Even though [6] characterizes e-participation as the inclusion of citizens in the planning and/or the development stages of e-government services, they focus only on the democratic participation of citizens when discussing the concept of e-participation. [7] continues this characterization but clearly states as a limitation of his work that he focuses on issues of ICT for democratic decision-making and not on all participatory processes. In another contribution to the systematization of the e-participation field, [8] tries to enlarge the scope of this research field by clearly distinguishing political e-participation from other forms of participation.

In line with this extension of citizen participation to other fields, some key research fields in literature can already be identified. In the public administration literature, there has been seminal attempts to define participation such as [9]. Furthermore, the view of citizens as participants also heavily refers to the co-creation and coproduction concepts [10]. In this perspective, [11] describes the re-emergence of citizen-coproduction through the introduction of new ICT possibilities. From an IT perspective, citizen participation in e-government heavily relates to the consideration of end-user involvement in the design, development and evaluation stage of an IT project as discussed by [12]. In recent political trends, citizen participation is also closely related to the participation and collaboration concepts of the "Open Government" movement [12]. The best advocate for an increased citizen participation resides in the smart city paradigm [13]. During recent years, smart cities have been more popular than ever because they provide new solutions in the domains of mobility, environment, economy, governance, quality of life, and education, through the innovative use of ICT [13]. As [14] states, the defining difference between e-government and smart city concepts resides in the increased focus on stakeholder collaboration and participation. In their attempt to suggest a research agenda for smart government, [15] also underlines the need for the e-government paradigm to evolve and to integrate participation in order to tackle the challenges that modern cities aim to face.

To conclude this background, the concept of citizen participation is not exclusive to a specific research field but each field can shed a new light on this concept and provide new means to enable citizen participation.

2.2. Research Gaps

After performing the background evaluation described in the previous sub-section, I was able to identify research gaps that this thesis will attempt to fill by means of future research:

Gap 1 – Lack of a formalization of citizen participation categories: A major problem with the "citizen participation" research field is its lack of integrative analysis. Citizen participation refers to the participation of citizens in all forms but is often reduced to democratic participation (often referred to as e-participation or e-democracy). Further research should be conducted to determine other forms of participation, fueled by insights of other research fields. Furthermore, the need for appropriate evaluation tools and metrics is emerging to structure and evaluate this participation but there is still a gap in scientific literature regarding this emerging need [16].

Gap 2 – Lack of methodology and narrow scope for participation methods: Even though the necessary formalization discussed in Gap 1 can help to structure the exploration for enablers of citizen participation, it will not give complete information about the implementation of each participation category into participation methods. Through literature analysis, I was able to identify a number of methods. However, these methods were not integrated into a complete methodology potentially usable by policy-makers. Furthermore, regarding the participation methods themselves, a striking observation is that almost all methods used to development e-government services with citizens focus on small scale participation with methods based on participatory design, user-centered design and user innovation. This finding has two implications. Firstly, regarding small scale participation, there is only a limited consideration for other innovative methods to operate citizen participation in the e-government domain, such as creativity in requirements engineering, agile software development methods tailored to e-government, gamification, etc… Secondly, even though small scale participation is necessary to define the research field, it is essential to enable large scale participation due to the large heterogeneous user group in e-government.

Gap 3 – Lack of an understanding of "the citizens": I adopt the point of view that there are four main groups of stakeholders in the citizen participation research field: public servants, political representatives, software developers and citizens. In this thesis, I wish to analyze participation by integrating all stakeholders. However, the term "citizens" is often used without a proper definition. I suggest to investigate this abstract term in future research. A taxonomy of the profiles of citizens and their importance in participation are necessary. A good start could be to determine at a larger scale how citizens would like to be considered in e-government (e.g.: Do they care about participation or are they satisfied with an effective and efficient service delivery ?). When the term "citizen" is used, it is often linked to the "end-user" concept. Regarding the participation of citizens as end users, the question of "Who to include ?" is crucial: their profile, their digital literacy, their skills or their representativeness are all issues that will impact the implementation of participation and the methods applied.

Gap 4 – Lack of consideration for all stakeholders: As stated above, citizens are essential within citizen participation, but public servants, software developers, and political representatives are also impacted by this change in governance. As little is

known about their drivers, opinion and operational barriers for participation, an extension of the research domain to all stakeholders would be beneficial to truly reach an integrative analysis. Furthermore, e-government research focuses on praising the benefits of citizen participation without mentioning the possible negative effects of this participation if not implemented properly by these stakeholders. Pre-conditions for participation are, in that respect, essential to tackle and could be identified by considering this extended group of stakeholders. This knowledge about pre-conditions will allow to design a more integrative process for participation.

This thesis wishes to research citizen participation in e-government in an integrative manner in two main ways. First, I want to identify all means by which citizens can participate within e-government from different research fields (Gap 1 and Gap 2). This will mainly fuel the design of the CitiVoice Framework. Second, I want to perform this identification by integrating all stakeholders impacted by this participation (Gap 3 and Gap 4). Building on the participation categories and methods identified before, answering these two gaps will mainly fuel the co-creation process.

3. Methodology

In the research design of this thesis, I heavily rely on three different research methodologies; Design Research, Case Study and Action Research. Figure 1 represents the overall methodology I intend to follow in this thesis.

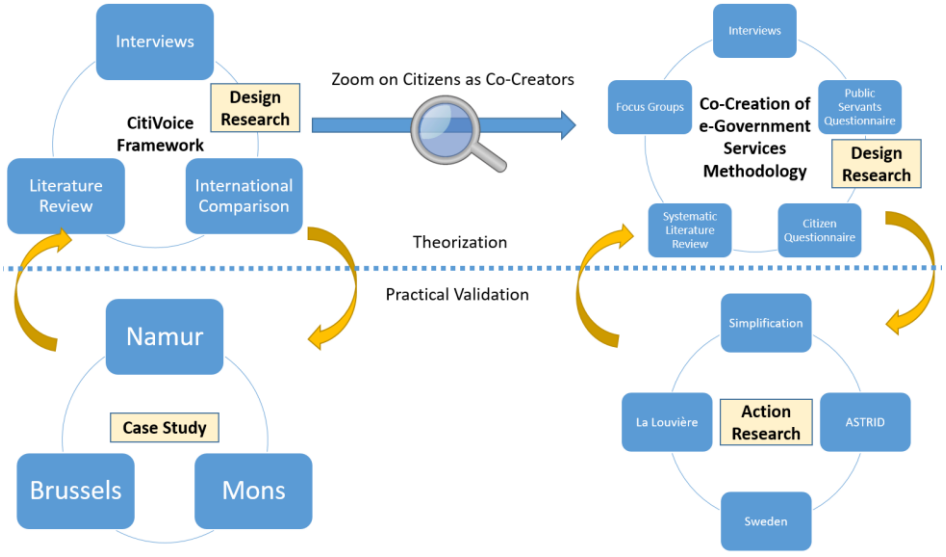

Figure 1 Overall Methodology

Applying design research, I iteratively build the research outputs (CitiVoice and Co-Creation Process) through the iteration of different Design Cycles. To meet space restrictions, I won't expand here on the Relevance Cycle and the Rigor Cycle. Each of the Design Cycles applied allow refining the different artifacts (constructs, metrics or guidelines) of these results. Furthermore, several validation cycles of the design research rely on the testing of the results in a real-life environment through case studies and action

research. For CitiVoice, the framework is iteratively tested through three case studies and no intervention from the researcher. For the Co-Creation process, it is tested through four Action research activities.

To sum it up, the research design consists of four main quadrants. In the 1st Phase of the research (**Theorization of Citivoice)** , I identify the different main participation categories and reflect them into the CitiVoice framework. The framework is built following design research with three design cycles: Literature Review, International Comparison and In-Depth Interviews.: In the 2nd Phase of the research (**Validation of CitiVoice**). I perform practical design cycles to iteratively improve CitiVoice through the the case studies of Namur, Brussels and Mons. In the 3rd Phase (**Theorization of Co-Creation Process**), I zoom on one specific participation category of CitiVoice: the citizens as co-creators of e-government services. This zoom allows aligning with operational considerations whereas the framework is more theoretical. Consistent with design research, the Co-Creation Process is iteratively built thanks to a cycle of several research activities: a systematic literature review, interviews and a questionnaire sent to public servants, a questionnaire sent to citizens and focus groups. The 4th Phase of the research (**Validation of Co-Creation Process**) refers to the validation of the Co-Creation process thanks to its application to four action research activities where I will get the chance to test it in real-life conditions (in the city of La Louvière, the Walloon administration of eWBS, the federal emergency system ASTRID and a potential research stay in Sweden).

4. Preliminary Results

4.1. CitiVoice Framework

The section summarizes the elements and uses of the CitiVoice framework. More details on the results can be found in [17]. CitiVoice consists of three main categories of citizen participation that I formalized through an extensive literature review from different research fields. Firstly, citizens can be **democratic participants** in the decision-making processes of the city. The criteria in this category aim to verify that citizens' opinions indeed have an impact in decision-making. Secondly, citizens can be **co-creators** in order to propose better solutions and ideas and to decrease the risk of failure early in the process. Finally, in the post-implementation phase, the citizens can also participate as **ICT users** by proactively using the smart city infrastructure to enable them to participate more easily. Figure 2 synthetizes CitiVoice, the three participation categories as well as their reflection into criteria.

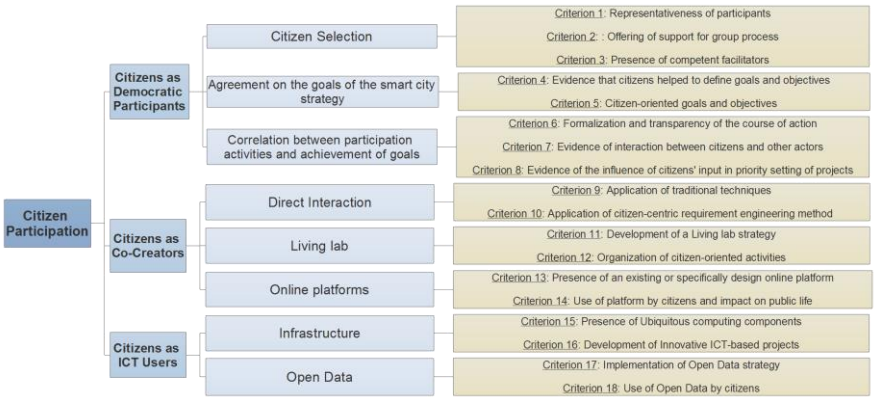

Figure 2. CitiVoice Framework

I improved CitiVoice by applying it to the designs of three cities that have undertaken citizen participation activities in their smart city strategy (Mons, Namur and Brussels). CitiVoice can be used ex-post as an **evaluation tool** to assess a smart city strategy. This evaluation refers to the analysis of one city along all the criteria of the framework. It can be used ex-ante as a **governance tool** for government officials that want to invest in a citizen-oriented smart city strategy. In that respect, the criteria can be considered as guidelines for implementation. It can be used as a **comparison and creativity tool** by enabling comparative analysis of best practices for one criterion or category across different smart cities. These comparisons allow differentiating by which means different smart city strategies can ensure citizen participation and designing new means based on this comparison.

I will undertake **further research** to improve CitiVoice, On top of applying to a higher number of cities, I wish to improve the metrics that evaluate citizen participation. Although the current simplicity (based on a 0/0,5/1 scale) facilitates the use of CitiVoice, it may be necessary to have individual and more precise metrics for each criterion to provide a more specific evaluation in order to limit threats to validity. This implies the further elaboration of theories on citizen participation, as no ready-made set of metrics is available today for all categories. The metrics could furthermore be improved according to a maturity model for evaluating each criterion.

4.2. Citizens as Co-Creators of e-government Services

In this section, I will take a deeper look in one specific participation category: citizen as co-creators. The goal is to provide a usable methodology to collect citizens' needs and requirements and to give a more operational contribution to the thesis. In order to align this methodology with stakeholders' needs as much as possible, I chose to take the specific case of the co-creation of e-government services. Before designing the methodology, it is essential to focus on the context of the research and of practice by identifying the different stakeholders and their link with co-creation.

In order to understand the **context of research**, I have conducted a Systematic Literature Review (SLR) to summarize all existing information about the participation of citizens in e-government service development and to depict the ecosystem of stakeholders in this field [18].

In order to have the **context of practice**, I follow a multi-methods approach to gain insights from all stakeholders: in-depth interviews and two online questionnaires (one sent to public servants and the other to citizens). Thanks to the interviews and the questionnaire sent to public servants, I was able to discuss the methods, drivers and barriers of practitioners regarding co-creation. For the questionnaire sent to citizens, the goal was to understand which factors (age, employment, digital literacy,…) impact the role citizens would like to have in e-government (co-creators, customer, democratic participants). This will allow having a taxonomy of citizen profiles and most importantly their preferred methods and drivers for co-creation.

One of the findings of context analysis was that public organizations sometimes lack an ideal setting to enable citizen participation in e-government. In order to identify the **domain-specific challenges** emerging in the introduction of an governance-shifting methodology, I chose to take the example of Agile methods and examine how these methods are tailored in an e-government context and how they tackle the domain-specific challenges (number of users, organizational, regulation, …) of this field. In order to reach that objective, I scheduled three focus groups to understand how they tailor these methods, with a focus on user participation. After identifying the potential challenges emerging in the implementation of an innovative methodology, I dug deeper into agile methods by focusing on its user participation practices, or in this case, on the participation of citizens in the co-creation of e-government services. After having established an **inventory of participation methods** summarized in Table 1 (as well as their use in practice and preference by citizens collected by the questionnaires), the **next steps** I intend to undertake will be to connect them to a concrete setting to evaluate how the different organizational cultures impact the choice of a specific method. Therefore, I will heavily rely on previous work about the impact of culture on innovative methodologies (such as agile methods) [19]. Furthermore, I intend to rely on an emerging body of research that has already started to discuss how public sector values the impact the development of e-government services [20]. The main output of this research activity would take the form of a "Matrix" that compares the different methods in function of the cultural elements of an organization. The practitioners will thus be able to choose a method in a more straightforward manner.

Participation Methods	Use in Practice	Preference by Citizen	Recommendation
Interviews/Discussions	1	6	Improve the method
Workshop	2	5	Improve the method
Rep. in Project Team	3	8	Use in specific cases
Prototypes	4	3	Use the method more extensively
Surveys	5	2	Use the method more extensively
Dedicated Software	6	1	Research the method
Social Media	7	4	Research the method
Living Lab	8	7	Use in specific cases

Table 1. Participation Methods Identified

After putting the different participation methods in context, I will focus on one specific method to be investigated in-depth and then tested in practice. These methods will then be validated thanks to Action Research use cases as described in Phase 4 of my research (cf. Section 3). However, I won't expand on this phase to meet space restrictions.

5. Conclusion

I hope this thesis will have implications for research and for practice. Regarding the implications for research, I intend to formalize citizen participation categories from different research fields and to integrate them into the CitiVoice evaluation framework. The different uses of this framework can lead to applied research to study citizen participation strategies. Regarding the implications for practice, I hope that CitiVoice can also be used to guide strategies of policy-makers. Furthermore, I hope that the Co-creation methodology will be easily usable in order to facilitate the development of e-government services with citizens.

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Education

2016-…	PhD Student, Doctoral programme "Docteur en sciences", Unamur PhD Student, Doctoral programme "Business Economics ", KU Leuven Thesis: « An Integrative Look on Citizen Participation in e-Government »
2014-2016	Master of Business Engineering (Information Management), Unamur Master of Business and Information Systems Engineering, KULeuven Master's thesis: « A critical review of Citizen Participation in Smart Cities »
2011-2014	Bachelor in Business Engineering (Information Management), UNamur
2005-2011	Secondary school (Latin-Mathematics), Collège Saint-Augustin, Gerpinnes

Experience

2016-…	**President**, Alumni Management Economics and Social Sciences Namur *Revitalizing of the alumni's association through the organization of alternative job days and informative conferences.*
2014-2015	**Student Administrator**, Université de Namur (UNamur) *At the board of directors of the UNamur, the General Assembly of the UNamur and At Board of Directors of the "Pôle Académique Namurois (PAN)"*
2014-2015	**Student Representative**, Representative Chamber of the UNamur *Defense of students' interest in different workgroups: « Job Day's », « Infrastructures » and in the education commission.*
2013-2015	**Member (Senior)**, Junior Enterprise, Namur *First contact with companies, participation in formations , participation in various projects (innovation week, internet presence indexing, market studies,…)*

Technical competences

Office suite: Excel, Word, Powerpoint
Software: SPSS, Qlikview, R, RapidMiner, SAS, Stata, Mule, Disco, Bizagi and ArgoUML
Programming background: basic notions in Pascal and Java

Languages

French	Mother Tongue	*Finalist at the "dictée du Balfroid" (2006)*
English	Very good knowledge	*Private courses (7 years) and 9 years in class*
Dutch	Good knowledge	*Master in Leuven (1 year), summer school and 9 year in class*

Hobbies

Cinema: Fan of horror movies, plans to create a festival to make this genre more known in Belgium
Music: Volunteer at the "Dour" Music Festival, fan of the Rolling Stones and of Rock Music in general
Reading: Compulsive reader of Japanese, American and European comics

Subject : Personal Statement for Participation at the EGOV-CeDEM-ePart 2018 PhD Colloquium

Leuven, March 16th, 2018

Dear Madam, Dear Sir,

With this statement, I would like to express my interest for participating at the EGOV-CeDEM-ePart 2018 PhD Colloquium to present my PhD research entitled: "*An Integrative Look on Citizen Participation in e-Government*". I began to work as a PhD student in September 2016 at the University of Namur (Faculty of Computer Science) and at the KU Leuven (Faculty of Business Economics). Prof. Dr. Monique is my promotor for the KU Leuven and Prof. Dr. Naji Habra is my promotor for the University of Namur. Their area of expertise ranges from requirements engineering and agile software development methods to e-learning and e-government. My research is funded by BELSPO for the FLEXPUB project that aims to contribute to the development of a Belgian federal strategy for enabling innovation in the public sector with a focus on a next generation of e-services.

In this context, I am focusing my research on Citizen Participation in e-Government. This choice is a results from three inherent motivations. First, my personal experience led me to an important interest in participation. As a master's student in Namur, I was elected as a student representative and seated at the Board of Directors of the University. In this position, I witnessed the relevance of the participation of the students for a more informed decision-making process of authorities. I have taken some steps in that direction through the use of social media and surveys to facilitate participation of students. For my PhD, I hope to further work in that direction at a much broader scale : the students are now the citizens and the University is now the Government. Second, after a systematic literature review conducted in the first year of my PhD, I am confident that research field of participation in e-government would beneficiate from insights from other perspectives and from all stakeholders involved. Indeed, a finding from the SLR was that this research field was often reduced to democratic participation with a lack of insights from software developers, public servants, or citizens themselves… Third, thanks to the research project I am funded by, I am confident that the research could have a practical impact. Indeed, a lot of practitioners are driven to engage in participation strategies but lack of a concrete methodology to do so, e.g. for the development of e-government services.

At the end of my PhD, I would be more than proud if the research performed could have an impact in practice. Indeed, I am currently helping practitioners from diverse Belgian cities (Namur, Mons, La Louvière, Brussels) in their participation strategies. An end-goal for this research would be the constitution of a spin-off specialized the customized guidance of participation strategies. To achieve these goals, I hope to collect precious feedback from this colloquium. As I am half way through the second year of my PhD, I hope to collect relevant feedback from knowledgeable authors of the field. I really feel that the opportunity to present the preliminary findings of the thesis will strongly influence the direction of my research for the next two years. Regarding the specific questions I would like to be addressed, I hope to have more specific feedback on 1) the holisticness of the CitiVoice Framework 2) the completeness of the metrics I designed 3) the relevance of using agile methods as backbones of the co-creation methodology.

Thank you for considering my request. I look forward to your response.

Yours faithfully,

Anthony Simonofski