Potential for Improving Public Services by Exploring Citizens' Communication to Public Organizations

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Abstract. While the purpose of public organizations is to serve citizens, the citizens themselves are not always consulted in order to develop better public services. We argue that the direct communication from citizens to public organizations contains a wealth of information on how the organizations could improve their services, and this information is worth exploring. In order to prove our argument, we have interviewed 19 public organizations in Rwanda and Sri Lanka, identified 26 issues raised by the citizens, and mapped these issues into four solution domains: availability and timeliness of information, policy development, business process development, availability and design of e-services.

Keywords: Citizen-centered E-government, Participatory Governance, Bottom-up Policy Making, Co-creation of Public Services.

1 Introduction

Traditionally, public services have been perceived as something designed and implemented by public organizations for the rest of the society to consume. Osborne et al. [1], however, claim that public services cannot exist without being co-produced together with citizens, where the citizens' involvement is voluntary or involuntary. The concept of e-participation has reinforced the co-producer's role of a citizen: the citizen can be an explorer who identifies the needs, an ideator and a designer who co-develops ideas and co-designs the services, a diffuser who facilitates adoption of the services by the society and monitors them working [2-4]. Advancing technology (e.g., collaboration platforms, AI and big-data analysis) facilitates the "do-it-yourself" government and citizens' self-organization [3, 5].

In reality, however, the engagement of ordinary citizens is likely to be obscure, in particular in policy making where the rules and public services for the society are

being designed. There are numerous approaches to bottom-up policy making (see Section 7); still, published results of such policy making are hard to find. A recent study [6] shows that public organizations in Rwanda rely primarily on input from domain experts, governmental and non-governmental organizations, and companies. Some government officials in Sri Lanka confirmed, in private communication, the same situation in their country. The lack of published results on citizens' involvement in policy making suggests that the situation is not specific to these two countries.

The framework of this research is the direct communication generated by citizens, addressed to public organizations, and how this communication can be used in order to improve public policies and services. Two questions arise: is the content of the communication actionable; is the volume of the communication sufficient to make it actionable? In order to answer both questions, we interviewed 19 public organizations, estimated the volume of the communication, identified 26 issues raised by the citizens, and mapped these issues into four solution domains. The answer to both questions is affirmative.

2 Method

There are two kinds of communication between citizens and public organizations. The first kind is well-structured and formal: registration of people, property, credentials, and issuing related certificates. The second kind is more ad hoc: the citizens ask questions, report problems. We are interested in the second kind of communication as the input to knowledge mining in order to improve public services. In order to demonstrate the opportunities, we interviewed 19 public organizations – 7 in Rwanda, 12 in Sri Lanka – and asked about (i) the channels that citizens use to contact the organization, (ii) communication volume by channel, (iii) the frequent inquiries, and (iv) archiving of the communication from citizens.

The respondents were selected by the snowball sampling process; we interviewed public organizations that had enough volume of ad hoc communication with citizens. In each organization, one person was interviewed for about 20-30 minutes. The typical duties of the interviewees were the head or vice-head of the unit, public relations officer, officer who communicates with the citizens. During the interview, notes were taken. After the interview, a summary was sent to the interviewee; six interviewees replied with "ok" or minor comments.

In Rwanda, the organizations were happy to reveal their identity. The organizations were Rwanda Public Procurement Authority, City of Kigali, Ministry of Justice (MINJUST), High Education Student Loans Department at Rwanda Education Board (HESLD/REB), Rwanda Governance Board (RGB), Consumer Protection Unit at Rwanda Utilities Regulatory Authority (CPU/RURA), and Admission Office of the University of Rwanda (AO/UR).

In Sri Lanka, the organizations preferred to remain anonymous. The respondents were municipalities as well as governmental organizations active in education, management of natural resources, economic development, transportation, foreign affairs, and management of civil servants.

3 Issues that Citizens Raise

We asked each of the 19 organizations about frequent inquiries from the citizens (not formal registration procedures) and identified, in total, 54 such inquires. We summarized the inquiries, as well as two own observations while visiting the organizations, into 26 issues and 10 problem domains displayed in Table 1.

Table 1. Issues raised by the citizens, their problem domains and solution domains.

Problem domain	Issue	Comments	N	Solution domains
Information supply	Requests for personal data	Forgotten login credentials. Non-standard certificates being issued. State employees may have personal files outside their direct reach.	4	eS
	Telephone inquiries about the status of the interaction	"What is the status of my application?" "Have you received my letter?" A phone call prior to a visit.	3	Inf, eS
	Inquiries about eligibility for a service	Eligibility for getting subsidized loans, scholarships, economic support.	3	Inf, eS
	Requests for clarification regarding a service	Confirmation of previously published information. "Which one of the related services is most relevant for me?" "Which documents are required for the application?" "How do I calculate the period of employment?"	6	Inf, eS
	People do not know where to seek help	Then they visit the local municipality.	1	Inf
	Platform between information provider and information consumer	Announced vacancies. Changes in the lecture schedule at a university.	2	Inf, eS
Data update	Non-standard update of standard personal data	Citizens try to register their address different from where they live.	1	PD
	Update to the personal file	State employees may have personal files outside their direct reach.	1	PD, eS, BP
Service update	Negotiated update of an existing service	Increased amount of the scholarship. Pension transferred to the spouse of a late husband or wife, or recalculated because of a part-time job.	3	PD, BP
Bad user interface	Difficulty to use a web-based information system	Citizens do not understand online forms or interpret them incorrectly.	3	Inf, eS, BP
Bad service	Complaints about delays in the service	Case that is supposed to take a few days takes more than a few days.	4	BP

	Complaints about interruptions in the e-service	Poor contact between dependent e-services.	1	eS
	Wrong/missing data needs to be corrected	After an application has been received, some supporting documents are found missing and need to be added. A property has wrong data in the registry; the error needs to be corrected after it is discovered.	2	eS
	Complaints that the service does not deliver the expected outcome	Job seekers do not find vacancies. A public procurement process does not result in product/service offers.	2	PD, BP
	Unfriendly service	Citizens use intermediaries for registration of property and receiving certificates because dealing with the service directly takes too much time and hassle.	1	PD, eS, BP
Material claims	Economic support to poor citizens	Subsidized housing, home infrastructure, public transportation.	4	PD, BP
	Compensation for nationalized property	State acquires land for public infrastructure.	3	PD, BP
	Support in case of a natural disaster	People need clean water; water pumps and cleaners in case of draught.	1	PD, BP
Jobs	Professional and business development	Vocational training, advice and networking for small businesses.	2	PD, BP
Conflict management	Disputes regarding ownership of real estate	Family members and neighbors dispute the ownership of property/land.	1	eS
	Complaints from citizens about unfair distribution of economic support	"The neighbor got more help than me, it's unfair."	1	PD, BP
	Consumer complaints	Transportation and sanitation service providers disrespect regulations.	1	PD, Inf, BP
	Mediation in case of mismanaged funds and internal conflicts in churches and NGOs	Complex interaction between organizations lies outside the scope of this research.	1	
Land management	Land requested for private or business use	Land management is a piece of science itself; we leave it to the professionals.	1	
Infrastructure	Insufficient infrastructure for the service	Staff members at an educational establishment request better infrastructure.	1	
	Service not available nearby	Parents cannot find a school place for their child.	1	
	Paper files	Paper files are still the prevailing information carrier in Sri Lanka.		

The fourth column ("N") shows the number of organizations that reported the issue relevant. Table 1 summarizes joint results from Rwanda and Sri Lanka because this is not a comparative study and we want to avoid unintended conclusions. Also, joint results increase anonymity.

Table 1 demonstrates that the direct communication from citizens to public organizations contains signals that call for improvement of the provided services. In order to show that such improvement is realistic, the last column in Table 1 maps each issue into one or several solution domains; the mapping comes from the analysis in the next section. A solution domain is a realm of development activities in order to improve the services.. Table 2 lists four solution domains, which were identified by analyzing the issues in the next section, as well as the number of issues from Table 1 that are linked to each solution domain. The solution domains are following:

- *Availability and timeliness of information*, i.e. information provided where and when it is needed, is a basic utility that reduces the hassle with using a service without the need to change the service itself.
- By *policy development* we mean developing the utility of the service, its input and output, eligibility requirements, as well as the legal basis for the service.
- By *business process development* we mean first of all improving the user experience when the citizens interact with the service; to a lesser extent internal optimization which leads to a better service, such as respecting the deadlines.
- *Availability and design of e-services* is an important part of business process development, so important that it got a separate solution domain.

Table 2. Solution domains, the number of and the share of linked issues.

Solution domain	Abbreviation	Number of linked issues
Availability and timeliness of information	Inf	7 (17%)
Policy development	PD	11 (27%)
Business process development	BP	12 (29%)
Availability and design of e-services	eS	11 (27%)

4   Reasoning towards Improvement

Analysis of the direct communication from citizens to public organizations can fuel the development of e-services, business processes, policies, and information supply. We demonstrate it in this section by analyzing each issue; the discussed solutions determine the solution domains listed in the last column of Table 1. The analysis and selected solution domains are subjective opinions of the authors; they are based on the interviews, our observations while visiting the organizations, common sense, and previous research. The analysis has not been confirmed by the respondents. We would like to emphasize that the goal of this section is not to state universally valid solutions but rather to demonstrate that the content of the communication from the citizens to the public organizations is actionable. We present our reasoning by problem domain.

Information supply. Retrieving personal data is best done by an e-service where the user enters his or her credentials and the e-service delivers the requested information. Inter-organization e-services eliminate the need for paper certificates.

Telephone inquiries about the status of one's interaction with the organization signal inefficient communication. One interviewed organization had half of its phone calls from the citizens with only one question: "What is the status of my application?" Another organization mentioned that the citizens often call to confirm whether their paper letter has been received. A third organization mentioned that citizens usually call before they come for a face-to-face visit. E-services and clear information could save most of these calls, and people's time and stress.

Right placement of the information, user experience while they navigate through the information, readability and completeness of the information help people satisfy their information need in a self-service mode. Interactive information seeking systems [7], which guide the user through the information flow, can help with the navigation problem; analysis of the logs [8] of the information system can help with the completeness problem.

AO/UR has compiled Frequently Asked Questions (FAQ) on its website, but people do not read them. Maybe people do not find them; maybe people do not care to look for them. If people write an email-style text message requesting information that is readily available, then an email-answering system [9] can automate the interaction.

If citizens do not know where to seek help, then comprehensive web-based information may provide guidance. Google is an effective, time- and cost-efficient solution for the citizens who are willing to google.

The aforementioned solutions assume that public information is available online and the citizens are comfortable with self-service when they contact public organizations, instead of dedicated personnel answering their questions. Sri Lanka, for example, has a strong tradition of face-to-face interaction between citizens and local government through the institution of grama niladhari ("village officer"), as well as overcrowded receptions of public organizations. The respondent at one divisional secretariat (municipality) mentioned that 90% of their interaction with citizens is face-to-face; the remaining 10% are phone calls. Research shows that an important e-governance adoption factor is trust, which may be undermined by the technology-created spatial and temporal distance between a citizen and the government [10].

In non-western countries, some local traditions may bypass the western-style governance altogether. Abunzi ("mediators") are traditional Rwandan judges who know people's needs. If a legal dispute is worth less than 3 million Rwandan Francs, the case is judged by Abunzi who do not report to the official legal system. No information online, no self-service.

Data update is most efficient by using an e-service, if the data storage is digital, which may not always be the case. Self-service needs policies on which data the citizens may update themselves, and which update requires a prior approval. The e-service may span across organization borders, which affects the business processes in the participating organizations. User authentication and digital signature require an appropriate legal basis and infrastructure.

If the data update still requires face-to-face interaction between citizens and public organizations, then the organizations may invest in minimizing two problems – overcrowded receptions and visits to a range of officials, often across organization borders, in order to collect approvals and certificates.

Service update needs policies and business processes for smooth implementation of the update.

Bad user interface. Three interviewed organizations mentioned that citizens contact the organization because they cannot fill in an online form – the citizens either do not understand it, or they fill in wrong data and get stuck. The remedy in such a case could be comprehensive explanation of the requested input (see "information supply"), usable design of the form itself [11], or eventually a well-designed e-service that guides the user through the step-by-step application process. The level of how intuitive the information system is has a direct impact on the learning abilities of its users; the design of the information system should take into account the diversity of the users' age, language skills, cultural diversity, and computer literacy [12].

If use of a public service requires skills that ordinary citizens do not normally possess, trained intermediaries may help [13]. In Rwanda, all lawsuits are filed through an Integrated Electronic Case Management System. If a case is not filed in the system, it is not a court case. Many citizens use Internet cafés in order to file their court cases; hiring a private legal representative is expensive. Without prior experience, a citizen may ask the manager of the Internet café for help, and they both make mistakes. MINJUST responded to the problem by training the managers of Internet cafés to file court cases.

Bad service. If an organization cannot keep its deadlines, it should redesign its business processes. Faulty e-services need to be fixed; interoperability across organization borders is a challenge [14]. Manual collecting of citizens' data will always be subject to human error, which can be reduced by letting a "smart" e-service collect and validate the data. If a service continuously does not deliver what it promises, well, some research suggests that more resources and better management may help [15], but the service needs to be redesigned anyhow.

If citizens avoid contacting an unfriendly service because the service is time consuming and unpleasant to deal with, and pay intermediaries to do business with the unfriendly service instead, then the public-private partnership [16] may be institutionalized and developed quality-wise, or the business processes and interaction with the service should be redesigned to meet the citizens' needs.

Material claims. Poverty reduction requires effort in at least two dimensions: income and access to services such as health care, education, sanitation, infrastructure, and security [17]. Therefore economic support to poor citizens is likely to fuel the development of policies and business processes in both dimensions.

The subject of material claims lies outside the scope of this research; still, we believe there must be space for learning the citizens' needs and subsequently improving the relevant policies and business processes.

Jobs. Professional development of the citizens is closely related to the economic growth of the country. The government may invest in vocational training and career guidance, as well as help small businesses with advice (e.g., certification, marketing,

enterprise development) and networking (e.g., contact with supermarkets, export organizations, financial institutions), as the respective public organizations in Sri Lanka do. This is an ongoing process of learning the needs, opportunities, solutions, and collaboration with established businesses and their lobby organizations.

Conflict management. Disputes regarding ownership of real estate are best resolved with the help of rigorous cadastral records and associated e-services. In order to deal with citizens' complaints regarding unfair distribution of economic support, the authorities must learn what causes these complaints, and then implement the lessons in policies and business processes. Consumer protection depends on informed complaining consumers [18], channel management [19], and effective law enforcement procedures. On a positive note, consumer complaints may lead to innovation [20].

The infrastructure of public services needs financial investment; financial investments lie outside the scope of this research.

There exists a piece of public infrastructure that has utmost influence on public services and the entire society. It is paper files as the information carrier. Paper files make e-services impossible, face-to-face interaction and queueing for the services mandatory. Paper files are likely to make services suffer from faulty data because of human error, and business processes around paper files will notoriously be slow and miss their deadlines.

There is another important aspect of paper files. During a visit at one Sri Lankan municipality, we observed some 10-15 persons in a room, mostly women, browsing through files, reading, sorting, and stapling the papers. There are about 1.5 million civil servants in Sri Lanka (the figure given by one interviewed organization), and about 12.6 million people in the age group 15-54 [21], which means that civil servants are about 12% of the working population. Because public organizations work with data and information, paper files as the information carrier are an important employer (as well as a burden on tax payers and a competitor of other publicly funded services such as education and healthcare). Paper files give jobs to many women and low-skilled (by western standards) workers, two types of employees who are disadvantaged on the labor market [22], as well as to middle management who makes sure that the employees are always occupied. State is an attractive employer in Sri Lanka because of job security and guaranteed pension. Removing paper files from the job market also removes attractive jobs, and jobs for underprivileged job seekers. It certainly requires new job opportunities, training, education, employment opportunities for women (e.g., hotel and restaurant industry is not a widely-accepted employer for women in Sri Lanka, although the country is a popular tourist destination), business development. Job market is a complex ecosystem, and ill-considered changes in the ecosystem may lead to political instability in the country.

This is the end of our reasoning upon the 26 issues. We have demonstrated that public organizations may learn a lot from their direct communication with citizens in order to improve their services. If so, why did we not observe much of the learning outcome at the interviewed organizations? This is a good question; it is our future research question.

Well, it is not accurately true that there were no learning outcomes at all. As mentioned earlier, MINJUST in Rwanda trained the managers of Internet cafés to file

legal cases. AO/UR has compiled FAQs on their website. Furthermore, AO/UR considers introducing a chat system that allows, in asynchronous mode, forwarding inquiries to different units and following the status of these inquiries – solved or not solved. HESLD/REB publishes announcements on their website as a response to suddenly frequent inquiries. CPU/RURA makes quarterly reports with recommendations to the management (we do not know how the management uses the reports).

Both Rwanda and Sri Lanka invest in developing good governance. "Rwanda Governance Scorecard 2016", the latest edition by RGB, reports on governance practices and achievements in the country. Sri Lanka Institute of Development Administration works on acquiring research-based evidence for policy makers. Both countries seek to develop their governance practices; analysis of the citizens' direct communication to public organizations is an opportunity yet to be utilized.

5 Frequent Inquiries in the Flow of the Communication

While the content of the direct communication from citizens to public organizations is most interesting, the volume and the structure of the communication allow us to estimate the significance of the issues in Table 1. Of the 19 interviewed organizations, 14 could estimate the total number of inquiries received from citizens within a certain period of time. Fig. 1 illustrates the total number of inquiries per channel, normalized per five-day business week, for 12 organizations. Two organizations had extreme numbers and were not included in the chart.
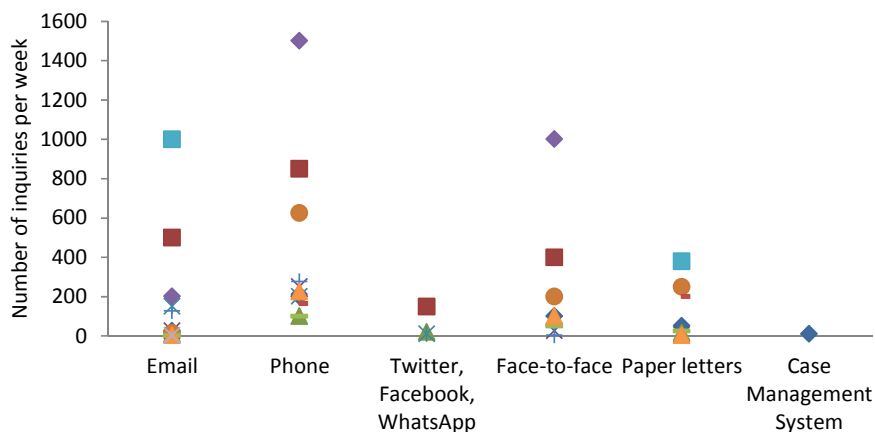

Fig. 1. Estimated number of inquiries per channel per five-day business week, 12 organizations. Individual channels are not used by all the organizations.

Almost the same 13 organizations could estimate the share of frequent inquiries among all the inquiries. Four organizations reported 100% of the communication flow covered by frequent inquiries (apparently minor issues were ignored). Three organiza-

tions had 70-90%, four organizations had 50-69%, and two organizations had 20-30% of the communication flow covered by frequent inquiries.

Furthermore, 8 organizations could estimate the share of individual frequent inquiries among all the inquiries, see Fig. 2. For example, the fifth organization from the left had three frequent inquiries and the distribution of these inquiries was estimated 60, 5, and 4 percent of the flow.
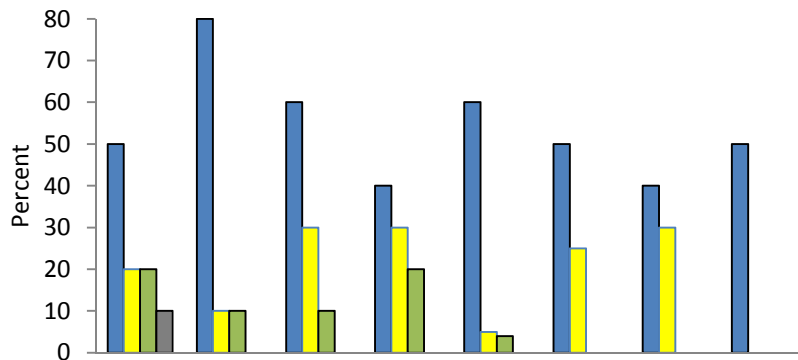

Fig. 2. Share of individual frequent inquiries among all the inquiries, 8 organizations.

We conclude that the volume of the communication and the share of the frequent inquiries in the communication flow substantiate the use of the issues in Table 1 as a source to develop and improve public services.

6   Archiving the Communication

We asked the organizations how they archive their communication from citizens; the means of archiving affect the opportunities for knowledge mining. We summarize the archiving methods by communication channel; the number in parentheses shows how many organizations use the particular archiving method. In Rwanda:

- *Email.* Stored in the inbox indefinitely (5) or deleted when the inbox is full (1). Filed on paper (1).
- *Telephone calls.* No record (4). Notes filed on paper (2). Summary of today's issues sent to the management (1).
- *WhatsApp* messages on the personal phone; most interesting ones are kept, the rest is deleted (1).
- *Twitter, Facebook* messages stay indefinitely (1).
- *Face-to-face meetings.* Notes filed on paper (1). The meeting is registered in a book (1). No record (1). In the other organizations, the citizens meet individual officials or local units who do not report individual meetings.
- *Paper letters* are archived by 2 organizations.
- *Case Management System* keeps the messages indefinitely (2).

In Sri Lanka:

- *Email.* Stored in the inbox indefinitely (2). Filed on paper (3). Included in a personal paper file (2). Printed and forwarded internally, not archived (1).
- *Telephone calls.* No record (5). Updates made in a personal paper file (2). Notes filed on paper (3). The call is registered in a book (1). The call is forwarded without any record (1).
- *Face-to-face meetings* (we do not consider formal registration procedures). Notes filed on paper (1). Updates made in a personal paper file (2). Complaints, issues, and their solutions filed on paper (2). Citizens have to formulate their needs as a letter (2). In the other organizations, the citizens meet individual officials or local units who do not report individual meetings, or there are no face-to-face meetings.
- *Paper letters* are archived by 8 organizations.

In Sri Lanka, the citizens may dial 1919 and call the Government Information Center which distributes information on behalf of many public organizations; hence, these organizations are not fully aware of the details of the inquiries.

In order to have a more aggregated view, we counted the number of organization-channel instances (the same communication channel for different organizations counts as different organization-channel instances), classified the archiving methods into archiving types as shown in Fig. 3, and calculated the distribution of the organization-channel instances by archiving type. Please observe that 100% means 23 organization-channel instances for Rwanda and 35 organization-channel instances for Sri Lanka. Also, please observe that Fig. 3 does not illustrate the amount of communication, i.e., busy and not so busy organization-channel instances are counted equally.
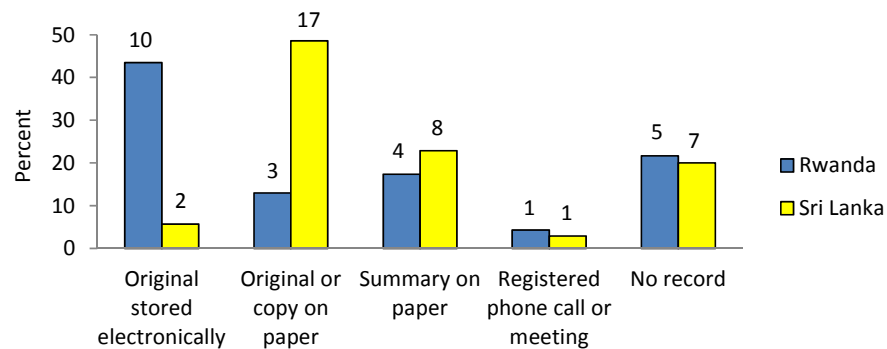

Fig. 3. Number of organization-channel instances (on top of the bar) per archiving type and the share of the archiving type (the bar) for the country.

In Rwanda, ICT-based text communication channels are significant, which allows electronic archiving of the original content. In Sri Lanka, much of the communication is archived on paper – either the original documents, or printed emails, or summaries. In both countries, around 20% of the organization-channel instances do not archive the communication.

Despite the differences between Rwanda and Sri Lanka regarding communication channels and archiving methods, the organizations in both countries possess the aggregated knowledge about the issues that the citizens raise. This aggregated knowledge does not seem to be well-documented, though; our method of knowledge mining was interviews with the management.

7 Learning from the Citizens

Surveys and polls are probably the most common form of soliciting feedback, used also to obtain citizens' input in policy making [23]. Surveys and polls are not initiated by the respondents, and low response rate may be a problem.

Charalabidis et al. [24] distinguish three generations of e-participation tools: (i) official government websites with predefined topics and discussion options; (ii) government establishes its presence in social media; (iii) government uses advanced technology for opinion mining, sentiment analysis, crowdsourcing in social media a.k.a. citizen-sourcing, social media monitoring, open innovation – these are different names for related activities to obtain citizens' input for developing more socially rooted policies.

The goals of social media adoption by public organizations are (i) increasing citizens' participation and engagement in the policy development and implementation, (ii) promoting transparency and accountability, reducing corruption, (iii) co-production of public-services, (iv) exploiting public knowledge and talent to develop innovative solutions to complex societal problems [25]. Social media trigger a governance paradigm shift because they facilitate bottom-up participation and self-organization of citizens [26], as well as facilitate openness and transparency, rationalize the actions of civil servants and policy makers, promote direct democracy [27]. Our own solution domains in Table 2, compared with the ambitions of the social media adoption, seem more modest and oriented towards solving operational challenges at hand.

While studying the literature on social media adoption by public organizations, we observed that opinion mining in social media is not regarded as a successor of opinion mining in the citizens' direct communication to public organizations. Opinion mining in the direct communication has never really existed. Arguably, the following three phenomena make social media different from the direct communication, which has triggered the social media adoption: (i) public organizations cannot control the communication in social media, at least not in the western countries; (ii) social media facilitate the aforementioned self-organization of citizens which cannot be ignored by public organizations; and (iii) the e-participation tools and technologies – visualization and argumentation, voting and deliberation, opinion mining, simulation, serious games, big-data analysis, etc. [28] – have managed to arrive just in time.

Four Dutch case studies [26] show symptomatic applications of social media monitoring by public organizations. In 2007, the ministry of education was surprised by a student revolt; in order to be better prepared for the future surprises, the ministry commissioned social media monitoring, i.e., an early warning system. In 2009, the

ministry of environment felt threatened by a political scandal around climate research. The ministry commissioned monitoring of "who, where, how often, and what" was discussed. Eventually, the ministry invited the sceptics of the government's climate policy to meet the officials. Thus, both ministries used social media monitoring in the context of policy making. Two other governmental agencies monitored the image of the organization, questions and problems posted by the citizens. Answering questions in an online community is more efficient than answering individual phone calls. Thus, both agencies used social media monitoring in the context of service delivery.

These Dutch case studies are among the best examples of social media adoption by public organizations; there are hardly any published examples of policies and services co-designed by the citizens. There exist two evaluation frameworks that help measuring social media interactions in the public sector [25, 29, 30], but the actual evaluations did not include any final "product".

Another Dutch research [31] sheds some light on why this final "product" is often missing. Politicians consult citizens; the role of citizens is mainly to provide information and ideas. Other actors, such as social and professional organizations and entrepreneurs, are more important in the policy making process itself. Civil servants are the decisive actors. 73% of the surveyed entrepreneurs believe that citizens lack the necessary knowledge to participate in policy making, and civil servants are highly critical about the value of the information and suggestions provided. Also Sneiders at al. [6] suggest that public organizations rely primarily on input from domain experts, governmental and non-governmental organizations, and companies.

8 Conclusions

This research explores the direct communication generated by citizens, addressed to public organizations, and how this communication can be used to improve public policies and services. We have interviewed 19 public organizations in Rwanda and Sri Lanka, identified 26 issues raised by the citizens, and mapped these issues into four solution domains: availability and timeliness of information, policy development, business process development, availability and design of e-services (Table 1, Section 4). Furthermore, we show that the volume of the communication is sufficient to substantiate the importance of the issues (Section 5). Therefore we conclude that the citizens' feedback embedded in their communication to public organizations is actionable and can be used to develop and improve public policies and services. We collected our data in two countries; still, we believe our conclusions are valid in most countries.

There exists a substantial amount of research in co-production of public services. Still, published results of citizens' involvement in developing public policies and services are rare.

Our own results and those of the related research suggest a conflict between the wealth of governance-related information generated by citizens on one side, and reluctance of public organizations to act upon this information on the other side. Therefore we propose the future research that identifies the barriers inside public organiza-

tions that hinder more direct involvement of citizens in governance, investigates how the barriers could be lifted, and whether the barriers should be lifted at all.

9   Acknowledgements

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