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HOW IMPORTANT IS CIVIC ENGAGEMENT FOR PUBLIC TRANSPORTATION COMMUNICATION?

Abstract

The communication between users of digital media and public or non-profit organization involved into an open data policy are represented through a democratic way with upwards and downward flows; implying an evolving participation of citizens and a progressive openness of a company's database. Under this perspective, various tasks have been employed. The mission of this paper is to define and analyze the tasks – related to certain cultural factors – in an open data policy as well as their level of importance. This action will help determine which communication process is suitable in such utopian relation. We conducted an empirical case study research design. Subsequently, a qualitative and a quantitative data analysis were performed. The authors present a cultural context of civic engagement as well as a communicational model between the players enrolled in democratic exchanges taking place in an open data environment. Our research reveals the main characteristics of information flows and of the communication relations established among the company Transports Publics Genevois (TPG), a civic community of experts and the end users of the mobile application "UnCrowdTPG". Organizations involved into an open data project could communicate mainly through two cultural factors: "Knowledge", establishing content oriented communication; and "Trust", constituting a relation oriented communication.

Keywords - engagement, civic, communication, trust, knowledge

Paper type Research paper

1. INTRODUCTION

The traditional forms of social and political engagement of volunteering in NGOs encounter a significant decline (Worth, 2013). Far from reaching the end of militancy (Ion, 1997), new forms of engagement are revealed through the networking of individuals (Martinot-Lagarde & Hériard-Dubreuil, 2008) willing to cooperate and share their expertise without expecting a financial compensation (Béraud, du Castel & Cormerais, 2012). These new practices could be further detached from the organisational framework and occur episodically as illustrated by the notion of slacktivism (Christensen, 2011) or micro-volunteering (Kacprowicz & Borowiecka, 2014). Non Profit Organisations should, hence, meet the challenge of interpreting the nature of these new generations of citizens and adjust their activities and communication strategies accordingly. Under this perspective, the integration of an open data strategy appears as a windfall capable of relaunching and fostering online volunteer engagement (Wymer, Knowles & Gomes, 2006) particularly in regards to the ideal of transparency and participation (Asdourian, 2015).

The communication between users of digital media and public or non-profit organization involved into an open data policy are represented through a democratic way with upwards and downward flows. This fact occurs mainly because of the increasing participation of citizens (Deuze, 2006) and the public deliberation (Wright, 2012; Held, 1996; Sunstein, 2001). This kind of movement appears within the social media and mobile application opportunities which promote new modalities of thought and expression, new ways of knowing (Kaplan & Haenlein, 2010). Current scientific literature on digital technologies deals with the case of organizations which disseminate internal data to a crowd of citizens (Chignard, 2012) and take into account its ideas, help and judgments (Surowiecki, 2004). These actions demonstrate a dual role. They not only contribute to development of a civic society oriented towards a civic engagement of citizens (Uldam & Vestergaard, 2015; Lee, 2015; Oh, Bellur & Sundar, 2010; Thompson, 1995) but also perceive open data projects as one of the significant variations of political engagement (Dahlgren, 2009). Thus, organizations involved into an open data policy need to comprehend this cultural context and to communicate specifically to participative citizens.

The overall purpose of this study is, above all, to determinate the tasks and their levels of importance by attaching certain cultural factors at an open data policy. Such factors, can shape civic agency, have an effect on citizens' engagement and participation and emphasize the role of an open data policy via social media and mobile devices. Besides, through this study, we propose a communication mix between organizations and citizens which will promote the engagement in an open data policy. At this point, an important question emerges: what are the characteristics of information flows and of the communication relations exchanged between these actors?

Relying on the methodology of the case study (Geneva Public Transport) conducted in this paper; this research explores the communication context that occurs between an organization involved into an open data project, certain mobile experts who create mobile applications as well as the users of such applications.

In the following sections, we set up the theoretical framework which incorporates a participative model and a civic cultural framework. Then, we provide an analysis of the concepts of open data and the utility of the crowd enriched with data from interviews and an e-survey. Various measures of concrete actions based on Dahlgren's notions of cultural factors, are also suggested and discussed. In that way, we propose a communication mix model implemented in an open data policy. Finally, the paper describes the managerial contributions as well as the possible limitations of this study.

2. LITERATURE REVIEW

The literature review is carried out into two sections. The authors, at first section, determine the theoretical framework of the civic engagement principle thus to define and analyze the potential tasks emerged from this principle. Then, at the second section, is presented a reflection on the transformation of the utopian vision of an open data project into real and concrete.

2.1. Framework built to analyze tasks related to civic engagement

The theoretical framework interplays the participative related AIP model (Carpentier, 2011) and the Civic Culture Framework (Dahlgren, 2009) in order to categorize tasks performed in the relation between citizens and public transportation organization involved into an open data policy.

Carpentier (2011) describes civic agency and participative environment in the public sphere through three distinctive notions: "Access", "Interaction" and "Participation". In fact, "Access" and "Interaction" could be defined as possible conditions for the participatory processes. These three notions are also interlinked with the following areas: technology, content, people and organizations. "Access", of course, is the main component for the media technologies since it allows people to access media content. In the context of organizations, "access implies gaining a presence within media organizations, which generates the opportunity for people to have their voices heard (in providing feedback). If we focus more on media production, access still plays a key role in describing the presence of media (production) technology, and of media organizations and other people to (co-)produce and distribute the content" (Carpentier, 2011, p.28). "Interaction" is related to the establishment of socio-communicative relationships. Finally, "Participation" focuses on power and decision-making. The AIP model will be implemented, in this paper, in order to identify the tasks performed at internal level (within the organization studied) but also at external level (between citizens). It will also serve to delineate the link between organization and citizens (see methodology of Carpentier, 2014).

Dahlgren (2009) indicates elements of a civic culture which depict the suitable environment for an agency: "Knowledge", "Values", "Trust", "Spaces", "Practices" and "Identities". As for "Knowledge", tool that triggers the participation process, Dahlgren puts emphasis on its crucial aspect: knowledge acquisition. This fact helps, at this point, two types of citizens emerge. The first kind of citizens includes those who "tend to rest more on established background knowledge – which may even become outdated and ossified as ideological truths" (Dahlgren, 2009, p.110). Besides, the second type of citizens deal "with new information and thereby revising knowledge" (Dahlgren, 2009, p.110) while possessing the traits that render them "able to make sense of that which circulates in public spheres" (Dahlgren, 2009, p.109). In this way, new media play "key role in regard to civic knowledge [because] new media technologies promote new modalities of thought and expression, new ways of knowing" (Dahlgren, 2009, pp.109-110). "Values" are linked with the notion of democracy and with the principles of tolerance and willingness. Two categories of values are distinguished by Dahlgren: first, substantive values referring to equality, liberty, justice, solidarity, and tolerance; secondly, procedural values attached with the notions of openness, reciprocity, discussion, and responsibility/accountability. The most active citizens demonstrate an enthusiasm for democratic values, thereby; more engagement and action are stimulated and generated. Regarding the element of "Trust", Dahlgren claims that networks, social movements or political parties need, at least, a modest level of trust. For Mayer, Davis and Schoorman (1995) the nature of "Trust" connotes those citizens having confidence in each other (in a two-way communication). "Spaces" criteria are perceived by Dahlgren as "contexts in which [citizens] can act together" while he insist that new communicative contexts are easily generated by new media. These media create links between online and offline activities such as political interventions. "Practices" interact with "Knowledge", "Trust" and "Values" dimension of civic cultures. By practicing, citizens build their civic identities around a specific ideology adopted through networks. "Identities" are a protean and evolve through experience. Consequently, "people's subjective view of themselves as members and participants of democracy [is] build on knowledge and values […] can be reinforced by trust, and embodied in particular spaces via practices – pursuing issues by the use of civic skills – that in turn serve to reinforce identities" (Dahlgren, 2009, p.119). Thus, the sense of being an empowered agent and a member of communities are considered as valuable conditions to make some political interventions.

2.2. From an utopian vision of open data projects to real

An open data philosophy results in a provision of data, previously considered as private. Correspondently, the public can use and exploit these data "without copyright restrictions, patents or other mechanisms" (Noyer & Carmes, 2013, p.137-138). Open data is linked to the culture of "free" – i.e. free software – (Lessig, 2004). This logic lessens the boundaries between organizations and the general public; particularly its category of: "professional amateur" or "pro-am" (Martin, Foulonneau, Turki & Ihadjadene, 2013) called

"experts". This category of public, acts on a collaborative and ethical basis (Lin, 2004; Himanen, 2004). Thus, this logic of open data intertwines with the principles of utopia and myth (Couldry 2015; Ricoeur, 2005; Flichy, 2001), consequently, the free access to information and knowledge is promoted (Powell 2015; Mansell, 2013).

The open data and web 2.0 stimulate the emergence of values constructed by the blend of collective intelligences (Rheingold, 2002). In his book "The wisdom of crowds," Surowiecki (2004) embraces the principle of the emergence of additional value resulting from the aggregation of the parties. He asserts that the more information a group possess, the more its collective judgment improves. However, Surowiecki claims that collective intelligence is evident mainly through the combined presence of amateurs and experts in social groups composing these crowds. The utility of expert communities for the company is also present in the principle of crowdsourcing (Howe, 2008).

The mission of crowdsourcing is to procure the creation of new ideas by external experts in business communities that can work together face to face and / or by digital social media (Levine, Loch, Searls & Weinberger, 1999; Von Hippel, 2005). The crowdsourcing includes various forms (collaborative, cumulative, competitive and coopetitive) according to the levels of interaction and competition of participants (Renault, 2014). In a community of experts oriented in a collaborative form, such as the case study provided below, the values of sharing and trust are considered as key components (Watson & Hagen, 2015) – versus to a competitive form. The methodology applied in this study allows us to quantify the levels of importance of these values.

3. RESEARCH QUESTIONS

Conducting a literature review, the following three research questions were established to guide the data collection and analysis:

- RQ1: What are the tasks related to cultural factors in an open data policy?
- RQ2: What are the levels of importance of the tasks related to cultural factors in an open data policy?
- RQ3: Which kind of communication mix between organization and citizens could promote engagement in an open data policy?

4. METHOD

In this paper, we conducted an empirical case study research design (Yin, 2003) in order to obtain deeper insights into the possible factors affecting the actors' culture of participation in a context of open data. Subsequently a qualitative and a quantitative data analysis were performed.

4.1. Case and data collection

Data sets were collected from members of Geneva Public Transport (in French: Transports Publics de Genève as well as from creators and users of the UnCrowdTPG mobile applications. *Transports Publics de Genève* (TPG) operates the public transportation system in Geneva Canton with trams, buses and trolleybus. TPG is the first public transport organization in Switzerland involved in an open data project. The group Quality of Life (QoL) – from Geneva University – has created the mobile application called UnCrowdTPG. Winner of the Open Geneva competition, organized by TPG, UnCrowdTPG enables its users, since July 2014, to give their opinion on the overloading of vehicles (Souche, 2009). This application integrates the data of public transport users in order to detect the traffic affluence in real time. Hence, it allows citizens to change or postpone their urban travel. In test phase and without wide publicity, this application has been downloaded more than 100 times and has hosted about 300 visits in a three months period. The qualitative part of this research approach was developed through an explorative approach. It was based on a collection of data extracted from interviews. We conducted four interviews of approximately 45 minutes with each of the stakeholders of TPG, QoL and users of the UnCrowdTPG mobile application.

Following a thorough literature review, an e-survey was designed to include 49 civic acts related to 3 civic agencies and promoted by 5 cultural factors. All of the items in the e-survey were presented as statements to which contributors were asked to state their personal perceived importance on a seven-point Likert scale of 1 to 7 (1="Not at all important", 2="Low importance", 3="Slightly important", 4="Neutral", 5="Moderately important", 6="Very important", 7="Extremely important"). A brief description of our study and the link to the e-survey were sent from August to October 2015 to 12 Twitter accounts of the reference persons and organizations specialized in the open data thematic (i.e. @OKFN, @OpenDataMonitor, @schignard, @OpenDataZurich, @HackathonWatch, @OpendataCH, @giorgiop5, @katewac, @shalf, @loleg, @ecolix, @andreasamsler) ; 7 specifics Twitter hashtag dedicated to open data or open innovation (i.e. #makeopendata, #hackdays, #hackathon, #opendata, #hackzurich, #openinnovation, #innovation) ; and to Master students from Fribourg and Geneva Universities. Some of our messages including a link to the e-survey were retweeted to many followers. The e-survey was completed by 22 persons (5 contest organizers, 3 mobile applications developers and 14 mobile applications users). The results were analyzed using the online tool Qualtrics.

5. FINDINGS

5.1. Analysis and results from interviews

The interviews and the e-survey of this study have provided useful insights to comprehend the important factors appealed to the Open data Communication mix; created to enforce the engagement of citizens. The extracted data has allowed us to formulate suggestions for establishing a relation of contribution built upon Dahlgren's theory of cultural factors and particularly the principles of Trust and Knowledge. This was achieved by correlating messages and high number of participative related content. The interpretation of the interviews permitted us, also, to establish an overview of the relation between organization, data experts and mobile application users.

5.2. Analysis and results from e-survey

Regarding this overview, 49 tasks were created to define the relation between all actors involved in a collaborative relation. Results from the e-survey indicate the mean values of all of these tasks according to a level of importance. Table 5.1 illustrates the mean values of all tasks arranged, based on their mean values (highest starting from up).

Tasks (ranking)	Mean
Information on the open data project	**6.14**
Gradual improvement of the application (in *beta* mode) through feedback	**6.08**
Individual distribution of local data, advice and ideas for improvement in real time	**6.08**
Collaborative crowdsourcing Background	6
Facilitating the opening of internal borders	5.93
Ties with other similar organizations on the topic of open	5.86
Judgment/ Evaluation of the quality of the commitment of the creative team and the relevance of the result	5.86
Collaboration (Techies & Manager of competition on open data)	5.86
Networking dialogues between experts and users	5.85
Access to the content of the organization	5.85
Manager as good listener	5.79
Users donating proposals of improvement	5.79
Business-expert users together around a utopian project	5.79
Access to a network (bridging)	5.77
Determine open data formats	5.71
Translation of complex data into an understandable statement	5.71
Willingness to share, improved practices (tech- savvy spirit, civic engagement)	5.71
Computer specialists as proponent of open (data innovation)	5.64

Employee participation in valuing the process of open data	5.64
Selection of project management teams animating the contest	5.64
Data donation from organizations	5.62
Discussions for the creation of an innovative speech	5.57
Generating ideas to be developed	5.57
Strong technological and combinatorial skills: transdisciplinary approach	5.57
Dissemination of the concept of open utopia	5.57
Information on resources people	5.54
Access to tutorials and skills	5.54
Content production via the opinions / evaluations / recommendations of users	5.43
Access to internal raw data	5.43
Networking dialogues between experts	5.36
Requests for new datasets for additional services	5.36
Participation in the dissemination of an innovative discourse between the services concerned	5.36
Creation of mobile applications	5.36
Retrieving information provided by the experts and users of the mobile application	5.36
Retrieving information generated by the citizens about the mobile application	5.36
Information about the tools available for creating applications	5.23
Creation of content through the uses of applications	5.21
Selection of teams of experts participating in the contest	5.14
Participation in the creation of a digital innovation	5.14
Interaction via mobile applications	5.14
Decision making process to hold an open data contest	5.07
Crowdsourcing through competitions	5
Recovery of users' data by innovators	5
Access to mobile tools (citizens)	4.92
Production, dissemination and reception of advertising content to enhance the image of an innovative company	4.86
Access to the imaginary of sharing	4.62
Software /available for the development of Mobile applications	4.38
Participation of members of the company to highlight the themes of reflection to participants during the contest	4.36

Table 5.1 Ranking of the mean value of all tasks.

In order to simplify the interpretation of the findings, related items of the e-surveys were aggregated within the following five categories: (1) Knowledge, (2) Values, (3) Trust, (4) Spaces and (5) Participation. Table 5.2 illustrates the 49 tasks classified into five categories perceived by Dahlgren (2009) in his book "Media and political engagement: citizens, communication and democracy". Some tasks might be placed into more than one category; however, for heuristic purposes this e-survey embraces Dahlgren's notions.

Tasks	KVTSP Dahlgren
Computer specialists as proponent of open (data innovation) Manager as good listener Determine open data formats Information on the open data project Information on resources people Information about the tools available for creating applications Access to a network (bridging) Access to tutorials and skills Ties with other similar organizations on the topic of open Software /available for the development of Mobile applications Networking dialogues between experts Networking dialogues between experts and users	K
Dissemination of the concept of open utopia Facilitating the opening of internal borders Data donation from organizations Individual distribution of local data, advice and ideas for improvement in real time Access to the imaginary of sharing Retrieving information provided by the experts and users of the mobile application Retrieving information generated by the citizens about the mobile application Recovery of users' data by innovators Decision making process to hold an open data contest Willingness to share, improved practices (tech- savvy spirit, civic engagement)	V
Collaboration (Techies & Manager of competition on open data) Business-expert users together around a utopian project Collaborative crowdsourcing Background	T
Access to internal raw data Access to mobile tools (citizens) Crowdsourcing through competitions Interaction via mobile applications	S
Discussions for the creation of an innovative speech Production, dissemination and reception of advertising content to enhance the image of an innovative company Requests for new datasets for additional services Gradual improvement of the application (in beta mode) through feedback Employee participation in valuing the process of open data Participation in the dissemination of an innovative discourse between the services concerned Selection of project management teams animating the contest Selection of teams of experts participating in the contest Judgment/ Evaluation of the quality of the commitment of the creative team and the relevance of the result Participation of members of the company to highlight the themes of reflection to participants during the contest Creation of content through the uses of applications Content production via the opinions / evaluations / recommendations of users Creation of mobile applications Generating ideas to be developed Translation of complex data into an understandable statement	P

Users donating proposals of improvement Strong technological and combinatorial skills: transdisciplinary approach Participation in the creation of a digital innovation	

Table 5.2 Tasks categorized into five Dahlgren's categories.

Top tasks were coined as those items presenting a mean value higher than 6.0 based on the use of a seven-point Likert scale. Respondents of our e-survey considered as highly important to following item also illustrated in Table 5.3 (mean value and related category are described into the brackets):

- "Information on the open data project" (6.14 – Knowledge): The organization embarks on the establishment and the diffusion of internal and external information related to open data procedures. Thus, documents, internal exchanges, web pages including core information and links towards tutorials for the development of software and open data formats are disseminated. The objective is to make accessible the information on the philosophy and open data practices. At this point, the criterion of Knowledge plays a crucial role.
- "Individual distribution of local data, advice and ideas for improvement in real time" (6.08 – Values): Citizens offer data issued from their perceptions and amelioration proposals. This task requires the Values of sharing and giving.
- "Gradual improvement of the application – in beta mode – through feedback" (6.08 – Practices): The practice of permanent technical improvements is conducted by the developers of mobile applications through the interactions of its users.
- "Collaborative crowdsourcing background" (6 – Trust): The developers of the mobile application collaborate between each other (high level of interaction, and low level of competition) in order to generate intelligible and comprehensive open data offered by the organization. The ultimate objective is to facilitate the daily life of citizens. This could be achieved if and only the citizens express Trust and confidence on the functioning of the application by indicating the information related to the level of traffic congestion of the transport they use.

Low tasks were defined as those items indicating a mean value lower than 4.5 based on the use of same seven-point Likert. A lower importance was evident to: "Software available for the development of Mobile applications" (4.38 – Knowledge) and "Participation of members of the company to highlight the themes of reflection to participants during the contest" (4.36 – Practices).

To intensify the detection of potential trends and to facilitate data interpretation, a simple depiction of the achieved data was performed, aiming to illustrate the ranking of the five categories (Table 5.3). The rankings are based on the average of the mean values of the items within each category where the items were given equal weight. The ranking of the Dahlgren's categories, in a context of open data, was the following: (1= highest – 5=lowest): (1) Trust, (2) Knowledge, (3) Values and Practices and (5) Spaces (Table 5.4).

KVTSP Dahlgren	Tasks	Mean	Global Mean
K	Information on the open data project	6.14	**5.57**
	Ties with other similar organizations on the topic of open	5.86	
	Networking dialogues between experts and users	5.85	
	Manager as good listener	5.79	
	Access to a network (bridging)	5.77	
	Determine open data formats	5.71	
	Computer specialists as proponent of open (data innovation)	5.64	
	Information on resources people	5.54	
	Access to tutorials and skills	5.54	
	Networking dialogues between experts	5.36	
	Information about the tools available for creating applications	5.23	
	Software /available for the development of Mobile applications	4.38	
V	Individual distribution of local data, advice and ideas for improvement in real time	6.08	**5.43**
	Facilitating the opening of internal borders	5.93	
	Willingness to share, improved practices (tech- savvy spirit, civic engagement)	5.71	
	Data donation from organizations	5.62	
	Dissemination of the concept of open utopia	5.57	
	Retrieving information provided by the experts and users of the mobile application	5.36	
	Retrieving information generated by the citizens about the mobile application	5.36	
	Decision making process to hold an open data contest	5.07	
	Recovery of users' data by innovators	5	
	Access to the imaginary of sharing	4.62	
T	Collaborative crowdsourcing Background	6	**5.88**
	Collaboration (Techies & Manager of competition on open data)	5.86	
	Business-expert users together around a utopian project	5.79	
S	Access to the content of the organization	5.85	**5.27**
	Access to internal raw data	5.43	
	Interaction via mobile applications	5.14	
	Crowdsourcing through competitions	5	
	Access to mobile tools (citizens)	4.92	
P	Gradual improvement of the application (in beta mode) through feedback	6.08	**5.43**
	Judgment of the quality of the commitment of the creative team and the relevance of the result	5.86	
	Users donating proposals of improvement	5.79	
	Translation of complex data into an understandable statement	5.71	
	Employee participation in valuing the process of open data	5.64	
	Selection of project management teams animating the contest	5.64	
	Discussions for the creation of an innovative speech	5.57	
	Generating ideas to be developed	5.57	
	Strong technological and combinatorial skills: transdisciplinary approach	5.57	
	Content production via the opinions / evaluations / recommendations of users	5.43	
		5.36	
		5.36	

	Requests for new datasets for additional services Participation in the dissemination of an innovative discourse between the services concerned Creation of mobile applications Creation of content through the uses of applications Selection of teams of experts participating in the contest Participation in the creation of a digital innovation Production, dissemination and reception of advertising content to enhance the image of an innovative company Participation of members of the company to highlight the themes of reflection to participants during the contest	5.36 5.21 5.14 5.14 4.86 4.36	

Table 5.3 Tasks categorized into five Dahlgren's categories and ranked through each of them.

Category ranking	Cultural factors	Mean value
1	**Trust**	5.88
2	Knowledge	5.57
3 3	Values Practices	5.43 5.43
5	Spaces	5.27

Table 5.4 Ranking of the Dahlgren's categories in an open data policy.

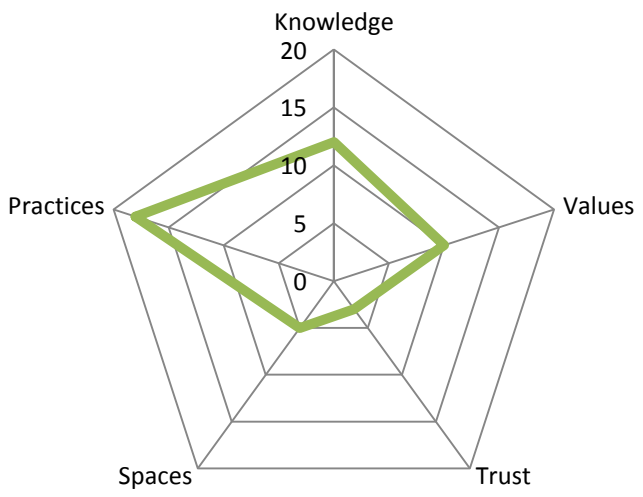
5.3. Discussion and proposition of an Open data Communication mix model

The objective of this study is to determinate the tasks and their levels of importance by attributing cultural factors inside an open data policy. Consequently, it is proposed a communication mix between organization and citizens capable to promote engagement in an open data policy. This study has revealed the significant importance of the Trust and Knowledge categories. Our findings indicate that the key characteristics of a well-defined open data context enhancing of citizens democratic participation, rely on symmetrical and horizontal interactions.

The symbiosis of Trust and Knowledge could be characterized as a valuable method to foster a participative creation of mobile applications by experts, data or even by feedback transmitted from end users. We propose that organizations involved into an open data project could undertake the following missions. First of all, they could try to reinforce the principle of Trust; secondly they could lay more emphasis on the notion of sharing knowledge through open data projects.

The four tasks that have been considered as "highly important" mean values are related to the four following categories: Knowledge, Practices, Values and Trust. However, respondents to the e-survey indicated a lowest importance to tasks related to the category "Spaces".

According to the number of tasks belonging to each category, "Practices" appeared to have a numerous items in comparison with "Trust" which includes a lower number of items. The level of importance for the first three tasks of these categories is equivalent; however, with a high number of items, the "Practices" category indicates a lower ranking mean value. If many "Practices" items were evoked by interviewees, many of them could be defined as not important at all (for instance: "Participation of members of the company to highlight the themes of reflection to participants during the contest" or even "Production, dissemination and reception of advertising content to enhance the image of an innovative company").



Characteristics	Numbers
Practices	**18**
Knowledge	12
Values	9
Spaces	5
Trust	4

Fig. 5.1 Number of civic cultural related tasks.

To a certain extent, this research confirms prior findings that identify “ordinary people" as experienced individuals, empowered citizens and community’s members (Dahlgren 2009). The notion of experience implies that an open data policy can promote a long term evolution of civic identities in regards of creating and using applications from a collaborative aspect. Despite the political context, adversaries do not exist: people help each other in order to get well informed on transportation situation in Geneva. Using open data to create services, participation is stimulated thus to build empowered citizens. This individual empowerment serves immediately to indicate the individual willingness to become and behave as a part of a collectivity. This movement reinforces collective trust between open data actors improving also the sharing of knowledge and community values.

Overall, our findings function as indicators to propose an open data Communication mix model, created to enforce the engagement of citizens. This open data communication mix model should be constructed by the principles of Trust – deriving from relations – and Knowledge lying on content.

5.4. An Open data Communication mix model

The authors present a proposal for a communicational mix model between the players enrolled in a context of an open data project (Fig. 5.2). This model is inspired by aspects such as the content and type of relationship communication (Watzlawick, Beavin & Jackson, 1972). Following the Palo Alto theories, the transmission of a message involves two elements: the content itself and the relationship between the participants. In that way, information is established on a two-dimensional form revealing the facts and the link between the people involved. Most often, the relationship is more important than the content itself.

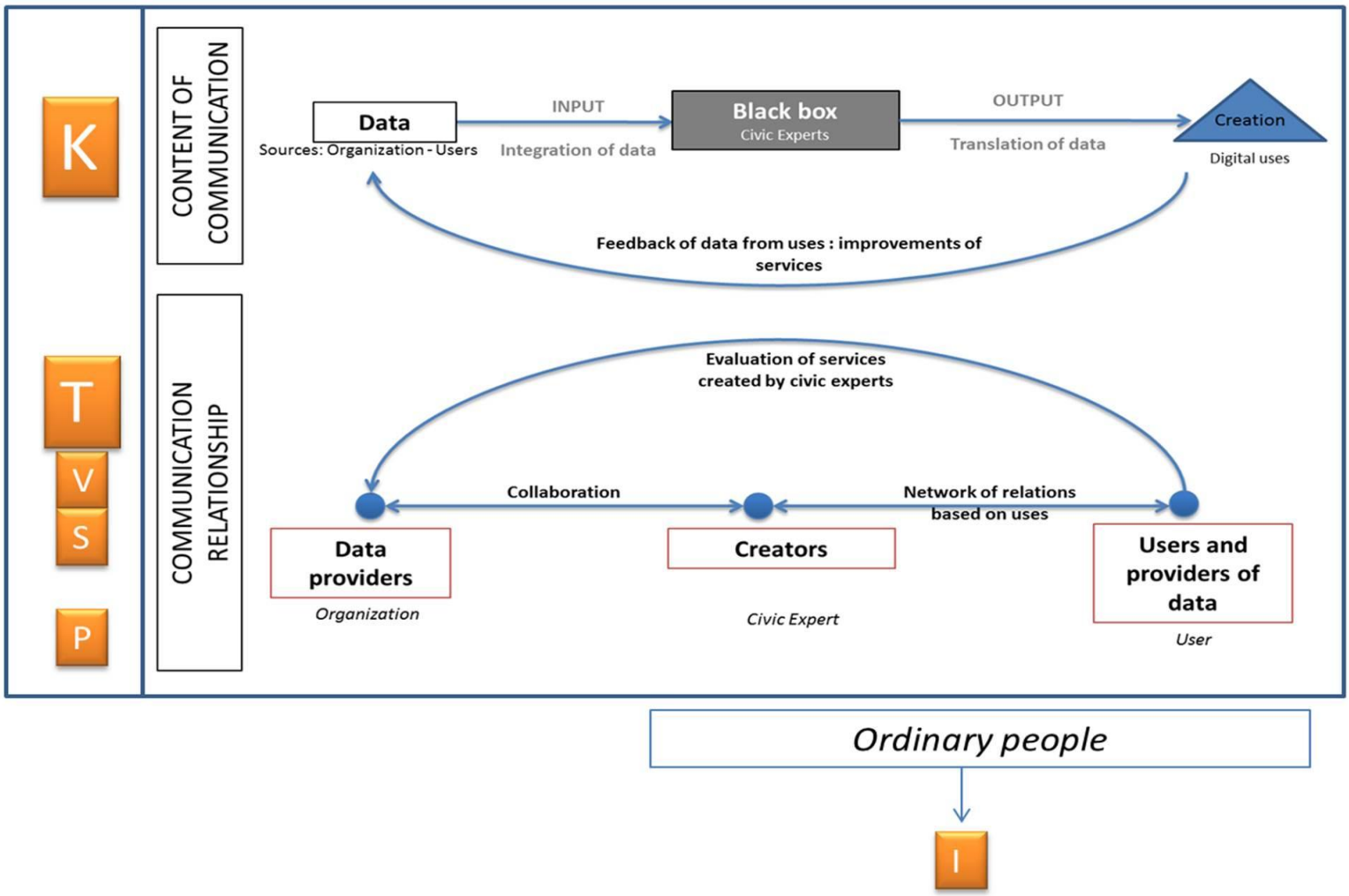


Fig. 5.2 An Open data Communication mix model

Regarding the aspect of the content of the communication, the flows of content between actors are presented in terms of a cybernetic process control and regulation (Wiener, 1958). The command is materialized by an input consisting of data from a digital environment. This input is integrated in a black box of engaged civic experts. The output of that black box is a translation work data from the input. The regulation is materialized by the use of data feedback for refinement of open data, data translation, improving the novelty and the organization's services. This regulation may enrich the data of the digital environment of the system and constitutes a feedback effect on the cause, as defined by cybernetics. These exchanges based on content result from the element of Knowledge provided in Dahlgren's theory of cultural factors.

Under the scope of the communication relationship, relational flows between the actors derive from the adaptation of the Katz and Lazarsfeld (1955) model of "two step flow communication" between the media and the public, via opinion leaders. Transcending these notions into situations of a communication for civic engagement related to open data, two phases emerge. The first phase, demonstrates the collaborative relationship between the organization and experts whereas, the second phase signifies the relationship of the

uses of these services created as well as the link between the experts and the users. These relationships are considered as the steps inasmuch as grounds, in the sense that they are horizontal (collaborative) and not vertical (hierarchical). It is also observed a relationship between users and the organization through the trial of innovative services. These exchanges based on relationship derive from the element of Trust, provided in Dahlgren's theory of cultural factors.

6. CONCLUSION

6.1. Contribution

Our study provides a theoretical contribution. The integration of cultural factors and civic engagement theories into the present study sheds light on the new relationship between organization and citizens in a context of an open data policy for public transportation. The evidence of tasks importance, evaluated by all actors of an open data project, indicates the necessity of a suitable Open data Communication mix model capable to incorporate the values of Trust and Knowledge. These kinds of values could be attached into the exchanges and practices between organizations, experts and end users of mobile applications. Furthermore, our findings on circulation of information confirm that open data generate informational and relational descendants and ascendants streams. Namely, the organization must agree to disclose its data in order to access a value that ultimately aims to improve the lives of its customers and to collect valuable data for the organization itself. The improvement of the relationship between players through the use of these resources is thus considered as a main challenge for the development of ideas to the users of digital services.

6.2. Management implications

Based on these findings and the theoretical contribution, our study reveals several practical implications for issue management and open data communication. We propose that organizations involved into an open data project should intensify the value of Trust and attempt to facilitate the sharing of Knowledge on this subject.

6.3. Limitations and future research

This study demonstrates two important limitations. First of all, the categorization of tasks according to Dahlgren's cultural factors "may convey a misleading impression of their individual independence, but it is necessary for heuristic purposes" Dahlgren (2009: 108-109). Secondly, the e-survey presents a limited number of answers. Worth mentioning that this e-survey is still ongoing.

This study sets an important foundation for a future analysis. We intend to further explore the concept of communication mix model in relation to civic engagement discussed in this paper. We aim to test it into an open data project from a Non-Governmental Organization in relation with the development of smart cities.

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