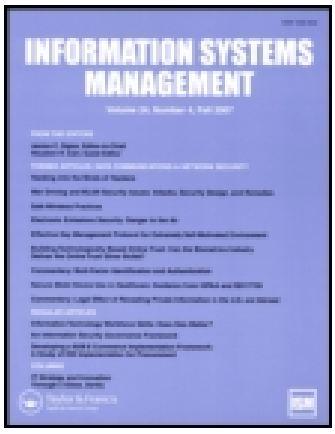


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# Fostering Social Innovation through Multiple Social Media Combinations

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# Fostering Social Innovation through Multiple Social Media Combinations

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**Social innovation requires extensive networking, communication, and collaboration among various social actors. This article presents an approach to fostering and supporting social innovation through the combined exploitation of multiple social media. Furthermore, a methodology is developed for evaluating this approach, based on sound theoretical foundations: The wicked problems theory and the diffusion of innovation theory. This methodology is used for evaluating three pilot applications of this approach, organized in cooperation with members of the European Parliament.**

**Keywords** social innovation; Web 2.0; social media; wicked problems; diffusion of innovation



## 1. INTRODUCTION

Extensive research has been conducted in the area of innovation, due to its high importance for modern economy and society, focused mainly on private sector firms' innovation in products, services, and processes. A considerable part of this research is dealing with the role and impact of various types of information and communication technologies (ICT) on private sector innovation (Dodgson, Gann, & Salter, 2006; Brynjolfsson & Saunders, 2010; Lindic, Baloh, Ribiere, & Desouza, 2011; Kleis, Chwelos, Ramirez, & Cockburn, 2012). Recently, there is a growing interest in the "social innovation," which differs from the above "classical" concept of innovation in that it is "social both in their ends and in their means" (Franz, Hochgerner, & Howaldt, 2012). As social innovation is defined a novel set of activities, performed by various social actors, such as government agencies of various layers (e.g., municipalities, regions, ministries), non-government organizations, firms, civil society, citizens' initiatives, or even individual citizens, entering in new forms and networks of cooperation, in order to address a problem not addressed by existing market offerings or government services (e.g., to manage a negative situation that poses threats to a social group, or to exploit a new positive opportunity for improving welfare of a social group; Moulaert, Martinelli, Swyngedouw, & Gonzalez, 2005; Franz et al., 2012). However, quite limited research—mainly theoretical—has been conducted on the role and impact of various types of ICT on social innovation.

Social innovation, as mentioned above, requires extensive networking, communication, and collaboration among various social actors. These critical preconditions of social innovation are strongly associated with the fundamentals characteristics of the recently emerged Web 2.0 social media: Online community building and social networking, user generated social multimedia content intended to be shared with other users, rated and commented by them, and extensive users' interaction and collaboration (O'Reilly, 2007; Chun & Luna Reyes, 2012). Furthermore, the social media constitute a "paradigm shift in communication," which lowers the barriers of communication for individuals and groups, so it allows and facilitates more extensive and wider communication among them at a low cost. For the above reasons, taking into account that social media and social innovation have a common root, being both "social" (both "in their ends and in their means"), we expect that the former might have a good potential to foster and support the latter. So it is necessary to investigate empirically this potential, and also to develop and evaluate effective "socio-technical architectures" of using social media for this purpose (Kaletka, Kappler, Pelka, and De Querol, 2012). This research can be quite important for the development of social innovation, by providing guidance for the exploitation of social media for this purpose. So we expect that its findings will be quite interesting and useful to all social innovation stakeholders: Government institutions of various layers, non-government organizations, private sector firms, and civil society initiatives interested in social innovation.

In general, it is necessary to extend the existing scientific knowledge basis in the area of innovation, by creating, adding and integrating to it new knowledge on social innovation, and finally "embed the concept of social innovation in a comprehensive theory of innovation" (Franz et al., 2012). This requires

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analyzing social innovation initiatives using theoretical lenses from previous innovation research (as "social innovation still is innovation" according to the above article), and also from other relevant domains, such as the political sciences (as social innovation has important political dimensions). This article contributes towards filling the above research gaps; in particular, it makes the following three contributions:

1. It presents an approach to fostering and supporting social innovation based on the combined exploitation of multiple social media, with each of them attracting different groups of citizens, and also a supporting technological architecture, and a process model for its practical application.
2. It develops a methodology for evaluating the proposed approach, based on sound theoretical foundations from previous research in the areas of political sciences and innovation: The wicked problems theory (see Section 3.1) and the diffusion of innovation theory (see Section 3.2), respectively.
3. It uses this methodology for the evaluation from the above perspectives of three pilot applications of the above approach, which have been organized in cooperation with Members of the European Parliament, in order to answer our central research questions:

   - to what extent the proposed approach can foster and support social innovation?
   - and also to what extent this approach, viewed as a social innovation itself, has the required characteristics for wide adoption and diffusion?

The research presented in this article has been conducted as part of the research project PADGETS ("PolicyGadgets Mashing Underlying Group Knowledge in Web 2.0 Media"—http://www.padgets.eu), which has been partially funded by the "ICT for Governance and Policy Modeling" research initiative of the European Commission.

The paper is structured in six sections. The following Section 2 provides a review of relevant literature, while Section 3 outlines the theoretical background of our research. Then in Section 4 the proposed approach is presented, followed by the evaluation methodology in Section 5. The research method we have adopted is described in Section 6. The results of the evaluation of the above pilot applications are presented in Section 7. Finally, in Section 8 the conclusions are summarized and future research directions are proposed.

## 2. LITERATURE REVIEW

### 2.1. Innovation and ICT

There has been considerable literature concerning the impact of various types of ICT on private sector firms' innovation in products, services, and processes. A significant part of this literature analyses the potential of ICT to support and improve the collection, storage, management, and exchange of innovation-related knowledge, and therefore, the productivity of firms' research and development (R&D) and innovation creation processes, leading finally to a positive impact on innovation performance (Thomke, 2006; Dodgson et al., 2006; Kafouros, 2006; Gordon, Tarafdar, Cook, Maksimoski, & Rogowitz, 2008; Meyer, 2010; Kleis et al., 2012). This literature identifies three main channels, through which ICT foster and support knowledge exchange and management, and through them innovation in firms' products, services, and processes.

First, the ICT are important enablers of intra-organizational knowledge exchange and management (through intra-organizational networks, communication and collaboration applications, databases, etc.). In particular, they enable the efficient storage and high accessibility of innovation-related knowledge throughout a firm. Furthermore, ICT allow firm's employees from different functions and disciplines, and also from different locations, to exchange and share knowledge assets easily and rapidly, and this facilitates the combination of scientific and operational knowledge from different domains and areas, which according to the relevant literature (e.g., Rogers, 2003; Nerkar & Paruchuri, 2005) is highly important for innovation.

Second, electronic networks can support and improve inter-organizational knowledge exchange and innovation collaborations (e.g., with suppliers, customers, universities, research centers, other firms, etc.), through which a firm can gain access to specialized external knowledge, which can be very useful for designing innovative products, services, and processes. The transfer of new external knowledge through various sources has been traditionally recognized as an important drive for innovation, if properly combined with relevant internal knowledge (Klevorick, Levin, Nelson, & Winter, 1995; Cassiman & Veugelers, 2006). Furthermore, the ICT can provide the required links for effective research/innovation partner monitoring and information sharing, as well as reduce the transaction costs of working with such partners. In general, ICT are becoming an increasingly important infrastructure of innovation due to the gradual move from the "closed innovation" paradigm, in which firms generate internally ideas for innovative products and services, and then develop, manufacture, market, and distribute them on their own, to a new and more productive "open innovation" paradigm (Chesbrough & Crowther, 2006; Enkel, Gassmann, & Chesbrough, 2009); in this paradigm internal and external ideas, skills and knowledge (i.e., from both firm employees and suppliers, customers, partners) are combined in order to create better innovations in a shorter time and promote them rapidly in various markets.

Third, innovation production itself can be improved through ICT-based methods of designing, prototyping, and testing new products (e.g., using computer-aided design [CAD] and computer-aided design manufacturing [CAM] technologies). Furthermore, ICT help integrate design and production systems, so that errors of information transfer and translation are reduced and, as a consequence, the efficiency of this later stage of the innovation process is increased.

Another research stream analyses the potential of ICT to "directly" drive important ICT-based innovations in firms' processes, products, and services, and even new business models and value propositions (Timmers, 1998; Bresnahan, Brynjolfsson, & Hitt, 2002; Zwass, 2003; Wu & Hisa, 2008; Brynjolfsson & Saunders, 2010). In particular, ICT can enable new products and services, and also existing products' and services' personalizations, which would not be operationally and economically feasible without ICT, new ways of value generation in cooperation with other firms, and highly beneficial transformations of business processes.

However, only a very small part of this literature on the impact of ICT on private sector firms' innovation focuses on social media. Meyer (2010) investigates empirically the impact of using "social software" on innovation in the knowledge-intensive services sector. Using data collected from 505 German ICT and knowledge-intensive service firms, she estimates several innovation models, from which it is concluded that the use of social software for internal and external communication has a positive impact on service innovation (broadening or differentiation of the range of services offered), as it supports the exchange of internal and external knowledge. Furthermore, there is quite limited research on the impact of ICT on social innovation, as explained in more detail in the following section.

### 2.2. Social Innovation and Social Media

The concept of innovation was initially focused on the private sector, and consisted in new combinations of production factors (according to the Schumpeterian definitions [Schumpeter, 1967]), leading to new products and services, or/and new production processes, and having mainly economic objectives and rationale (aiming to increase the sales revenues and profits of innovating firms). However, some fundamental changes in the economy and the society that took place in the first decade of the 21st century lead to serious and complex social problems affecting large citizens' groups, which could not be addressed by existing market offerings or government services, and necessitated a new form of innovation, referred to as "social innovation," which has social objectives and rationales (rather than economic ones), and is based on cooperation of multiple social actors (Harrisson, 2012). In particular, this period is characterized by a weakening of the welfare state, domination of large multinational firms in a context of economic globalization, rapid development of technologies leading to disruptive changes in the economy and the society, transition from an industrial to a services and knowledge based economy and society in the western world, and at the cultural level a growing individualization mentality concerning responsibility for life, employment, and health. These evolutions lead on one hand to prosperity and wealth creation for some social groups, but on the other hand, to serious losses for other groups, or even to social exclusion, and finally to an increase of the gap between the richest and poorest in society. They also lead to a notable increase in the number of citizens in poverty, facing a scarcity of basic material goods essential to survival, and also being excluded from networks essential for establishing a place in society.

As a response to this situation, a new form of innovation has been developed, which is social from two perspectives (Moulaert et al., 2005; Franz et al., 2012):

- in its "ends," aiming to address problems not addressed by existing market offerings or government services: To manage negative situations that pose threats to groups of citizens, or to exploit new positive opportunities for improving welfare of some citizens' groups (this can be viewed as a kind of "product/service innovation");
- and also in its "means," consisting of new sets of activities, performed by new networks of social actors entering in new forms of cooperation: Government agencies of various layers (e.g., municipalities, regions, ministries), firms, non-government organizations, civil society, citizens' initiatives, or even individual citizens (this can be viewed as a kind of "process innovation").

Therefore, social innovation can be viewed as a new combination of social practices (Hochgerner, 2012), and in this sense it constitutes an extension of the "classical" innovation concept, consisting according to J. Schumpeter in new combinations of production factors (Schumpeter, 1967). Also, the main values that social innovation aims to promote are "the public interest and common good, a new approach to the concept of service and the networks strengthening the bonds of trust between citizens" (Harrisson, 2012), which are quite different from the economic ones of the "classical" innovation. So, since social innovation constitutes a different "paradigm" of innovation, it is necessary to conduct further research on various aspects of it.

One of them is definitely its relation with ICT. Quite limited research has been conducted on the role and impact of various types of ICT on social innovation, which is mainly theoretical. Bruck and Roth (2013) argue that the extensive use of various ICT by people in their work and personal life in contemporary society can be exploited for addressing collectively and in novel ways the numerous problems it faces: ICT can be crucial to communicate effectively, to manage information dynamically, to work and create solutions in teams, to respond flexibly to complex social problems, and to continuously produce new knowledge about them. For the above reasons ICT (mainly internet, mobile, and social media) can be of critical importance for both the design and the implementation of social innovation in various national contexts, even in the ones of less developed countries. The authors also provide some interesting examples, taken from the World Summit Youth Award (WSYA) on social innovation, organized as a follow up activity of the UN Summit on Information Society: They include new electronic services (delivered mainly through mobile phones, due

to their wide use in most countries, even by lower income citizens) to small farmers (providing information about market demands and prices, suppliers, best agricultural practices), less privileged students (providing personalized educational content in a highly organized and comprehensible form), and citizens (providing information on government activities, projects and budget allocations, and also fulfillment of pre-electional commitments); they also include mobile applications-games, which are parts of wider social innovation programs (e.g., concerning natural resources waste, saving trees from illegal loggers, climate change, gender violence, bullying, and mobbing, etc.).

Also, interesting theoretical work is included in a relevant "manifesto" written by a group of transdisciplinary researchers and practitioners concerning the potential of social media to foster social innovation (Kaletka et al., 2012). They argue that since social innovation is a creation of new meanings, taking into account that meanings are constructed in society through the process of communicative action (Castells, 2009, p. 12), it can be greatly fostered and supported by social media, which constitute a "paradigm shift in communication" that lowers the barriers of communication for individuals and groups. Social media can enable the wide exchange of ideas among many different actors required in order to identify and understand better social problems not addressed by markets and government, and to design and implement collaboratively social innovations for addressing them. However, the authors of the above manifesto suggest that systematic research is required in order to develop and evaluate effective "socio-technical architectures" for exploiting this potential of social media for fostering and supporting social innovation, and that there is a lack of empirical research in this direction. Our study contributes to filling these research gaps by proposing an approach to fostering and supporting social innovation through the combined exploitation of multiple social media, and evaluating it from both political and innovation diffusion perspective.

## 3. THEORETICAL BACKGROUND

### 3.1. Wicked Problems Theory

Social innovation, as mentioned in Section 2.2, aims to address social problems not addressed by existing market offerings or government services. Previous literature has analyzed the inherent high complexity that characterizes social problems. In a highly influential article Rittel and Weber (1973) theorize that social problems are usually "wicked," because they lack clear and widely agreed definition and objectives. Our societies have become more heterogeneous and pluralistic in terms of culture, values, concerns, and lifestyles, and this has serious effects on the nature of social problems and the methodology of addressing them: Social problems have many stakeholders with different and heterogeneous problem views, concerns, and expectations, so they lack clear and widely agreed definition and objectives that can be adopted as criteria for identifying and evaluating possible solutions. For these reasons these wicked social problems cannot be solved by using the previously established "first generation" mathematical methods, which are based on various mathematical optimization algorithms, since the latter do need clear and widely agreed definition and objectives.

So Rittel and Webber (1973) suggest that wicked social problems require "second generation" methods, which include: (a) a first stage of consultation among problem stakeholders, aiming to formulate a shared definition of the problem and the relevant objectives to be achieved, and (b) a second stage of mathematical analysis of the well-defined at this stage problem, using mathematical optimization algorithms. In the first stage it is necessary to conduct extensive discourse and negotiation among the stakeholders of the social problem, in which each of them expresses their views, opinions, concerns, and expectations with respect to the problem, similarities and differences are identified and discussed further, performing several cycles of this process if required, in order to achieve finally a synthesis and convergence, and formulate a shared definition of the problem and the particular relevant objectives.

Subsequent research on this "second generation" approach to the wicked social problems has revealed that its first stage can be greatly supported by the use of appropriate information systems, which are referred to as "issue-based information systems" (IBIS; Kunz & Rittel, 1979; Conklin & Begeman, 1989; Conklin, 2003). These systems allow stakeholders to enter the following four types of elements, which are regarded as the basic "ontology" of a consultation (i.e., the main types of entities that a consultation includes): "topics" (defined as broad discussion areas), "questions/issues" (defined as particular problems to be addressed within a discussion topic), "ideas" (defined as possible alternative solutions/activities for addressing the above questions/issues), and "arguments" (defined as positive or negative evidence or viewpoints that respectively support or object to ideas).

Therefore, the evaluation of a particular "socio-technical architecture" of social media (and ICT in general) exploitation as to its potential to foster and support social innovation should focus on assessing to what extent the former is useful for addressing the above mentioned inherent complexities of the social problems targeted by the latter:

1. by enabling more stakeholders to participate in relevant consultations at a lower cost and in shorter time,
2. by revealing topics, questions/issues, solutions/activities for addressing them and relevant positive/negative arguments, which are perceived by various stakeholder groups,
3. and also by facilitating synthesis and convergence (at least to some extent) between the stakeholders on the definition of the problem, the main questions/issues, the required solutions/activities, and also their advantages and disadvantages.

TABLE 1
Innovation Characteristics that Determine the Degree of Adoption

| Characteristic | Definition |
|---|---|
| Relative Advantage | The degree to which an innovation is perceived as better than the idea, work practice or object it supersedes |
| Compatibility | The degree to which an innovation is perceived as being consistent with the existing values, past experiences, and needs of potential adopters |
| Complexity | The degree to which an innovation is perceived as difficult to understand, implement, and use |
| Trialability | The degree to which an innovation may be experimented with on a limited scale basis |
| Observability | The degree to which the results of an innovation are visible to others |

### 3.2. Diffusion of Innovation Theory

At the same time the use of social media for fostering and supporting social innovation is itself an innovation, so it is important to investigate to what extent it has the fundamental preconditions for a wider diffusion. Extensive research has been conducted on the diffusion of innovation, in order to understand it better and identify factors that favor it (MacVaugh & Schiavone, 2010). One of the most widely accepted and use theories of innovations diffusion is the one proposed by Rogers (2003), which has been extensively employed for analyzing ICT-related innovations in both the public and the private sector (Wonglimpiyarata & Yuberk, 2005; Raus, Flügge, & Boutellier, 2009; Loukis, Spinellis, & Katsigiannis, 2011; Al-Jabri & Sohail, 2012). According to this theory, there are five critical characteristics of an innovation that determine the degree of its adoption, which are shown with their definitions in Table 1.

Therefore, the evaluation of a particular "socio-technical architecture" of social media (and ICT in general) exploitation for fostering and supporting social innovation should also include assessing to what extent it has the above characteristics required for a wider adoption and diffusion of it.

## 4. AN APPROACH TO SOCIAL MEDIA USE FOR FOSTERING SOCIAL INNOVATION

Social innovation, as mentioned above in Section 2.2, consists in the creation of new meanings in the society through communicative actions among many different social actors (Kaletka et al., 2012). In the same direction "classical" innovation research has concluded that the exchange and combination of diverse kinds of knowledge among individuals with different kinds of expertise and experience, and also from different kinds of organizations, is of critical importance for promoting innovation (e.g., Nerkar & Paruchuri, 2005; Cassiman & Veugelers, 2006). For these reasons the proposed approach, in order to enable a wide communication among and involvement of many and different social actors, is based on the combined exploitation of multiple social media for fostering and supporting social innovation for addressing a social problem (e.g., for coping with a threat or for exploiting an opportunity affecting a social group), with each of these social media attracting different groups of citizens. Furthermore, in order to make this more efficient, we use the application programming interfaces (APIs) of the targeted social media for the automated posting of contention the particular social problem to them (e.g., relevant text, images, videos) in order to initiate and stimulate a discussion on it, and then for retrieving from them citizens' interactions with this content (e.g., views, likes, comments).

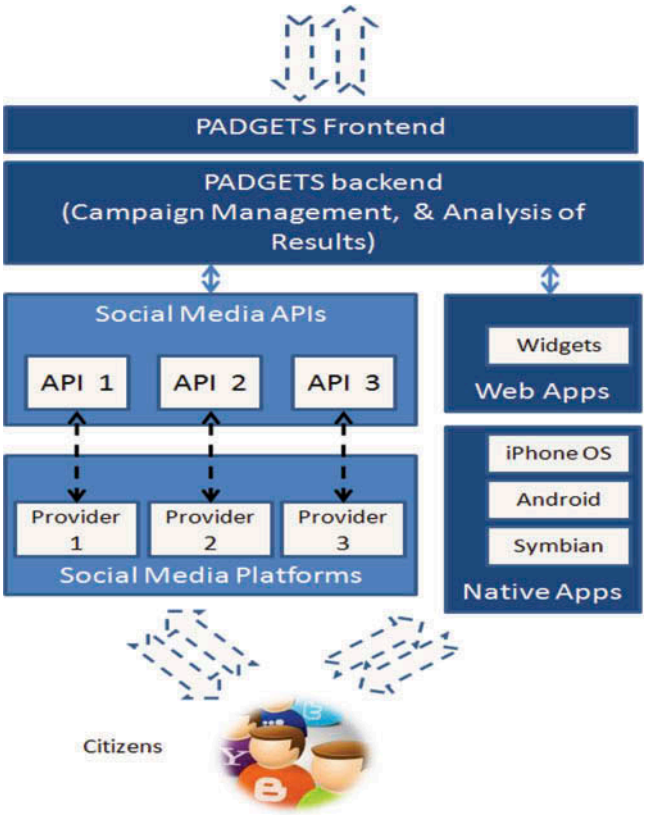


FIG. 1. Basic architecture of the proposed approach of using multiple social media for fostering and supporting social innovation.

In particular, the basic architecture of the proposed approach is shown in Figure 1. It is based on a central ICT platform which enables automated publishing problem-related content

to multiple social media (e.g., to the accounts of an initiator social actor in several social media, or even to other accounts if allowed) simultaneously, and also monitoring and collecting data on citizens' interactions with this content, both in an automated efficient manner using the APIs of these social media. Finally, this central platform can make advanced processing of the collected interaction data, such as calculations of analytics, opinion mining for extracting main topics and corresponding sentiments (positive or negative), and also future forecasts through simulation modeling. This platform can also be accessed by both the initiators and the citizens through a mobile application as well. A more detailed description of the proposed approach is provided by Charalabidis and Loukis (2012).

Also, a process model for the practical application of the above approach has been developed, which is shown in Figure 2. It includes the following stages:

1. Community Building: Initially it is necessary to build a community of social actors (e.g., non-government and civil society organizations, citizens' initiatives, or even individual citizens) interested in the particular social problem, to which the initial stimulating content will be propagated using multiple social media, for example, by increasing accordingly the networks of the initiator social actor (e.g., friends, followers, etc.) in these social media, adding to them new interest groups, etc.
2. Creation of Campaign: For this purpose a package of relevant multimedia content has to be created concerning the particular social problem (e.g., short description, longer description, video, images, etc.); also the social media accounts to be used should be defined in the above central platform.
3. Publish of Campaign: This content is then distributed and published to the above multiple social media (acting as "campaign channels"), in order to attract the above social actors and involve them in the discussion; the above mentioned central platform will automatically publish to each of these social media the appropriate part of this content (e.g., the short description to Twitter, the longer description to a blog, the video to YouTube, the images to Picasa).
4. Monitor Activity: All the activity in these social media with respect to the above content (various types of users' interaction, such as views, likes, comments, etc.) will be retrieved and monitored continuously, so that additional content can be posted (e.g., clarifications, answers to questions, etc.) by the initiator social actor if necessary.
5. Analysis of Results: After the end of the campaign advanced processing of users' interaction data will be conducted, in order to extract from them useful information; based on it a

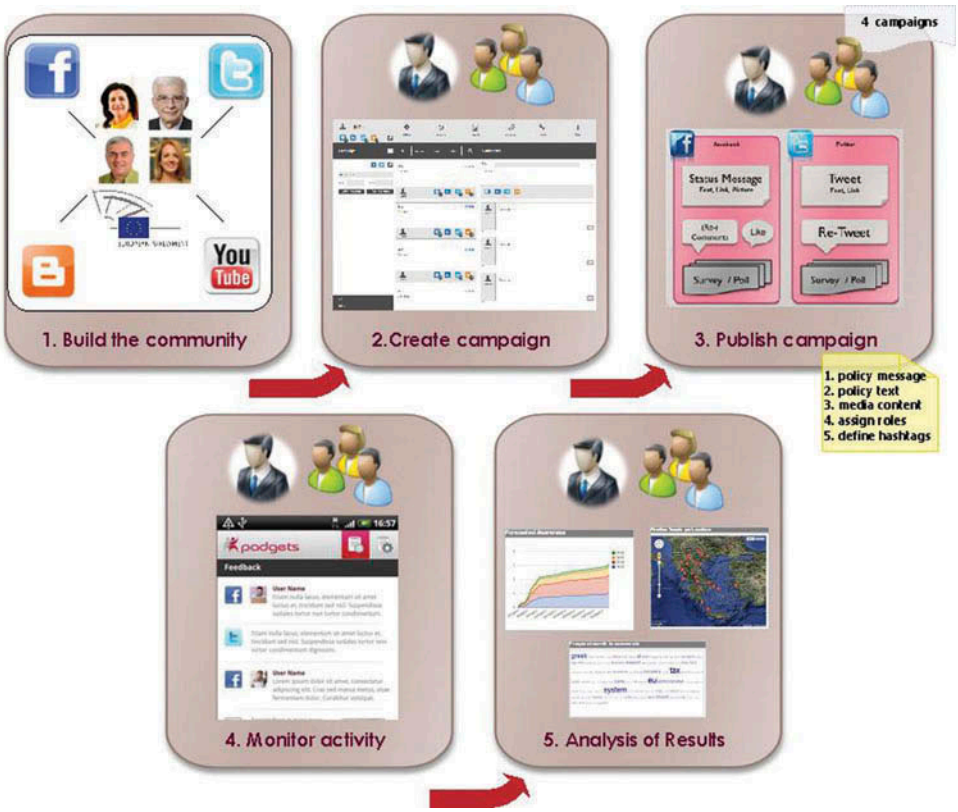


FIG. 2. A process model for the practical application of the above approach.

TABLE 2
Evaluation Methodology

Political Evaluation

To what extent the proposed approach is useful/beneficial for conducting consultations on social problems and corresponding social innovations in terms of . . .

- reaching wider audiences (= more citizens);
- time saving;
- cost saving;
- identifying the main issues concerning the targeted social problem;
- identifying possible solutions or activities for addressing these issues;
- identifying relevant advantages (positive arguments) and disadvantages (negative arguments) of them;
- facilitating synthesis and convergence (at least to some extent) between stakeholders on the definition of the problem, the main issues, the required solutions/activities, and also their advantages and disadvantages.

Innovation Diffusion Potential Evaluation

To what extent the proposed approach:

- is a better way for conducting consultations on social problems and corresponding social innovations among interested stakeholders than the other existing alternative ways for doing this (relative advantage);
- is compatible with the values, experiences, practices, and needs of various social actors (compatibility);
- its practical application does not require much effort (complexity);
- it can be initially applied in small scale pilot applications, in order to assess its capabilities, advantages and disadvantages, before proceeding to a larger scale application (trialability);
- is an innovation highly visible to other social actors, and the society in general, so it can create positive impressions and comments (observability).



new iteration of this process can start, possibly more focused on the specific directions proposed in the first iteration for addressing the targeted social problem, in order to elaborate them, and this can be continued several times.

## 5. EVALUATION METHODOLOGY

Social innovation, as mentioned in Section 2.2, aims at addressing social problems, which are not addressed by market or government. However, most social problems today are "wicked" (Rittel & Weber, 1973), as mentioned in Section 3.1, lacking clear and widely agreed definition and objectives, and having many stakeholders with different and heterogeneous problem views, values, concerns, and expectations. For this reason a methodology for evaluating the potential of social media to foster and support social innovation should focus on assessing to what extent the former are useful for addressing the above mentioned inherent complexities of the latter, and the most appropriate lens for this is the "Wicked Problems Theory" (Rittel & Weber, 1973; Kunz & Rittel, 1979; Conklin & Begeman, 1989; Conklin, 2003) outlined in Section 3.1. Therefore, the first perspective of our evaluation methodology is the political evaluation. It assesses to what extent the proposed approach is useful for conducting consultations on such social problems and corresponding social innovations in shorter time and at lower costs, and also reaching wider audiences (i.e., more stakeholders); also, to what extent it is useful for identifying the main issues concerning the targeted social problem, possible solutions or activities for addressing them, and relevant advantages—positive arguments and disadvantages—negative arguments; and finally, to what extent it facilitates synthesis and convergence (at least to some extent) between the stakeholders on the definition of the problem, the main issues, the required solutions/activities, and also their advantages and disadvantages.

Furthermore, the use of social media for fostering and supporting social innovation is itself an innovation, so it is important to investigate to what extent it has the fundamental preconditions for a wider diffusion and adoption. Therefore, the second perspective of our evaluation methodology is the evaluation of the innovation diffusion potential, and the most appropriate lens for this is the innovation diffusion theory of Rogers (2003) outlined in Section 3.2. It assesses to what extent the proposed approach has the five characteristics proposed by the above theory for a wide diffusion and adoption: Relative advantage, compatibility, complexity, trialability, and observability. The main dimensions of the political and innovation diffusion perspectives of our evaluation methodology are shown in Table 2.

## 6. RESEARCH METHOD

In order to investigate to what extent the proposed approach (Section 4) can foster and support social innovation, using the above evaluation methodology (Section 5), we adopted

a qualitative method (Maylor & Blackmon, 2005; Miles, Huberman, & Saldana, 2013), based on case studies, which is the most appropriate research method for investigating "a contemporary phenomenon in depth and within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident" (Yin, 2013). In particular, three pilot applications of this approach were organized in cooperation with three Greek Members of the European Parliament (MEPs). They all concerned the use of multiple social media for the initial formulation of social innovations (meant as new sets of activities, performed by various social actors, both government institutions and civil society, and other citizens' initiatives) aiming to address three specific problems of interest to the European Parliament. In particular, the first two of them aim to manage two negative situations:

1. a milder one, the underrepresentation of women executives in the higher management of enterprises;
2. and a severe one, the socio-economic crisis that the societies of the Southern European countries are facing, while the third one aims at the exploitation of an important positive opportunity for the society;
3. the exploitation of renewable energy sources, and especially wind power, for improving capacity in energy production.

The common goal of these three pilots was to organize public consultations on these three social problems, and attract the main stakeholders of these problems (e.g., interested non-government organizations, civil society, citizens' initiatives, or even individual citizens), in order to understand their perceptions of these problems (= the main perspectives and issues they perceive), and collect social innovation ideas for addressing them (= ideas for possible new activities by various social actors). The three participating MEPs undertook the role of initiators, and their existing personal accounts in three different social media platforms (Facebook, Twitter, Blogger) were used to activate and involve various interested social actors. The following method was used for the organization of these pilots:

1. The first stage was the presentation to Greek MEPs of the proposed concept of multiple social media use in order to foster and support social innovation for addressing existing social problems.
2. For the three MEPs who were eventually interested and willing to participate, we proceeded to a more detailed presentation of the concept and the supporting ICT central platform to their assistants. Then the main topics-problems of the campaigns were selected in cooperation with them, so that on one hand they reflect current discussions and priorities of the European Parliament, and on the other hand satisfy our objectives (as we wanted to have pilot public consultations both on the management of negative situations of various levels of severity, and on the exploitation of positive opportunities).
3. After the selection of the topics-problems of the three campaigns, for each pilot a detailed action plan was designed based on the process model described in Section 3.
4. Then for each pilot the targeted community of social actors was initially built, both by enhancing the already established social networks of the MEPs in the employed social media platforms (Facebook, Twitter, Blogger), and by identifying and inviting additional groups interested in the particular topic-problem. These groups were contacted (by e-mail, phone, or via their own social media) and asked to be involved, both by contributing content and by propagating the messages and content of the campaign to other groups and individuals who might be interested. The communities of the pilots (a) and (b) were built in Greece, but for pilot (c) due to its nature we decided to build a cross-national community. The rationale behind this was that since the problem to be addressed in this pilot (the socio-economic crisis in the European South) affects several countries, a consultation on it should involve a wider community representing all the affected countries. For this purpose cooperation was established between the Greek initiator MEP, two other MEPs from Italy and Spain, and also the Portuguese Socialist party and a civil society initiative currently established in Portugal. Each of them, under the coordination of the Greek side, used their own social media accounts to post simultaneously the same content on the problem in their own language, in order to initiate and stimulate discussion on it. Additionally, a blog was created in English in order to host international discussion on this problem.
5. The next stage was the preparation of various forms of content concerning the particular problem, both textual (short messages, larger texts, small surveys) and multimedia (photos, videos, charts with statistical figures); they aimed to introduce to the community the different aspects of the problem, and provide a basis and stimulation for its online discussion. Also, the employed social media accounts were defined in the central ICT platform.
6. Subsequently, each campaign was launched: the responsible team (consisting of assistants of the MEP, and members of the authors' research group) started publishing the prepared content on the aforementioned social media using the ICT platform.
7. The operation of the campaigns lasted 15 days on average, and included close monitoring of users' activity daily, especially their textual inputs, which feed a constructive discussion around the problems.
8. Finally, each pilot application was concluded with analysis of users' activity and a discussion with involved MEP's team.

In order to address our research questions mentioned in the Introduction, at the end of each campaign data were collected from three different sources and then analyzed:

a. *Social Media Metrics*: They were collected from the official social media accounts of the initiators and the Google analytics engine, and used in order to calculate the level of reach and engagement achieved in the campaigns. The Google analytics were used to provide statistical information on the traffic in the campaigns' blogs; we focused on the total number of unique visitors and the countries they were coming from, the total visits and page views, and the traffic sources. With respect to the reach, it was not possible to calculate accurately the number of unique users who saw the messages and content of each campaign, due to the viral effects caused by the retransmissions of them in the Facebook and the Twitter. For this reason we calculated a conservative estimate of the audience reached and also a more optimistic one. The conservative estimate was calculated as the sum of the unique visitors in the campaign blogs and Facebook accounts. The more optimistic one was calculated as the sum of the unique visitors in the campaign blogs plus the numbers of followers in the Facebook and Twitter accounts. The actual audience engagement achieved was calculated as the sum of users' active reactions to the messages and content of each campaign in its social media accounts, taking into account for each social media platform the particular kind of reactions it allows. In particular, in Facebook the number of "likes," "shares," and "comments" on the created posts were taken into account, in twitter the "re-tweets," "replies," and "favorites" on the campaign "tweets," and finally in Blogger the number of "comments" submitted on the blog posts. Also, we have distinguished between two forms of reactions: "Direct" ones, concerning the initial posts published by the campaign initiators, and "indirect" ones, concerning their retransmissions (through sharing or re-tweeting).
b. *Textual inputs*: The textual inputs of the participants in each campaign (i.e., various types of comments) were retrieved and analyzed in a twofold manner. First, using the opinion mining capabilities of the central ICT platform (see Section 4) the main topics mentioned and the corresponding sentiments were extracted. Second, all textual inputs were examined in more detail, in order to understand better their nature, and then classified according to the typology of the wicked problems theory (Section 3.1) and the political evaluation perspective of our evaluation methodology (Section 5), into issues/concerns, solutions/activities, advantages and disadvantages/barriers.
c. *Focus group discussions*: Three separate semi-structured focus group discussions were organized with the three MEPs' teams involved in these pilots. In each of them initially were presented the results of the analyses of the above data (a) and (b) for their campaign. Then the participants were encouraged to unfold their views on the whole concept, and assess the dimensions of the political and innovation diffusion perspectives of our evaluation methodology (Section 5). Each discussion lasted about one hour, was recorded with the consent of the participants, and then transcribed and coded manually by the authors, using an open coding approach (Maylor & Blackmon, 2005).

## 7. RESULTS

### 7.1. Social Media Metrics

The reach estimations according to the method described in the previous section lead to the conclusion that the messages and content published by the three MEPs in these campaigns have reached large numbers of citizens. In particular, the conservative estimation of their reach is at the level of about 10,000 citizens, while the optimistic estimation is at the level of 35,000 citizens. With respect to the actual engagement of people, our estimations based on the method described in the previous section indicate that the campaign posts have generated 5,869 direct and indirect reactions. The above results provide a first positive evidence that the proposed approach of using multiple social media for fostering and supporting social innovation enables us to communicate messages and content concerning the social problem we want to create social innovation (i.e., a new set of activities by various social actors for addressing it) for to large numbers of citizens, and also to obtain their reactions, which can be quite useful for the initial formulation of the social innovation.

### 7.2. Textual Inputs Analysis

Next, for each campaign we analyzed the textual inputs of the participants, as described in the previous section, in order to assess to what extent they are useful for fostering, formulating, and supporting social innovation for addressing the corresponding problem.

The objective of the first pilot application was the initial formulation of social innovation for addressing the phenomenon of under-representation of women in top management positions in listed companies across Europe. The main question under discussion was how we can improve the gender balance among non-executive directors of companies, and what activities and measures should be undertaken in order to achieve the target of 40% women presence in management boards for 2020 set by relevant EU draft directives. Most textual inputs concern the advantages of the EU policy under formulation for increasing women representation in top management positions (which can be viewed as a high level "solution" direction in the wicked problems theory terminology). A number of specific advantages of this policy have been mentioned, which can be summarized in the following contribution:

> Women bring another dimension to corporate governance and decision-making in general, because of their special qualifications, such as multitasking, and the world with more women in leadership positions would be safer and more effective and lead to social, economic, and cultural progress.

Also, many textual inputs—mainly from women—stressed the barriers to their participation in management boards (which

can be characterized as "issues" in the wicked problems theory terminology, directly associated with the above "solution"), such as the negative prejudice towards women's skills, the heterogeneities that exist in the relevant legal frameworks in different countries, and the factors that may influence their evolution and prospects, such as family responsibilities, and the time required to best serve all their different roles, leading finally to less women than men pursuing higher positions. However, there was a small number of textual inputs proposing solutions to the above issues (barriers), which were directed towards either cultural or legislative changes. The former propose changes in peoples' behaviors and mentalities, and overcoming relevant stereotypes, which should be fostered by governmental actions. As it was characteristically said "It is time to overcome the discrimination against women," "Not to force equal behavior and imitation, but equal treatment and equal opportunities," but "equality is matter of culture and education, so strategies should be start from there." The latter propose modifications in the relevant legislation, such as to include executive positions on management boards, and not only non-executive ones, in the above 40% women representation target, and this to apply to small and medium enterprises (SMEs) as well, or even to all companies of the private and public sector. Summarizing, in this first pilot most textual contributions concern advantages of the initial solution direction, and also issues-barriers to its realization. On the contrary, there were much less proposals of specific solutions-activities, mainly general and legislative (i.e., to be undertaken by government institutions), while there was a lack of proposals of specific activities to be performed by other social actors beyond government (which is a basic element of the social innovation concept), and also advantages and disadvantages of them. The above advantages of this policy provide a basis for justifying the need for social innovation in this direction, while the above issues-barriers and high level solution provide a basis for designing their specific activities.

The second pilot application aimed at the initial formulation of social innovation for overcoming the current severe socioeconomic crisis in the European South. Most textual inputs collected referred to relevant issues raised by participants on this topic, concerning either the insufficiency of current austerity measures forced by the European institutions for overcoming the crisis, or perceived causes of the crisis. For instance, with respect to the former a posting mentioned that "austerity measures, do not contribute to economic improvement." Regarding the latter there was a convergence on the main causes of the problem: "the division between North and South," "left and progressive is absent from European politics" and "the barbarism of the Northern countries." Some other textual inputs proposed general solution directions. The majority of them referred to transformations in the government, including the "establishment a healthy state machine," "elimination of corruption," "consolidation of the public sector," "Less favoritism and customer relationships from politics." Some others mentioned the need for cultural change in public sector agencies, and in the society in general, as an important prerequisite. Towards this direction, the involvement of other social actors, such as the "intellectuals," was suggested as quite important. Finally a common concern expressed was the need for "viable solutions to equilibrium between growth and quality of life of peoples." Summarizing, in this second pilot most textual contributions are perceived critical issues concerning the main problem, but only few of them are "pointing" towards specific solution directions; some others include perceived general solution directions (mainly at an institutional level), but there is a lack of proposals of specific activities to be performed by various social actors for overcoming the crisis. The above critical issues and solution directions provide some assistance for the design of social innovations (i.e., specific activities by multiple social actors) for overcoming the crisis. However, due to the complexity of the problem they should be viewed mainly as perceptions of the citizens, which should definitely be taken into account for the formulation of these social innovations, but in combination with experts' recommendations. Also, it should be noted that the proposed solution directions were not "politically balanced," but rather biased towards a social-democrat direction (as in this pilot the initiator MEP was from the Socialist-Democrat group of the European Parliament).

Finally, the third pilot application aimed at the initial formulation of social innovation for the exploitation of wind energy as an alternative renewable energy source. In this debate two distinct clusters of participants could be clearly identified. The first cluster includes participants who are against the massive exploitation of wind power for energy generation (which can be viewed as a high level "solution" direction in the wicked problems theory terminology); nearly all their textual inputs highlight disadvantages, such as the negative environmental consequences from the installation of wind parks ("wind turbines threaten environment, animals, birds, etc."), their high cost ("the installation and maintenance cost are prohibitive"), the lack of efficient technologies for storing wind energy ("neither wind nor electricity produced can be stored, so wind power is fundamentally incompatible with energy networks"), while concerns about the financial feasibility and profitability of wind energy have also been expressed. We also had a few textual inputs from this cluster proposing alternative solutions, such as better management and more efficient use of energy resources, for instance "using energy efficient appliances and machines both for consumers and for the industry." The second cluster includes participants who recognize the benefits from the exploitation of the renewable wind energy sources, but are to some extent concerned about its risks and disadvantages. Many of their textual inputs mention benefits and advantages of the installation of wind parks, as a sustainable way to cover part of the energy needs, however at the same time they accept some of the risks and disadvantages mentioned by the first cluster. Some other textual inputs from this cluster propose ideas for addressing the disadvantages/issues, for instance "feasibility studies can be conducted by independent bodies," or for the

efficient exploitation of wind energy, such as "combination of wind energy with other renewable energy sources (e.g., geothermal, solar, hydroelectric)," "construction of third generation systems," "installation of wind turbines for urban environment." It should be noted that some degree of convergence between these two clusters has been developed, despite their differences, concerning the problems and disadvantages of wind energy.

Summarizing, this third pilot differs from the first two pilots, in that it has revealed two clusters having different positions on wind energy exploitation, with the first of them being negative and posting mainly disadvantages, and the second being positive and posting both advantages and proposals for addressing the inherent disadvantages and improving exploitation efficiency, leading finally to some degree of convergence. In this pilot we had more proposals for solutions and specific activities than in the first two pilots. Although the majority of proposals referred to activities that have to be triggered by government, there were interesting proposals for cooperations and synergies between different social actors, including government agencies of various layers, civil society, educational organizations, and industry. For instance, it has been proposed that emphasis should be placed on the promotion of wind energy, and this will require governmental funding, but also educational and information activities undertaken by various actors as well; also, cooperation between firms of this industry with research institutes is regarded as necessary, in order to take advantage of leading-edge technologies, promote research and know-how, and develop the required specialized human resources. Therefore, we can conclude that this third pilot has provided more basis and support for the formulation of social innovation than the first two pilots. The main reason suggested for this in the corresponding focus group discussion was that in this pilot there was a strong emphasis on building initially a wide and diverse community to participate in the consultation, beyond the followers-friends of the social media accounts of the initiator MEP, including many invited civil society organizations with strong interest and extensive knowledge on wind energy, and renewable energy sources in general, covering a wide range of different views and perspectives. This indicates that the first stage of the application process model described in Section 4 (titled "Community Building") is quite important for the success of the proposed approach.

### 7.3. Political Evaluation

With respect to the political evaluation dimensions (Section 5), in all three focus group discussions there was a wide agreement that the proposed approach of multiple social media combination is a time and cost efficient method to communicate a social problem to a wide audience "that an MEP will be unable to reach under other conditions" and achieve high levels of reach, which is of critical importance for initiating social innovation concerning the problem. Indeed they think that this cross-platform approach is a very good way to inform a big number of citizens about a negative situation or a positive opportunity that requires some kind of social innovation for addressing it. They also found it a good tool for motivating to think and propose ways to address it through social innovation, stimulating reactions of citizens, and actively involvement of them, even though they would like this to be more extensive. One of the MEP assistants mentioned that "Many people remained at the stage of following the action and not getting actively involved." They all mentioned that they wanted to achieve maximum public attention for their agenda, and at the same time go beyond "the passive approach taken when it comes to a TV audience," and mobilize a wide spectrum of social actors in order to launch wide multi-dimensional social innovation for overcoming important problems. A general remark was that the social media public is very often reluctant to express itself through comments, so citizens need some kind of motivation in order to be stimulated to participate more actively in such social media campaigns.

Furthermore, the participants in the focus group discussions believe that the proposed approach provided a useful picture about "high level" advantages and disadvantages of existing general policy directions on the topics under discussion (e.g., for increasing women representation in top management positions, overcoming the socio-economic crisis in the European South, exploiting wind energy), and also important issues and barriers, as perceived by social actors. This information is quite useful for the more detailed design of the specific activities that possible social innovation on the above topics should include, in order to exploit the above advantages, and manage disadvantages, issues and barriers, and also for the design of appropriate communication actions if necessary. Furthermore, the proposed approach provided some useful general solution-activity directions to be performed mainly by government. Overall, the participants in the focus group discussions characterised the approach as a valuable tool for gathering the main issues on which social innovation on the above problems should focus on, as perceived by social actors, and collecting some interesting ideas, since it allows "hearing citizens' voices as an initial formulation of ideas." As underlined by one of the MEP assistants "the outcome of the campaign provided an identification of the issues that should be taken in consideration in the formation of solutions, as input coming from society."

However, it was not possible to proceed in a more detailed formulation of social innovations for the discussed problems, in the sense of a wide range of more specific activities to be performed by various social actors (in accordance to definitions of social innovation provided in the Introduction and in Section 2.2). The main explanation suggested for this was that all three pilot applications took place in the early stage of the initial formulation of social innovations for addressing the corresponding problems. Therefore, it is necessary the information collected in this "first round" of consultations to be processed, and then to be used for further rounds of consultations, as part of the next stages of social innovation detailed design and implementation, possibly more focused on specific social actors with

strong interest and extensive knowledge on the particular problem and experts. Also, it was mentioned that the topic of the second pilot (socio-economic crisis in the European South) was quite complex, so proposing specific solutions and activities for addressing it requires extensive analysis by experts (which is to some extent in progress by various European institutions and research centers). Therefore, a realistic expectation from such a social media consultation is the collection of the main issues and the solution directions perceived by social actors, which are however quite important (definitely in combination with experts' proposals) for formulating the multi-dimensional social innovations for overcoming this severe crisis. On this one of the involved MEP assistants said: "We did not manage to find out the solution on the European South Crisis, but we didn't target on this: We wanted to listen to citizens' opinions on the issues that we should be concerned with."

Another weakness mentioned was that in the first two pilots we did not have "balanced debates," with different and diverse views and perspectives being expressed, leading to confrontations and convergences, which is quite important for the efficient ideas generation and social innovation formulation, as mentioned in Section 2.2; in general, the combination of different and diverse sources of knowledge and experience is quite important for innovation, as explained in Section 2.1. On the contrary, this weakness did not appear in the third pilot (on the exploitation of wind power), in which we had a more balanced and pluralistic debate, with more diversity of views and opinions, providing finally more assistance and support for the formulation of social innovation. This is attributed by the participants in the corresponding focus group discussion to the wide and diverse community built in this pilot, by inviting a big number of civil society organizations with strong interest and extensive knowledge on wind energy, and renewable energy sources in general, and diverse perspectives and orientations.

### 7.4. Innovation Diffusion Potential Evaluation

Finally, in all three focus groups we discussed with the participating MEP assistants to what extent they believe that the proposed approach has the five characteristics required for a wide adoption and diffusion according to the theory of innovations diffusion of Rogers (2003) (Section 3.2). With respect to the relative advantage, a comparison was made with the two main "traditional methods" that the European Parliament uses for conducting consultations with citizens: Physical events and meetings with representatives of main stakeholders. It was concluded that the main advantage of the proposed approach is its capability to enable much wider reach and participation of more citizens (individuals or representatives of affected citizens' groups) than the above traditional methods, and with reasonable effort and cost. It can be especially useful for involving younger target groups in such debates, which seems difficult to be achieved currently with the traditional consultation methods. According to one of the involved MEP assistants, it can be a valuable complementary activity that increases awareness and participation by "transferring the consultation outside the events we organize."

However, a possible "relative disadvantage" was mentioned as well: While in the usual consultations conducted by the European Parliament based on the above traditional methods there is a participation of a variety of diverse stakeholders, having different opinions, and perspectives, the proposed approach poses the risk of consultations among like-minded individuals belonging to the networks of the initiator MEP, leading to reduced diversity of opinions and perspectives; this can have negative impact on social innovation, as mentioned in previous sections. Hence, it was recommended that such consultations should exploit not only social media accounts and networks of MEPs (with possible enhancements, as in the third pilot), but also additional accounts and networks of other social actors, which enable access to a wide range of communities with strong interest and extensive knowledge on the topic under discussion, in order to ensure the inclusion of more and diverse social actors. Also, it was mentioned that the outcomes of such multiple social media consultations should be combined with the outcomes of other traditional consultations usually conducted by the European Parliament on the same topic, and also with experts' proposals.

Regarding its compatibility, the participants agreed that this approach is compatible with the objectives and practices of the European Parliament, which already organizes consultation processes when preparing proposals, directives and programs for addressing societal problems. In fact, the main findings of the first pilot consultation concerning the increase of women representation in companies' top management positions were included in the report on this draft directive to be discussed in the European Parliament. Also, it is compatible with the mentality and skills of most young MEP assistants, but less compatible with the ones of the older ones.

In terms of complexity, there was a wide agreement that the application of the proposed approach based on the central platform described briefly in Section 4 is convenient in general. However, some initial effort is required for the familiarization with the concept and the supporting central platform. Also, for more complex consultations, which are organized by several social actors collaboratively, using their own social media accounts, such as the second pilot on the socio-economic crisis in the European South, it was concluded that much more effort is required (mainly for the coordination and alignment of the campaign in four countries, in different languages and time-zones).

It was agreed that this approach may be experimented in a small scale without particular problems, before proceeding to a larger scale application of it, so it is characterized by high trialability. Finally, it was concluded that it is characterized by medium to high observability and visibility, mainly by the networks of the initiator MEPs. It was proposed that in order to increase the visibility by citizens it would be useful to integrate the multiple discussions taking place on the same topic

TABLE 3
Lessons Learned

- The proposed multiple social media approach has a very good potential to disseminate to a wide audience multimedia content about a social problem or opportunity that requires some kind of social innovation.
- It also has potential to stimulate citizens to react to the problem/opportunity, be actively involved and make specific social innovation proposals for addressing it.
- It can provide "high level" information concerning perceived advantages of existing policy directions, which can be very useful for justifying the need for social innovations in these directions.
- It can also provide "high level" information concerning perceived disadvantages of existing policy directions, which can be very useful for the design of specific social innovation activities for overcoming them.
- It can reveal issues and general solution directions concerning an existing social problem or opportunity, which provide a basis for the detailed design of social innovation activities for addressing it.
- However, it may not generate highly detailed information, such as detailed proposals of specific social innovation activities to be performed by various social actors.
- This will probably require a series of such social media consultations, in various social innovation stages (e.g., ideas generation, detailed design, social actors mobilization, implementation), with each of them focused on specific social actors and on different objectives.
- For highly complex social problems/opportunities, the outcomes of this multiple social media exploitation approach will have to be combined with experts' recommendations.
- A critical precondition for the success of the proposed approach is to build wide, diverse, and pluralistic communities for these social media consultations, including social actors with strong interest and good knowledge of the particular problem, different orientations and perspectives, and extending beyond the networks of the initiator.
- This can result in more balanced, pluralistic and productive debates, confrontations and convergences, leading finally to more and better proposals of social innovation activities, and finally providing more assistance and support for the formulation of social innovations.



in different social media platforms and accounts in a single digital space accessible by everybody, providing a single point of reference and an overall picture.

## 8. CONCLUSIONS

In the previous sections, it has been presented an approach to fostering and supporting social innovation through the combined highly automated exploitation of multiple social media, which attract different and diverse groups of citizens. It is based on a central ICT platform that uses the APIs of the targeted social media (1) for posting to them content on a social problem or opportunity (e.g., relevant text, images, videos), in order to initiate and stimulate a wide consultation on it, aiming at formulating social innovation activities for addressing it, and then (2) for retrieving from them citizens' interactions with this content (e.g., views, likes, comments), which finally undergo various kinds of advanced processing on the platform. Also, a process model for the practical application of the proposed approach has been developed. Furthermore, we have created a methodology for evaluating this approach, which is based on sound theoretical foundations from previous research in the areas of political sciences and innovation: The wicked problems theory and the diffusion of innovation theory. This methodology has been used for evaluating three pilot applications of the above approach, organized in cooperation with members of the European Parliament, in order to assess (a) to what extent the proposed approach can foster and support social innovation, and also (b) to what extent this approach, viewed as a social innovation itself, has the required characteristics for wide adoption and diffusion. The main lessons learned are shown below in Table 3.

With respect to the potential of the proposed approach for a wider adoption and diffusion, the evidence collected from the above pilots indicates that it possesses to a good extent the required characteristics for this according to the diffusion of innovations theory proposed by Rogers (2003). It particular, it provides strong relative advantage over traditional consultation methods in enabling much wider reach and participation of citizens with reasonable effort and cost. However, a possible "relative disadvantage" is that it can lead to consultations among "like-minded" individuals/social actors belonging to the networks of the initiator, resulting in reduced diversity of opinions and perspectives, with negative impact on social innovation generation. Also, this approach has a good degree of compatibility with the objectives and practices of government agencies, which already organize consultations with citizens, though older public servants might not be familiar with the style and language of communication in the social media. Its complexity has been assessed as low, though the involvement of several collaborating organizers (as in our second pilot) might increase complexity. Furthermore, the proposed approach is characterized by high trialability and visibility.

The findings of this article have interesting implications for research and practice. With respect to the former, it makes a valuable contribution to the limited empirical literature on social innovation, focusing on its relation with ICT. It opens up new directions of research towards extending the existing scientific knowledge basis concerning the relations between ICT and innovation with new knowledge on the relations between ICT and social innovation, and also proposes a framework for this research based on sound theoretical foundations. With respect to practice, the findings of this article can be very useful for the development of social innovation, by providing guidance for the exploitation of social media for this purpose to all social innovation stakeholders (e.g., government institutions of various layers, non-government organizations, private sector firms, civil society initiatives, etc.).

However, it has some limitations, which should be addressed by future research. First, it focuses on the use of social media in the initial stage of social innovation (initial ideas generation); so further research is required concerning the use of social media in the subsequent stages of social innovation (e.g., in the stages of detailed design, implementation, social actors mobilization, evaluation). Second, our research is dealing with the use of social media by a government institution (European Parliament) for fostering and supporting social innovation; therefore, further research is required concerning the use of social media by other types of social actors for this purpose. Third, we focus on one single type of ICT, the social media, and do not examine other types of ICT; so it will be interesting to investigate the use of other types of ICT as well (e.g., more structured forums; Loukis & Wimmer, 2012) for fostering and supporting various stages of social innovation.

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