

A Study of Multiple Social Media Use in the European Parliament from an Innovation Perspective

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ABSTRACT

Government agencies have started using the social media for increasing communication with citizens, and involvement of them in public policy making processes. However, most of the research in this area has technological orientation, but limited research on the use of social media in government from management and political sciences' perspectives has been conducted. This paper contributes to filling this gap, presenting a study of an advanced form of centrally managed combined use of multiple social media in the European Parliament from an innovation perspective. Our main theoretical foundation has been Rogers' Diffusion of Innovation (DOI) theory. It has been concluded that the above approach, viewed as an innovation, has to a good extent the fundamental preconditions for a wide diffusion proposed by DOI theory: relative advantage (though some possible 'relative disadvantages' have been identified as well), low complexity (though some considerable initial effort is required), compatibility with existing values and practices (at least to some extent), trialability and observability. Furthermore, recommendations have been provided for improving the diffusion potential of the above innovation, through interventions in the above attributes.

Categories and Subject Descriptors

J.1 [Computer Applications]: Administrative Data Processing – government

General Terms

Measurement, Performance.

Keywords

social media, government, European Parliament, innovation, innovation diffusion

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1. INTRODUCTION

Government agencies have started using the social media for increasing communication with citizens, and involvement of them in public policy making processes ([3], [4], [32], [34], [38]). Initially this had the form of manually operating accounts in various social media (e.g. Facebook, Twitter, YouTube); later there was a shift towards more sophisticated forms of social media use, which exploit the extensive application programming interfaces (API) the latter provided, in order to automate posting, monitoring and retrieval tasks with respect to multiple social media ([9], [10], [17], [25], [40]).

Most of the research conducted in this area has technological orientation, aiming at the development of various advanced tools that enable highly sophisticated and automated forms of social media use and advanced analysis of retrieved social media data leading to the calculation of useful and insightful analytics. On the contrary, limited research on different forms of social media use in government from management sciences' and political sciences' perspectives has been conducted. However, their adoption by government agencies and the benefits and value they will generate will depend not only on their technological quality and capabilities, but also on a variety of non-technological factors, associated with the interaction of these technological tools with the operation and management structure of government agencies, their culture and orientations, and also with the political characteristics of their environment. Therefore it is important to analyse these emerging forms of social media use in government from various management and political perspectives; this will allow us to identify problems and weaknesses from these perspectives, and provide guidance for making appropriate interventions and adaptations (e.g. at the technological or application process level) in order to address them.

One of these perspectives is the innovation one. The above simpler or more complex forms of social media use in government agencies constitute important innovations for them, so it is necessary to be analysed from this perspective as well. It is important to investigate to what extent they have the fundamental preconditions for a wider diffusion in government. For this purpose we can use methods and frameworks developed by the extensive previous research on innovation diffusion [27]. Such research can reveal both 'strengths and weaknesses' from this perspective, i.e. characteristics and contextual factors that

favordiffusion in government, and also characteristics and contextual factors that hinder it, so it can provide guidancefor the required improvements, and also concerning the contexts they are more suitable for.

This paper makes a contribution in this direction,presenting a study of an advanced form of centrally managed combined use of multiple social media (see section 3 for more details) in the European Parliament from an innovation perspective. Our main theoretical foundation has been the well established Diffusion of Innovation (DOI) theory of Rogers [36], [37]. Our study has been based on the analysis of three pilot consultations conducted in cooperation with Members of the European Parliament (MEP) using the above multiple social media use approach, concerning three widely debated European policies (see section 4 for more details). The research presented in this paper has been conducted as part of project PADGETS ('Policy Gadgets Mashing Underlying Group Knowledge in Web 2.0 Media' – www.padgets.eu), supported by the 'ICT for Governance and Policy Modeling' research initiative of the European Commission.

The paper is organized in seven sections. In the following section 2 the background of this study is presented, while in section 3 the abovementioned advanced form of centrally managed combined use of multiple social media by government agencies is outlined. In scition 4 the pilot applications are described.Then in section 5 the research methodology is described, while in the following section 6 the results are presented. The final section 7 contains the conclusions and future research directions.

2. BACKGROUND

2.1 Social Media in Government

Previous research in the domain of private sector innovation has revealed that ICT (and especially Internet-based ones) are important innovation drivers, as they can greatly facilitate and support this exchange of knowledge and opinions among individuals with different education, expertise, experience and perspectives, promotes innovation ([8], [13], [30], [31], [39]). Therefore, taking into account that the design of public policy for addressing a social problem usually includes the creative design of innovative actions for managing various dimensions of the problem, the exploitation of social media by government agencies for conducting consultations with citizens can have positive impact on the design of highly innovative, effectiveand acceptable public policies.

Previous literature ([2], [3], [4], [22], [28])has extensively analysed the great potential of social media for supporting, enhancing and transforming critical government functions, and offering to government agencies big opportunities to: i) increase citizens' participation and engagement, providing to more groups of modern societies a voice in debates on public policies development and implementation; ii) promote transparency and accountability, and reduce corruption, enabling governments to open up large quantities of activity and spending related data, and at the same time enabling citizens to collectively take part in monitoring the activities of their governments; iii) proceed to public services co-production with citizens, enabling government agencies and the public to develop and design jointly government services; iv) exploit citizens' knowledge and talent in order to develop innovative solutions to the increasingly serious and complex societal problems.Social media can also drive important innovations in both internal operations of government agencies and the ways they interact with the society, and transform

government's behavior and practices in information sharing and service provision and change decision making patterns [14]. They can lead to the creation of new models and paradigms in the public sector: i) social media-based citizen engagement models, ii) social media-based data generation and sharing models, and iii) social-media based collaborative government models [12].

Furthermore,social media enable the wide and low cost application of the 'crowdsourcing' ideas' ([6], [7], [20]) in government,which can be quite useful for public policy making. They enable government agencies to mine useful fresh ideas from large numbers of citizens concerning possible solutions to social needs and problems, new public services or improvements of existing ones, or other types of innovations ([5], [22], [26], [27]). This can promote and facilitate the adoption of open innovation ideas ([11], [16], [21]) in the public sector, which can lead to better, more innovative and socially-rooted public policies [19].

Given the above high potential of social media in government it is important to research into on one hand its adoption (and identify factors that favour it and also factors that hinder it), and on the other hand its benefits, value, advantages and disadvantages (and assess to what extent the above potential is realized). The present paper contributes in this direction, by analysing the advanced form of multiple social media use in government outlined in section 3 from an innovation perspective (while an analysis of it from a political sciences perspective is presented in [23]).

2.2 Diffusion of Innovation Theory

Extensive research has been conducted on the diffusion of innovations, in order to understand it better and identify factors that favouror hinder them. One of the most widely accepted and used theories of innovation diffusion is the one proposed by Rogers [36], [37], which has been extensively employed for analyzing ICT-related innovations in both the public and the private sector ([1], [24], [35], [41]). According to Rogers Diffusion of Innovation (DOI) theory there are five characteristics of an innovation that determine the degree of its adoption and diffusion, which are shown with their definitions in Table 1.

Table 1: Innovation characteristics that determine the degree of its adoption and diffusion according to DOI

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 perceives 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

We have chosen DOI over the widely used Technology Acceptance Model (TAM) [15], as the former is more specialised for innovation than the latter, and also proposes a wider set of innovation diffusion determinants (since the relative advantage and complexity correspond to some extent to the perceived usefulness and ease of use of the TAM).

3. AN ADVANCED FORM OF MULTIPLE SOCIAL MEDIA USE IN GOVERNMENT

In this paper we analyze from an innovation perspective an advanced form of multiple social media exploitation by government, which is based on the use of a central system for the conduction of consultation campaigns on public policy-related topics in multiple social media, carefully selected so that each of them attracts a different targeted group of citizens (more details on it are provided in [9] and [17]). Each campaign includes:

- i) automated centrally controlled publishing of relevant content (or even micro-applications if allowed), termed as 'Policy Gadgets' (or 'Padgets'), in a number of selected social media, using their API through the central system,
- ii) automated retrieval of citizens' interactions with these Padgets (e.g., views, likes, ratings, comments) from the afore-mentioned social media in the central system using again their API,
- iii) and finally various levels of sophisticated analyses of these interactions, including: a) calculation of various analytics (e.g. numbers of views, likes, ratings, comments per day/region per gender, age and education group for each of the targeted social media or in total), b) text mining (based on opinion mining techniques), in order to determine the 'sentiment' of citizens' comments (positive or negative), and the main topics, issues, suggestions, arguments raised by them), c) future projections through simulation (e.g. using system dynamics or agent-based simulation).

4. PILOT APPLICATIONS

Our study has been based, as mentioned in the introduction, on three pilot applications of the above social media use approach. In particular, three consultations were organised using this approach, in cooperation with three Greek MEPs. The first two of them concerned EU policies for addressing two negative situations:

- a milder one, the underrepresentation of women executives in the higher management of enterprises

- and a severe one, the socio-economic crisis that the societies of the Southern European countries are facing,

while the third one concerned EU policies for the exploitation of an important positive opportunity:

- the exploitation of renewable energy sources, and especially wind power, for improving capacity in energy production.

The three participating MEPs undertook the role of initiators of these social media consultations, 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 pilot consultations:

I) The first step was the presentation to Greek MEPs of the proposed concept of multiple social media use through a central system for the organization of policy-related consultations.

II) 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 system

to their assistants. Then the main topics-problems of the campaigns were selected in cooperation with them, so that they reflect current discussions and priorities of the European Parliament.

III) Then for each pilot the targeted community of citizens 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. The communities of the pilots (a) and (c) were built in Greece, but for pilot (b) due to its nature we decided to build a cross-national community. 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.

IV) The next step 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.

V) Then 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 through the ICT system.

VI) The operation of the campaigns lasted fifteen days on average, and included close monitoring of users' activity daily, especially their textual inputs.

VII) Finally, each pilot application was concluded with analysis of users' activity and a discussion with involved MEP team (as discussed in the following section)

5. RESEARCH METHODOLOGY

After the end of each campaign data were collected from three different sources and then analysed:

a) Social Media Metrics: They were collected from the official social media accounts of the initiators MEP and the Google analytics engine, and used in order to calculate the level of reach and engagement achieved in each campaign.

With respect to reach 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. For Facebook and Twitter 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. So 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 of the

corresponding MEP.

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 (for Facebook the number of 'likes', 'shares' and 'comments' on the created posts; for Twitter the 're-tweets', 'replies' and 'favorites' on the campaign 'tweets'; and for Blogger the number of 'comments' submitted on the blog posts).

b) Textual inputs: The textual inputs of the participants in each campaign (i.e. various types of comments) were retrieved and analysed. First, using the text mining capabilities of the central ICT system (see section 3) the main topics mentioned and the corresponding sentiments were extracted (through issues extraction techniques). Then all these comments were read, with main emphasis on the ones corresponding to the main topics extracted, in order to gain a deeper understanding of them.

c) Focus group discussions: Three separate semi-structured focus group discussions were organised with the three MEP teams involved in these pilots. In each of them initially were presented the results of the above (a) and (b) for their campaign. Then the participants were encouraged to unfold their views on the whole concept, and assess to what extent it has the five preconditions - characteristics proposed by the DOI theory of Rogers [36],[37] for a wide diffusion and adoption: relative advantage, compatibility, complexity, trialability and observability. The main questions of these focus group discussions are shown below in Table 2.

Table 2. Main questions of focus group discussions

To what extent the proposed approach: - is a better way for consultations with citizens on various public policies than the other existing 'physical' (i.e. through 'physical' meetings) or 'electronic' ways for this (relative advantage) ? - is compatible with the values and the policy formulation processes of government agencies (compatibility) - its practical application by government agencies policy makers requires effort (complexity) - it can be initially applied in small scale pilot applications by government agencies, in order to assess its capabilities, advantages and disadvantages, before proceeding to a larger scale application (trialability) - is an innovation highly visible to other public agencies, policy makers and the society in general, which can create positive impressions and comments (observability)

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 [29].

6. RESULTS

Our reach estimations (according to the previous section) indicate that the messages and content published by the three MEPs in these consultations reached large numbers of citizens. The conservative estimation of their reach is about 10,000 citizens, while the more optimistic estimation is about 35,000 citizens. Our citizens' engagement estimations (according to the previous section) indicate that the consultation posts have generated 5,869 reactions. The above results provide a first positive evidence that the multiple social media policy consultations enables us to communicate messages and multimedia content concerning the problem we want to create public policy for, to large numbers of

citizens, and also to obtain their reactions, which can be quite useful for the initial formulation of the policy. These reach and engagement estimations for each campaign were presented in the beginning of the corresponding focus group discussion, together with the analysis' results of its comments.

Therefore, a basis for the following discussion on the five preconditions - characteristics proposed by Rogers DOI theory [36], [37] was provided. With respect to the relative advantage, a comparison was made of the proposed approach 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. Furthermore, it can be especially useful for involving younger target groups in such debates, which seems difficult to be achieved 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 organise*".

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, this 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 the quality and effectiveness of these social media consultations. Hence, it was recommended that such consultations should exploit not only social media accounts and networks of MEP, 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 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 values, objectives and practices of the European Parliament, which already organizes consultation processes when preparing proposals, directives and programmes. 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 public servants. However, it was mentioned that for other types of government agencies, which do not have the tradition and familiarity of the European Parliament concerning policy consultation with citizens, the compatibility might be lower (and this might have negative consequences: the organizer might not be capable of providing timely and satisfactory responses to the numerous postings of citizens in their social media accounts, which would be very bad for their image).

In terms of complexity, there was a wide agreement that the application of the proposed approach is convenient in general.

However, considerable initial effort is required for the familiarization with the concept and the supporting central system; also considerable effort is required for building initially the linguistic resources required for the text mining functionalities of this system. So it was recommended that the system should incorporate ready-to-use linguistic resources for several languages. Furthermore, 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 might be experimented in a small scale without particular problems, before proceeding to a larger scale application of it, so it is characterised by high trialability. Finally, it was concluded that it is characterised by medium to high observability and visibility, by the networks of the initiator MEP, and also by the press (traditional and electronic) and the European Commission.

7. CONCLUSIONS

Various simpler or more sophisticated forms of social media use in government are emerging, and start being used – or even institutionalised – in many government agencies. In order to reach higher levels of adoption of them, and also maturity and effectiveness in this area, it is important to research into not only the technological dimensions of them (in order to improve their technological quality and capabilities), but also their managerial and political dimensions. This paper contributes in this direction, presenting a study of an advanced form of centrally managed combined use of multiple social media in the European Parliament from an innovation perspective. Its theoretical foundation is the well-established DOI theory of Rogers [36], [37]. Our study has been based on the analysis of three pilot consultations conducted in cooperation with Greek MEP using the above multiple social media use approach, concerning three widely debated European policies. These pilots enabled a first assessment of whether and to what extent this approach, viewed as an innovation, has the required characteristics for wide adoption and diffusion in government. Also, recommendations have been provided for overcoming weaknesses and improving its diffusion potential.

The evidence collected from the above pilots indicates that in general it possesses to a good extent the required characteristics for this according to the Rogers' DOI theory. In particular, it provides strong relative advantage over traditional consultation methods in enabling much wider reach and participation of citizens with reasonable effort and cost. Since social media are already used by several social actors for political discussions (of varying levels of quality) and mobilisation, it is important to be used by government agencies as well, in order to promote their activities and positions, and facilitate high quality productive discussions on them. However, a possible 'relative disadvantage' is that it can lead to consultations among 'like-minded' individuals belonging to the networks of the initiator, resulting in reduced diversity of opinions and perspectives, with negative impact on consultations' quality, effectiveness and productivity. Previous research on creativity has emphasized the positive impact of diverse social networks on creative performance [18], [33]. Also, this approach has a good degree of compatibility with the values, objectives and practices of the European Parliament,

which already organize consultations with citizens (but it may not be compatible with the tradition and culture of other government agencies). 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 characterised by high trialability and visibility.

This study has interesting implications for research and practice. With respect to research, it opens up a new direction of research on the use of social media by government from an innovation perspective, and also proposes a framework for this research, which is based on sound theoretical foundations (DOI theory of Rogers). With respect to practice, our findings provide useful guidance to both government agencies management and elected representatives for the wide diffusion and the effective exploitation of social media platforms in government policymaking processes. However, further research is required in the above directions, for investigating from these perspectives the use of social media for supporting various stages of the policy making cycle, by government institutions of different types and levels, and for different kinds of policies and social problems. Also, it is necessary to examine the combination of these multiple social media consultations, with other more structured ICT tools, such as structured forums [25].

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