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The use of digital social networks from an analytical sociology perspective: The case of Spain

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Abstract

Digital social networks have attracted the attention of a growing number of specialists. The use of digital tools such as Facebook, Twitter and YouTube to express socio-political demands or to perform protest actions has become a central issue for social science today. However, few studies analyse the factors behind this phenomenon using explanatory models based on analytical sociology and rational action. In this article, we take steps in this direction and study the socio-political use of social networks based on a methodological individualism model. Through an analysis of structural equations, we analyse how the individual and social factors

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involved in the use of the social networks to 'do' politics relate to one another. We conclude that attitudes towards the political possibilities of the Internet constitute an essential factor for this kind of political action.

Keywords
Analytical sociology, digital political participation, digital social networks, social mechanisms

Introduction

The use of digital social networks has become a phenomenon that has attracted the attention of specialists in many different academic fields. Experts in political participation, for instance, have shown interest in the effects of the use of tools such as Facebook and Twitter on election campaigns (Vonderschmitt, 2012) or in social revolts across the world (Bennett and Segerberg, 2011). The role of this kind of tool in the so-called 'Arab Spring', in the collective action processes of the *indignados* in Spain and in the latest election campaigns in the United States, are examples of the emergence and importance of this kind of activism.

There are several research programmes engaged in the study of the relationship between politics and the Internet, in general, and of digital social networks and political participation, in particular. A large part of this research, within the field of political science, weighs the effect of Internet on the political structure of democratic systems. This approach, which is essential in studies on the Internet and politics, has produced significant contributions in this field of research (Chadwick and Howard, 2009; Gibson et al., 2005; Lusoli et al., 2006; Margolis and Resnick, 2000). Moreover, from a theoretical point of view, *the school of the code* (Chadwick, 2006) has discussed the relationship between the original characteristics of the Internet – open and horizontal –, and the type of political action citizens undertake through this medium (Lessing, 2006; Winner, 1986).

The framework of reference for this article is analytical sociology (Boudon, 1998; Coleman, 1986; Elster, 2007; Goldthorpe, 2000; Hedström and Swedberg, 1998) and, more specifically, an analysis of the social phenomena where actions are explained with reference to social mechanisms based on the attitudes, dispositions and beliefs of individuals (Hedström, 2006). It is a novel approach in that the studies in the field had previously given priority mainly to probabilistic or descriptive-theoretical explanations. However, except for relevant exceptions as, for example, González-Bailón (2009), there are not enough studies about digital political participation using as a framework the analytical sociology. This is also applicable to the study of the political use of digital social networks. This article moves forward in this direction.

We focus on three types of political behaviour that are basic and representative of the repertoire of practices typical of digital social networks: sharing texts, photographs and videos with political content. Our general hypothesis is that this type of political use of the digital social networks can be explained based on the attitudes of people towards the political possibilities offered by this medium. These attitudes are related to two factors.[1] Both of them are based on the existing literature on society, politics and the Internet and are used in this work to describe the mechanism behind our general hypothesis.

The first of these factors analyses to what extent beliefs regarding ease of use of the Internet, as well as the subjective advantages assigned to this tool (first factor), favour the development of positive attitudes towards the political use of the Internet. The second one suggests that the very technical characteristics of the medium are also a factor to be taken into account (second factor). That is, the greater a citizen's Internet skills, the more favourable their attitude towards the socio-political possibilities of the Internet is likely to be, and the more prepared they will be to make a political use of them. Finally, we introduce in the model a set of control variables (level of education, age, sex and status) to analyse the relationship between individual resources and our theoretical model.

Based on these factors we have built a model that aims to predict the political use of digital social networks. At the core of this model are the socio-political attitudes towards the Internet, showing the link between attitudes and action (political use of social networks), as well as between attitudes and the factors mentioned.

To test our model and our hypothesis, we proceed as follows. First, in section 'Theoretical framework', we present the theoretical framework for this study. Then, in section 'Definition of the hypothesis, factors and construction of model', we outline the hypothesis, the factors and present the variables used in our model, as well as the way they have been constructed. Section 'Method and empirical results' includes the statistical analyses that allow us to corroborate our model. Finally, in section 'Conclusion', we introduce some considerations and conclusions.

Theoretical framework

The most influential approach in the study on the relationship between politics and the Internet analyses to what extent the use of digital tools affects political structures and processes, and influences the nature and the characteristics of the political system (Chadwick, 2006; Chadwick and Howard, 2009). Thus, the political development of the Internet is mostly interpreted as an emerging political process, and focuses on the analysis of the way this process influences the nature and characteristics of the political system.

This approach has led to different interpretations about how the Internet affects political structure and organizations. Ward and Gibson (2009) classify the effects into three categories: normalization, equalization and disintermediation. According to the theory of normalization, the socio-political relationships existing offline are being transferred to the online political sphere, and therefore, there is not an innovative effect of the Internet on politics (Margolis and Resnick, 2000). Studies appealing to the thesis of equalization, on the other hand, have shown that the Internet does have an effect, albeit modest, on the relationships among political organizations and the relationships between these organizations and the citizens themselves (Bimber, 2001). From this point of view, the Internet would favour a politically more plural scenario, by allowing weaker political organizations to reach audiences which, although still far smaller than those reached by more powerful political organizations, would be difficult to reach without the existence of the medium (Bennett, 2003). Finally, the disintermediation thesis suggests that the Internet makes it possible to revitalize citizens disaffected with politics (Wring and Horrocks, 2001). Thus, the Internet is becoming a tool through which citizens can relate with each other, as well as managing and transmitting information and knowledge without the mediation of the institutions characteristic of the traditional public space such as mass media, civil organizations, political parties, trade unions and so on (Wring and Horrocks, 2001).

The general approach regarding the relationship between politics and the Internet mentioned above is also predominant in the study on the use of digital social networks for political participation. Thus, different authors have focused on the effect of specific digital networks, such as Twitter and Facebook, on election campaigns in different countries in the world (Ausserhofer and Maireder, 2013; Dylko et al., 2012; Larsson and Moe, 2012; Williams and Gulati, 2013), political revolts and collective action processes (Bennett and Segerberg, 2011; Pilny and Shumate, 2012; Van Laer and Van Aelst, 2010). These studies, to a greater or lesser extent, are aimed at measuring the effect of different practices carried out through digital social networks regarding the relationship among citizens or between citizens and their representatives. In brief, they try to measure the effect of the political use of digital social networks on political structure and behaviour.

In accordance with this interpretation, the definitions of the subject of study have emphasized the effect of digital political participation, leaving to one side the mechanisms generated by this use of the Internet. Thus, Macintosh (2006) defines digital political participation as 'the use of information and communication technologies to broaden and deepen political

participation by enabling citizens to connect with one another and with their elected representatives' (p. 123). Along these same lines, digital democracy has been defined as the union between, on the one hand, the democratic structure of a political community and the exercise of its government functions and, on the other, the use of Information and Communication Technologies (ICTs), mainly the Internet (Dahlberg, 2001; Van Dijk, 2000).

In previous research (De Marco et al., 2014; Robles et al., 2013), our aim was to analyse digital political participation not as a means to explain the political changes produced in the context of the Information and Knowledge Society, but as a subject of study in itself. Thus, we focused on digital political practices to understand what factors help us understand it and explain it. In this article, we apply this approach to a specific case of digital political participation: the political use of digital social networks. With this research strategy, we strive to move away from the traditional approach of the study of this socio-political phenomenon, which we understand as marked by the metaphor of impact (Levy, 1997). That is, the idea that technological change affects socio-political structures by modifying them and generating new ones.

This research approach allows us to define 'digital political participation' as the repertory of political practices that includes the political use of digital social networks, which makes digital technologies possible and which depends on the attitudes and beliefs – individual and collective – regarding the political opportunities of this medium and of the social, political, economic and technological context of activists (Antino et al., 2013). This definition takes into account our interest in explaining the behaviour observed rather than its effect on the political structure. In this regard, we emphasize the role of beliefs and attitudes of citizens and of the political possibilities offered by the Internet in the explanation of the political use of digital social networks. In brief, we propose an interpretation that focuses on the actors, their actions, their beliefs and on the possibilities offered by the technology.

Based on these premises, our article looks to analytical sociology in general, and the DBO (Desires, Beliefs and Opportunities) theory in particular (Davidson, 1980; Lewis, 1994). According to this theory, desires, beliefs and opportunities are the primary theoretical terms on which the analysis of action is based (Hedström, 2006). *Opportunities* are defined as the choice of alternatives for action available to the agent. In the field of political participation, the Internet constitutes a new alternative for the public engagement of citizens. However, this alternative depends to a great extent on the existence of a set of digital skills that are a prerequisite for the political use of the Internet as well as of social networks. Therefore, the better an individual's

digital technological skills, the greater their opportunities to access to the advantages of this technology (Van Dijk, 2005). An absence of digital technological skills reduces the range of digital political options of individuals.[2]

According to DBO, beliefs are propositions about the world that are considered to be correct. Our article puts forward the hypothesis that beliefs regarding the political possibilities of the Internet constitute the key factor for predicting this kind of behaviour. The more certain an individual is with regard to the political possibilities of the Internet, as well as with regard to its ease of use and the advantages it provides, the greater his or her disposition to act politically through this medium.

Based on this set of considerations, we take a mechanisms-based approach to define a model that allows us to explain our subject of study. An analytical explanation should provide intelligibility patterns (Elster, 2007). From this point of view, the use of mechanisms requires that we explain a specific phenomenon – in our case the sharing of political content through digital social networks – based on a constellation of organizations and activities interrelated in such a way that they regularly generate the type of phenomena we wish to explain (Hedström, 2006). This implies that a mechanism should not only show what variables predict a specific behaviour but also which relationships exist among them, and between said variables and the behaviour to be explained.

In this article, we have built a model that aims to fulfil all the requirements of DBO and the mechanisms-based approach. This model has been designed with of a set of four hypotheses based on the existing literature on ICTs. The following section focuses on accounting for these hypotheses, the model created to test them, and the criteria used for designing the factors included in the model.

Definition of the hypothesis, factors and construction of model

As pointed out above, we focus on three basic uses of this kind of network: sharing comments, photographs or videos of a political nature. This is the dependent variable of our model and it was built as a scale of 1 to 5, where respondents could establish the frequency with which they shared political information through social networks in the different formats. Based on this, the basic hypothesis which supports the construction of the tested theoretical model is as follows:

HP. The use of digital social networks for sharing comments, photographs and/or videos of a political nature is based on specific socio-political

attitudes towards the Internet. In turn, these attitudes are based on two factors, beliefs and technological skills, and the socio-demographic variables.

Our model revolves around the independent variable 'socio-political attitudes towards technologies' which assesses to what extent citizens share positive attitudes regarding the possibilities offered by the Internet to strengthen social ties, improve the political possibilities of citizens and offer individual opportunities. This variable has been created for this article, and, based on a scale of 1 to 5, measures the extent to which citizens are in agreement or not with the following statements: 'The Internet strengthens social ties and gives citizens a sense of belonging to the community' and 'The Internet can increase the ability to influence power'.

In accordance with our hypothesis, this independent variable is an excellent predictor of the political use of the Internet, while depending to a great extent on two factors and the socio-demographic variable 'level of education'. As stated previously, the first of these is defined by the individual beliefs of citizens regarding the limitations and opportunities brought by technologies. That is to say, to what extent they trust in the possibilities of the medium and are prepared to start using it.

We based this factor on the Technological Acceptance Model (TAM). This is one of the most widely used methodological individualism approaches for analysing the motivations of a rational individual when it comes to choosing a specific type of technology (Davis, 1986). The TAM revolves around three main axes: perceived utility (PU) of technologies, perceived ease of use (PEU) of technologies, and attitudes towards technology. According to the theory, PU and PEU determine citizens' attitudes, constituting the ultimate cause of the choice of a particular tool (Davis, 1989). These two variables are closely related to one another, forming the subjective factor of the TAM (Mathieson, 1991).

In our model, PU and PEU are positioned as antecedent variables of 'socio-political attitudes towards technologies' and, as predicted by the TAM, we expect there to be a strong relationship of significance between the latter and our attitudinal variable. We have built the PU and PEU variables of our model according to the literature (Venkatesh et al., 2003). We have only modified the wording to include the word Internet instead of the technologies studied by the authors of said work. Thus, this factor has the following structure:

Factor 1. Individual beliefs towards technology.

Relation 1.1. Variables PEU and PU will be correlated.

Relation 1.2. Variables PEU and PU will be positively related with 'socio-political attitudes towards technologies'.

Our model includes, as a second factor, variables that analyse the role played by individuals' digital technological skills in the adoption of the political use of social networks. From our point of view, the possession of the type of knowledge and ability that we refer to as 'digital technological skills' provides the opportunity for engaging in the type of political activities that we analyse in this article. Thus, the better and broader the digital technological skills of individuals, the greater the digital political possibilities available to them. This circumstance has been described by the literature (Van Dijk, 2005). Research works framed within the analysis of the digital divide have shown the prominent role of digital skills in the political use of the Internet (Norris, 2001; Van Deursen and Van Dijk, 2009). According to some of these studies, the lack of digital skills acts as a link between social inequalities and digital inequalities. In our research, we take a positive version of this thesis to state that the possession of these kinds of skills generates opportunities for taking advantage of the repertoire of digital political practices available thanks to digital social networks. Our model aims to reflect this circumstance, emphasizing the relationship between digital skills and political use of social networks. Thus,

Factor 2. Digital Skills.

Relation 2.1. Digital skills will be positively related to the political use of social networks.

However, digital skills do not only generate direct opportunities. They also exert influence on 'socio-political attitudes towards technologies'. That is, the possession of this kind of skills implies a positive disposition towards the political possibilities of this medium. The literature points out that possession of this type of skills implies, first, a better knowledge of technology, and, second, a greater degree of trust in it (Howard et al., 2001). Both circumstances justify the inclusion of the following factor:

Relation 2.2. Digital skills will be positively related to 'socio-political attitudes towards technologies'.

There is a wealth of literature regarding the variables that favour the development of digital skills. Again, research regarding the digital divide serves as a point of reference in this field. This research has analysed the relationship between variables such as racial group, gender, age, status or level of education and digital skills (Bonfadelli, 2002; Cooper and Weaver,

2003; Hoffman et al., 2001). Younger citizens show a great proficiency in the use of digital tools, broader patterns of Internet use and a high degree of trust in this technology. However, the variable that has shown the greatest predictive capacity is 'level of education' (Robles and Torres, 2012). Thus, level of education and age have been identified as key factors for the development of digital skills. Therefore, the variable 'level of education', understood as a scale that goes from citizens without any formal education to those with university studies, becomes a basic antecedent variable of digital skills.

Furthermore, the other factor in our model identified the beliefs 'PU' and 'PEU' as antecedent variables of digital skills. From our point of view, the belief that the Internet is an easy-to-use technology (PEU), as well as the belief that this technology is useful for their goals (PU), will favour the disposition of individuals to use it, as well as their inclination to develop digital technological skills. However, there are no empirical studies that support this thesis, and therefore, its verification would imply a significant breakthrough in this field:

> *Relation 2.3*. Variables PEU and PU, level of education of individuals and age will be positively related to digital skills.

The variable 'digital skills' has been designed for this study as a hierarchical scale. This scale includes a broad range of uses of the Internet classified according to their degree of difficulty. Thus, at one end of the scale, we find basic uses such as opening an Internet browser, and at the other end, certain uses – for instance, designing in Java – which imply very advanced handling of digital tools. The scale was made taking as reference points current studies and debates regarding the measurement of digital skills (Hargittai, 2010; Van Dijk, 2006). For the final version, the scale was tested first with a sample of students from the Universidad Complutense de Madrid. Then, we studied the metric qualities of the tool (by means of an exploratory and confirmatory factor analysis), and selected the items showing the best results. Finally, the scale was applied to a survey of a representative sample of Spanish population and its validity was analysed in the population under study.

Therefore, the model we have designed (see Figure 1) has a core based on individual beliefs regarding the ease of use of the Internet and the utility of this technology (PU and PEU) and on the political attitudes towards technologies. The latter variable is the central axis of the model. Political attitudes towards technologies are influenced by digital technological skills which, in this article, we use to refer to the mechanism that generates the material opportunities of individuals for engaging in this kind of digital political practice. Finally, level of education, age, sex and status are shown

as cross-cutting variables that favours the possession of digital technological skills, political attitudes towards technologies and beliefs regarding their ease of use and their utility.

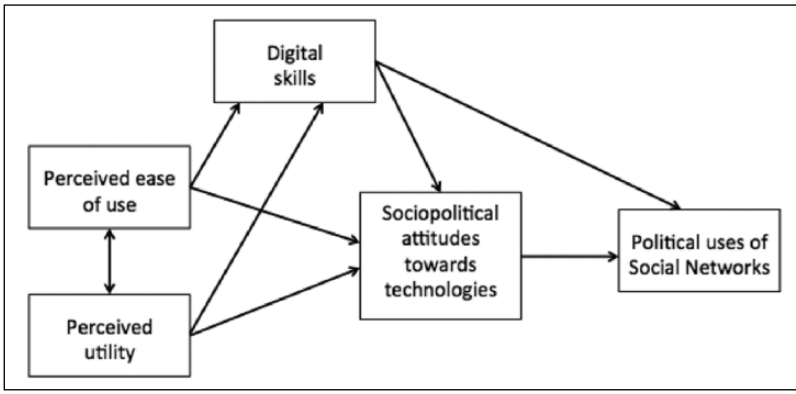

Figure 1. Analytical model.

Method and empirical results

Data and sample

In order to meet our goals, we used data from a survey, representative of the Spanish population, made in the context of the research grant CSO 2009-13424. The interviews were performed according to the computer-assisted telephone interviewing (CATI) method and the response rate was 31.7%. In total, 1526 individuals were interviewed. The 1526 interviews were stratified by the intersection habitat/Autonomous Community and distributed proportionally to the total of the region. Sex and age quotas were applied to the ultimate unit (person interviewed). Based on the criteria of simple random sampling, for a level of confidence of 95.5% (as usually adopted) and in the most unfavourable hypothesis of maximum indeterminacy (p = q = 50), the margin of error in the data referred to the total sample is ±2.6.

Measures

Political participation through digital social networks. To measure this variable, we used a self-developed scale (for a psychometric analysis, see Antino et al., 2013) of three items, showing high reliability (estimated through Omega index = .92). An example of item is 'I used to share videos with political contents in my social networks' (scale of answer: 1 = *no*, 7 = *every day*). The mean for this scale was $M = 4.87$, and the standard deviation (SD) = 4.01.

Perceived ease of use. To measure this variable, we were inspired by the scale developed by Davis (1989) and we introduced four items, showing high reliability (estimated through Cronbach's Alpha index = .74). An example of item is, 'To learn to surf on the Internet is easy' (scale of answer: 1 = *totally disagree*, 5 = *totally agree*). The mean for this scale was $M = 16.49$ and $SD = 3.29$.

Perceived utility. To measure this variable, we were inspired by the scale developed by Davis (1989), and we introduced six items, showing high reliability (estimated through Cronbach's Alpha index = .85). An example of item is, 'I consider that the Internet improves my range of opportunities of consumption' (scale of answer: 1 = *totally disagree*, 5 = *totally agree*). The mean for this scale was $M = 22.04$, and $SD = 6.58$.

Digital skills. To measure this variable, we used a self-developed scale (De Marco et al., 2013) of 14 items, showing high reliability (estimated through Cronbach's Alpha index = .79). An example of an item is 'I'm able to bound the search of information to a specific sentence' (scale of answer *yes* or *no*). The mean for this scale was $M = 8.87$ and $SD = 2.78$.

Level of education. This variable is based on the scale developed by CIS (*Centro de Investigaciones Sociologicas*) that consisted of one item. Specifically, the participants were asked to identify their level of education within these eight categories according to the Spanish educational system: unable to read, no studies, primary studies incomplete, primary studies complete, secondary studies first level, secondary studies second level, professional specialization, and university degree. The mean for this item was $M = 5.99$ and $SD = 1.22$.

Socio-political attitudes towards technologies. To measure this variable, we used the self-developed scale created specifically for this study, consisting of two items (items were significantly related to each other, $r = .41$, $p < .01$; estimated through Cronbach's Alpha index = .79). The two items were 'The Internet strengthens social ties and gives citizens a sense of belonging to the community' and 'The Internet can increase the ability to influence power' (scale of answer: 1 = *totally disagree*, 5 = *totally agree*). The mean for this scale was $M = 6.91$, and $SD = 2.30$.

Status. Status is a five-category variable that assesses the socio-economic position of the subject. Categories were calculated combining information from incomes, labour situation and family structure according to the CIS standardized cut values. The mean for this item was $M = 3.60$, and $SD = 1.18$.

Descriptive statistics for age and sex (as well as for all the other measures) are presented in Table 1.

Table 1. Descriptive statistics.

	Min	Max	M	SD
Socio-political attitudes towards technologies	2	10.00	6.9161	2.30
Digital skills	0.00	14.00	8.8787	2.78
Age	16	74	44.96	15.28
Education level	1	8	5.99	1.22
Perceived ease	4.00	20.00	16.4992	3.29
Political uses of social networks	3.00	21.00	4.8757	4.01
Sex	0	1	0.50	0.50
Incomes	1.00	5.00	3.6080	1.18
Perceived utility	6.00	30.00	22.0389	6.58

SD: standard deviation.

Data analysis

To test our different hypothesis, we ran a path analysis. We decided to apply this analysis technique instead of more traditional techniques such as hierarchical regression models for two reasons. First, our goal was to validate a complex theory as a whole, specifying directional patterns of relations. The literature on these phenomena has few empirical contributions that validate such complex models using this type of methodology. Second, this type of analysis offers an estimate of the fit of the empirical model for all the data, which allows us to estimate the model as a whole. It should be noted that, given the complexity of the model and considering the research design,[3] we have not focused on local relationships (with possible mediation patterns between variables) among different phenomena but rather on a vision of the model as a whole.

To run the analysis, we used *Amos Software*, version 18. Model adequacy was assessed through comparison of goodness-of-fit indices. Criteria to evaluate the fit of the models included (a) the adjusted goodness of fit index (AGFI), (b) the comparative fit index (CFI), (c) the Tucker–Lewis index (TLI), (d) the root mean square error of approximation (RMSEA) and (e) the standardized root mean square residual (SRMR). The following criteria were used to evaluate the goodness of fit: AGFI, TLI and CFI should be close to or greater than 0.90 (Hu and Bentler, 1998), and the RMSEA value should be 0.08 or lower (Browne and Cudeck, 1993).

Results

As shown in Table 2, the implementation of the model shows that our data had a good fit with the theoretical model (AGFI = 0.942, TLI = 0.887,

CFI = 0.901, RMSEA = 0.061, SRMR = 0.063). The only fit index that resulted below the acceptance criteria was TLI, which is coherent with the complexity of the tested model. These results offer empirical support for the existence of a concatenation of relations among the different variables included in the model.

Table 2. Fit indices for the path analysis.

Model	Chi-square	df	Chi/df	AGFI	TLI	CFI	RMSEA	SRMS
Model 1	41.839	9	4.649	0.972	0.921	0.975	0.049	0.029
Alternative Model 1	40.935	6	6.822	0.960	0.874	0.973	0.062	0.028
Alternative Model 2	59.743	6	9.957	0.989	0.823	0.949	0.077	0.037

AGFI: adjusted goodness of fit index; TLI: Tucker–Lewis index; CFI: comparative fit index; RMSEA: root mean square error of approximation; SRMS: standardized root mean squared residual.

Alternative Model 1 included a reverse relation between socio-political attitudes towards technologies and digital skills (reverse causation) and a direct relationship between education and the political use of social network (which was finally removed from the Alternative Model 1 the definitive model because it resulted no significant).[4] Similarly, the use of networks can change attitudes; chances are, they are reciprocally related. Alternative Model 2 was run without the digital skills, which would not include the concept of 'opportunities' that recommends DBO theory.

In the following subsections we will briefly describe the empirical evidence for each factor.

As predicted in relation 1.1, we find a covariance relationship between the PEU and PU variables. As predicted in relation 1.2, we find a positive and significant relationship between the PEU and PU variables and the 'socio-political attitudes towards technologies'.

As predicted in relation 2.1, we find a significant and positive relationship between digital skills and the political use of social networks. Similarly, we find a significant and positive relationship between digital skills and 'socio-political attitudes towards technologies', as predicted in relation 2.2. In line with relation 2.3, we find a significant and positive relationship between the PEU and PU variables and digital skills.

In sum, all the designed relations within the model were significant, as shown in Table 3.

In short, our model helps us to explain the behaviour observed, as well as the constellation of relations that are established between beliefs, attitudes and possibilities, and between all of these and our dependent variable.

Table 3. Standardized weights for the path analysis.

			Estimate	SE	CR	*p*
Socio-political attitudes towards technologies	←	Perceived ease of use	.103	.019	5.491	**
Digital skills	←	Perceived ease of use	.078	.019	4.230	**
Digital skills	←	Perceived utility	.034	.010	3.424	**
Socio-political attitudes towards technologies	←	Perceived utility	.131	.010	12.895	**
Political uses of social networks	←	Socio-political attitudes towards technologies	.109	.037	2.947	.003
Political uses of social networks	←	Digital skills	.334	.037	9.059	**
Control variables						
Perceived ease of use	←	Level of education	.261	.069	3.773	**
Perceived utility	←	Level of education	.776	.127	6.088	**
Socio-political attitudes towards technologies	←	Level of education	−.262	.047	−5.541	**
Digital skills	←	Level of education	.144	.047	3.090	.002
Perceived ease of use	←	Age	−.043	.006	−7.776	**
Perceived utility	←	Age	−.127	.010	−12.494	**
Socio-political attitudes towards technologies	←	Age	.011	.004	2.809	.005
Digital skills	←	Age	−.024	.004	−6.086	**
Perceived ease of use	←	Sex				ns
Perceived utility	←	Sex				ns
Digital skills	←	Sex	−.574	.109	−5.275	**
Socio-political attitudes towards technologies	←	Sex				ns
Perceived ease of use	←	Incomes				ns
Perceived utility	←	Incomes				ns
Digital skills	←	Incomes				ns
Socio-political attitudes towards technologies	←	Incomes				ns

SE: standard error; CR: critical ratio.
** = $p < .01$; ns = $p > .05$; non-significant parameters were removed from the model.

Empirical results

The results of analysis give empirical support to the hypotheses put forward for the construction of our model. Thus, we have established that the behaviour observed – sharing texts, photos and videos with a political content through social networks – greatly depends on the attitudes of activists regarding the political possibilities and potential of the Internet. We now know that this type of attitude is a basic antecedent variable of this kind of behaviour.

We also observe how these attitudes are the central axis of our model, and relate to a set of factors that make up the constellation activities defined in our analysis. The beliefs of activists regarding the utility of the Internet, as well as its ease of use, function as antecedent variables of the political action we are analysing. In this regard, beliefs, attitudes and action are configured in the basic mechanism of our model.

This basic mechanism depends on the opportunities enjoyed by citizens to make the most of the services and tools offered by the Internet. Digital skills thus become the gateway to sharing political information through social networks because, without them, it is not possible to carry out this kind of activity. However, this type of skill does not only exert influence on action. The development of digital skills improves the attitudes of citizens towards the political possibilities of the Internet. This way, these skills generate favourable dispositions, both for action and for the possibilities of the medium.

According to our model, having digital skills depends both on individual beliefs and on individual resources. Younger citizens and citizens with a higher level of education are more likely than citizens with lower levels of education to have the necessary digital technological skills for digital political participation. Likewise, these citizens believe, to a greater extent, that the Internet is easy to use and that it is a useful tool for the type of activities they carry out. What is more, our model also allows us to observe that high levels of formal education favour these types of beliefs, and that these generate positive attitudes towards the political possibilities of the Internet.

In sum, our model provides, in empirical terms, evidence of the existence of an explanatory mechanism of three political practices carried out through digital social networks: sharing texts, photographs and videos of a political nature. This mechanism revolves around the generation of trust (positive attitudes) regarding the possibilities offered by the Internet to improve the socio-political relations of citizens. The possession of this kind of political trust in the medium depends on the beliefs held by individuals regarding the use of the Internet, as well as specific individual resources such as level of education and age. Finally, there are specific prerequisites for this kind of

digital political participation. Digital technological skills become opportunities for action, as well as new stimulae for generating positive attitudes regarding the possibilities of this kind of political activity. In sum, we propose an explanatory mechanism in which beliefs, activities, attitudes, opportunities and action combine and interact together.

Conclusion

As shown above, research on politics and the Internet tends to weigh the probabilistic approaches for the study of the effect of digital participation on the political structure of democratic or non-democratic countries. In this article, we put forward an empirical analysis based on analytical sociology of the political use of digital social networks. That is to say, our aim is to explain the mechanisms that make it possible to predict this type of behaviour, and not so much its effect on the political structure. For this purpose, we have taken analytical sociology as a reference point, specifically the theory of DBO and of social mechanisms. This implies a certain change in the study of these phenomena, and a step forward in our understanding of them, given that, thanks to our empirical work, we have been able to establish an explanatory model of this type of digital political participation.

Based on this perspective, our work provides several relevant theoretical conclusions. First, we now know that attitudes are a fundamental factor for predicting this type of behaviour. However, the types of attitudes identified for our study do not coincide with those used in the studies in the field. Generally speaking, studies attempting to establish a relationship between attitudes and digital political participation define the former in the classical way. That is to say, they use as a reference point general political attitudes such as interest in politics or citizenship norms (Borge and Cardenal, 2011). This article suggests that classical political attitudes are a fundamental factor for predicting this type of behaviour. However, we also observe that, given that digital political participation is mediated by ICTs, we should propose a variation in the type of attitudes used. For this reason, we used attitudes towards the political possibilities of the Internet. This proposal, according to the empirical results obtained, has been corroborated. This leads us to think that digital political participation depends on general political attitudes but also, fundamentally, on specific attitudes towards the medium. This is a key element, given that it allows us to establish a significant difference between digital political participation and its offline counterpart.

We consider that this finding is relevant because the empirical study of digital political participation had never been focused, specifically, on beliefs of citizens towards the Internet. Thanks to this article, we know that these specific types of beliefs are a very good predictor of this kind of behaviour.

So, our recommendation is that the socio-political attitudes towards Internet should be introduced in the future in the empirical studies of digital political participation. Finally, our study supports an emergent field of research interested in expectations, beliefs and attitudes towards technologies and the role played by all of them in the individual actions in the context of digital society.

Our work implies a further theoretical contribution in this field. Our study supports the finding of TAM theory regarding the importance of basic attitudes to predict the use of technologies. Ease of use of the Internet and the PU of this medium are basic antecedent variables for this type of attitude. This is a relevant contribution to this field of study that allows us to gain a better understanding of the sequence of beliefs, attitudes and action behind the observed behaviour and establishes a specific sequence which, to date, had not been mentioned in the literature.

Another basic theoretical element that becomes clear thanks to our model is the importance of digital technological skills. As established in studies on the digital divide and the democratic digital divide, this kind of skill serves as a chain of transmission of social inequalities to the digital world (Torres et al., 2013). However, in our study, skills are understood as opportunities for action, not only because they allow individuals to improve their possibilities for action but also because they improve their attitudes towards the political possibilities of the medium. This is a basic variable given that it generates direct opportunities, mediated for political participation via the Internet.

It is our view that our analytic model makes it possible to move forward in our understanding of this socio-political phenomenon which has become so important in recent years. This progress takes place, as we have discussed in this article, in two dimensions: empirical and theoretical.

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Notes

1. We understand the term ‘factor’ in a lax way. That is, simply as a set of variables. We are not suggesting that there is, as the technical use of the term would imply, an underlying relationship between the different variables that make up each factor.
2. From our point of view, the ‘net’ opportunities of individuals to engage in political action through the Internet would be related with the technology itself. However, according to several authors, the political opportunities offered by

the Internet vary quickly as a result of the process of technological innovation and individuals' creativity. For this reason, it is difficult to include these kinds of opportunities in an analytical model. However, 'net' opportunities require a prerequisite that affects the use of the tools: digital skills. This is the reason why we introduced this factor as a limiting or encouraging factor of the opportunities of individuals in this context.

3. According to recent recommendations in the literature (Stone-Romero and Rosopa, 2008), the hypothesis test implied by the study of mediation relation requires an experimental design. A design of this kind, if the research goal is to extend the results to a population as is the case here, is not feasible.
4. We would like to thank one of the blind reviewers of this article for the recommendation to test this alternative model.

References

Antino M, Robles JM, De Marco S, et al. (2013) Development and validation of the digital political participation inventory. In: *XI Spanish congress of sociology*, Madrid, 10–12 July.

Ausserhofer J and Maireder A (2013) National politics on Twitter. Structures and topics of a networked public sphere. *Information, Communication and Society* 16(3): 291–314.

Bennett L (2003) Communicating global activism: strengths and vulnerabilities of networked politics. *Information, Communication and Society* 6(2): 143–168.

Bennett L and Segerberg A (2011) Digital media and the personalization of collective action: social technology and the organization of protests against the global economic crisis. *Information, Communication and Society* 14(6): 770–799.

Bimber B (2001) Information and political engagement in America: the search for effects of information technology at the individual level. *Political Research Quarterly* 54(1): 53–67.

Bonfadelli H (2002) The Internet and knowledge gaps. A theoretical and empirical investigation. *European Journal of Communication* 17: 65–84.

Borge R and Cardenal AS (2011) Surfing the net: a pathway to participation for the politically uninterested? *Policy & Internet* 3(1): 1–29.

Boudon R (1998) Social Mechanisms without black boxes. In: Hedström P and Swedberg R (eds) *Social Mechanisms: An Analytical Approach to Social Theory*. Cambridge: Cambridge University Press, pp. 172–203.

Browne MW and Cudeck R (1993) Alternative ways of assessing model fit. In: Bollen KA and Long JS (eds) *Testing Structural Equation Models*. Beverly Hills, CA: SAGE, pp. 136–162.

Chadwick A (2006) *Internet Politics: States, Citizens, and New Communication Technologies*. Oxford: Oxford University Press.

Chadwick A and Howard PN (2009) *The Routledge Handbook of Internet and Politics*. New York: Routledge.

Coleman JS (1986) Social theory, social research, and theory of action. *American Journal of Sociology* 91: 1309–1335.

Cooper J and Weaver K (2003) *Gender and Computers: Understanding Digital Divide*. Mahwah, NJ: Lawrence Erlbaum Associates.

Dahlberg L (2001) Democracy via cyberspace. *New Media & Society* 3(2): 157–177.

Davidson D (1980) *Essays on Actions and Events*. Oxford: Clarendon Press.

Davis FD (1986) *A Technological Acceptance Model for Empirical Testing New End-User Information Systems: Theory and Results*. Cambridge: MIT Sloan School of Management.

Davis FD (1989) Perceived usefulness, perceived ease of use and user acceptance of information technology. *MIS Quarterly* 13: 19–34.

De Marco S, Robles JM and Antino M (2014) Digital skills as a conditioning factor for digital political participation. *Communications: The European Journal of Communication Research* 39(1): 146–167.

Dylko IB, Beam MA, Landreville KD, et al. (2012) Filtering 2008 US presidential election news on YouTube by elites and non elites: an examination of the democratizing potential of the Internet. *New Media & Society* 14(5): 832–849.

Elster J (2007) *Explaining Social Behaviour: More Nuts and Bolts for the Social Science*. Cambridge: Cambridge University Press.

Gibson RK, Lusoli W and Ward S (2005) Online participation in the UK: testing a 'contextualised' model of Internet effects. *The British Journal of Politics and International Relations* 7(4): 561–583.

Goldthorpe JH (2000) *On Sociology: Numbers, Narratives, and the Integration of Research and Theory*. Oxford: Oxford University Press.

González-Bailón S (2009) Opening the black box of link formation: social factors underlying the structure of the web. *Social Networks* 31(4): 271–280.

Hargittai E (2010) Digital Na(t)ives? Variation in Internet skills and uses among members of the 'net generation'. *Sociological Inquiry* 80: 92–113.

Hedström P (2006) Explaining the social change: an analytical approach. *Papers: Revista de Sociología* 80: 73–95.

Hedström P and Swedberg R (1998) *Social Mechanisms: An Analytical Approach to Social Theory*. Cambridge: Cambridge University Press.

Hoffman D, Novak TP and Scholosser AE (2001) The evolution of digital divide: examining the relationship of race to internet access and usage over time. In: Compaine BM (ed.) *The Digital Divide: Facing a Crisis or Creating a Myth?* Cambridge: The MIT Press, pp. 47–99.

Howard PEN, Rainie L and Jones S (2001) Days and nights on the Internet. *American Behavioral Scientist* 45: 383–404.

Hu L and Bentler PM (1998) Fit indices in covariance structure modeling: sensitivity to underparameterized model misspecification. *Psychological Methods* 3(4): 424–453.

Larsson AO and Moe H (2012) Studying political microblogging: Twitter users in the 2010 Swedish election campaign. *New Media & Society* 14(5): 729–747.

Lessing L (2006) *The Code Version 2.0*. Cambridge: Basic Books.

Levy P (1997) *Cyberculture. Rapport au Conseil de l'Europedans le Cadre du Projet Nouvelles Technologies: Coopération Culturelle et Communication*. Brussels: Editorial Du Conseil de l'Europa.

Lewis D (1994) Reduction of mind. In: Guttenplan S (ed.) *A Companion to the Philosophy of Mind*. Oxford: Blackwell Publishers, pp. 412–431.

Lusoli W, Ward S and Gibson RK (2006) (Re)connecting politics? Parliament, the public and the internet. *Parliamentary Affairs* 59(1): 24–42.

Macintosh A (2006) E-participating in policy-making: the research and the challenges. In: Cunningham P and Cunningham M (eds) *Exploiting the Knowledge Economy: Issues, Applications, Case Studies*. Amsterdam: IOS Press, pp. 364–369.

Margolis M and Resnick D (2000) *Politics as Usual: The Cyberspace 'Revolution'*. Thousand Oaks, CA: SAGE.

Mathieson K (1991) Predicting user intentions: comparing the technological acceptance model with the theory of planned behaviour. *Information Systems Research* 2: 173–191.

Norris P (2001) *Digital Divide: Civic Engagement, Information Poverty, and the Internet Worldwide*. Cambridge: Cambridge University Press.

Pilny A and Shumate M (2012) Hyperlinks as extensions of offline instrumental collective action. *Information, Communication and Society* 15(2): 260–286.

Robles JM and Torres C (2012) Digital divide and the information and communication society in Spain. *Sociologija i Prostor* 194(1): 291–307.

Robles JM, De Marco S and Antino M (2013) Activating activist. The links between political participation and digital political participation. *Information, Communication and Society* 16(6): 856–877.

Stone-Romero EF and Rosopa PJ (2008) The relative validity of inferences about mediation as a function of research design characteristics. *Organizational Research Methods* 11(2): 326–352.

Torres C, Robles JM and De Marco S (2013) Inequalities in the information and knowledge society: from the digital divide to digital inequality. In: López Peláez A (eds) *The Robotic Divide: A New Frontier in the XXI Century?* London: Springer, pp. 173–194.

Van Deursen AJ and Van Dijk J (2009) Using the Internet: skill related problems in users' online behavior. *Interacting with Computers* 21: 393–402.

Van Dijk J (2000) Models of democracy and concepts of communication. In: Hacker KL and Van Dijk J (eds) *Digital Democracy: Issues of Theory & Practice*. Thousand Oaks, CA: SAGE, pp. 30–53.

Van Dijk J (2005) *The Deepening Divide: Inequality in the Information Society*. London: SAGE.

Van Dijk J (2006) Digital divide research, achievements and shortcomings. *Poetics* 34: 221–235.

Van Laer J and Van Aelst P (2010) Internet and social movements action repertoires. *Information, Communication and Society* 13(8): 1146–1171.

Venkatesh V, Morris MG, Davis, et al. (2003) User acceptance of information technology: toward a unified view. *MIS Quarterly* 27: 425–478.

Vonderschmitt K (2012) *The growing use of social media in political campaigns: how to use Facebook, Twitter and YouTube to create an effective social media campaign*. Honors College Capstone Experience/Thesis Projects paper 360. Available at: http://digitalcommons.wku.edu/cgi/viewcontent.cgi?article=1366&context=stu_hon_theses

Ward S and Gibson R (2009) European political organizations and the Internet: mobilization, participation, and change. In: Chadwick A and Howard PN (eds) *The Routledge Handbook of Internet and Politics*. New York: Routledge, pp. 25–39.

Williams CB and Gulati J (2013) Social networks in political campaigns: Facebook and the congressional elections of 2006 and 2008. *New Media & Society* 15(1): 52–71.

Winner L (1986) *The Whale and the Reactor*. Chicago, IL: The University Chicago Press.

Wring D and Horrocks I (2001) The transformation of political parties. In: Axford B and Huggins R (eds) *New Media and Politics*. London: SAGE, pp. 191–209.