Versión electrónica: ISSN 0719-367x http://www.cuadernos.info https://doi.org/10.7764/cdi.58.72109



Received: 14-12-2023 / Accepted: 12-03-2024

# What do Portuguese MPs use Twitter for? A case study on political communication in a country with a low Twitter adoption rate

¿Para qué utilizan Twitter los diputados portugueses? Estudio de caso de comunicación política en un país con baja tasa de adopción de Twitter

Para que é que os deputados portugueses utilizam o Twitter? Um caso de estudo de comunicação política num país com baixa taxa de adoção do Twitter.

**Sofia Ferro- Santos**, ISCTE-IUL, Lisbon, Portugal (sofia.ferro.santos@iscte-iul.pt) **Gustavo Cardoso**, ISCTE-IUL, Lisbon, Portugal (gustavo.cardoso@iscte-iul.pt) **Susana Santos**, ISCTE-IUL, Lisbon, Portugal (susanacsantos@iscte-iul.pt)

**ABSTRACT** | Portugal has the lowest Twitter usage rate in Western Europe and a political system that does not incentivize direct contact with voters. So, what do Portuguese MPs use Twitter for? We collected and manually coded 2,192 tweets from MPs. Our analysis shows that MPs use Twitter mainly as a business tool to serve a niche, the Twitter elite. Twitter is used significantly more often by male MPs, from small and non-conservative parties and from the largest constituencies. While following on Twitter depends on public recognition, popularity is only influenced by activity on the platform.

**KEYWORDS:** political communication; Twitter; members of parliament; social media; Portugal

#### **FORMA DE CITAR**

Ferro-Santos, S.; Cardoso, G & Santos, S. (2024). What do Portuguese MPs use Twitter for? A case study on political communication in a country with a low Twitter adoption rate. *Cuadernos.info*, (58), 184-207. https://doi.org/10.7764/cdi.58.72109

**RESUMEN** | Portugal tiene la tasa de adopción de Twitter más baja de Europa occidental y un sistema político que no fomenta el contacto directo con el electorado. Entonces, ¿para qué utilizan Twitter los parlamentarios portugueses? Recopilamos y codificamos manualmente 2192 tweets de parlamentarios. El análisis muestra que utilizan Twitter principalmente como herramienta de trabajo enfocada al nicho de la élite twittera. Twitter es significativamente más adoptado por parlamentarios varones, de partidos pequeños y no conservadores y de los distritos electorales más grandes. Aunque el seguimiento en Twitter se ve afectado por el reconocimiento público, la popularidad solo se ve afectada por la actividad.

**PALABRAS CLAVE:** comunicación política; Twitter; parlamentarios; redes sociales; Portugal

**RESUMO** | Portugal tem a taxa de adoção do Twitter mais baixa da Europa Ocidental e um sistema político que não incentiva o contacto direto com o eleitorado. Portanto, para que usam os deputados portugueses o Twitter? Recolhemos e codificamos manualmente 2,192 tweets de deputados. A análise revela que os deputados usam principalmente o Twitter como ferramenta de trabalho focados na niche "Elite do Twitter". O Twitter é significativamente mais adotado por deputados do sexo masculino, de partidos pequenos e não conservadores e dos maiores distritos eleitorais. Embora seguir no Twitter seja impactado pelo reconhecimento público, a popularidade só é impactada pela atividade na plataforma

**PALAVRAS-CHAVE**: Comunicação Política; Twitter; Deputados; social media; Portugal

#### INTRODUCTION

Early studies of online political campaigns have shown that the promise of direct representation (Coleman, 2005) or continuous democracy (Rodotà, 2007) has not been realized. Only small budgets were allocated to online campaigns, resulting in unidirectional online communication that was a replication of the offline strategy (Coleman, 2001). Nonetheless, the Web 2.0 era was characterized by increasing participation and more collaboration (Kaplan & Haenlein, 2010). Although user-generated content already existed, social media platforms enabled its development and the solidification of self-mass communication (Castells, 2007). One of the platforms developed in the Web 2.0 era is Twitter¹.

Most of the early studies on Twitter focused on its use in election campaigns, as Jungherr (2016) reports. These studies focused on countries with high Twitter use and/or single-seat constituencies, such as in the United States or the United Kingdom, where political actors have a clear motivation for using it and interacting with voters. This is not the case in Portugal, which opens a new perspective.

Enjolras (2014) examines Twitter use in Norway, which, like Portugal, has an electoral system based on direct, closed list voting, where, "with the exception of the most profiled politicians, the electorate therefore votes mainly for a party and secondarily for a personality" (Enjolras, 2014, p. 11). This affects how politicians perceive their need to engage with voters and, consequently, how they use social media platforms. These party-oriented democracies create different incentives for political socialization and communication than single-seat constituencies, such as in the United States or the United Kingdom. MPs can secure their re-election by consolidating their position in the party, as party career is considered an important factor in the recruitment of MPs (Teixeira et al., 2012). Therefore, the motivation of MPs to contact their constituents is low, as the recruitment of MPs is mainly done through the party organization.

Portugal has one of the lowest percentages of Twitter users among the general population and among MPs in Europe and the lowest in Western Europe (Haman & Skolnik, 2021). Nevertheless, the number of users is increasing in the younger generations (Cardoso et al., 2023). Considering the low usage of Twitter in Portugal, it could be argued that the use of Twitter in Portugal is a conscious choice and not an expectation.

The aim of this research is to better understand what are the main factors that explain the Twitter adoption of political actors in Portugal's particular context of low adoption rates and low political incentives for individual voter engagement.

**<sup>1.</sup>** At the time of data collection and analysis, the social media platform was called Twitter. It has currently been renamed X.

#### **RELATED LITERATURE AND RESEARCH QUESTIONS**

Most recent comparative studies on the use of Twitter in different countries by politicians have not included Portugal in the analysis, such as van Vliet and colleagues (2020), Praet and colleagues (2021) and Castanho Silva & Proksch (2022). However, the study by Haman and Skolnik (2021) did, citing the use of Twitter by the Portuguese population and politicians as an exceptional case: Portugal is the country in Western Europe where the smallest percentage of the population (14%) and MPs (41%) use Twitter (Haman & Skolnik, 2021). The Portuguese Digital News Report 2023 (Cardoso et al., 2023) estimates that only 14.6% of Portuguese people use Twitter, but with growing usage among the younger generations (18-24 years). The Portuguese Twittersphere has been described as having most users connected to the political and media spheres (Barriga, 2017), which is consistent with the idea of a Twitter elite (Ruoho & Kuusiplao, 2019).

Studies looking at the use of Twitter by Members of the European Parliament (Larsson, 2015; Scherpereel et al., 2017) concluded that Portugal has one of the lowest medians in MEP Twitter activity compared to other countries, but one of the largest margins of error. This suggests that there are Portuguese MEPs who are very active and others who do not use Twitter at all, but no explanation was offered.

## Twitter adoption and level of activity factors

Most studies on Twitter in the Portuguese context focus on the use of Twitter in political campaigns (Moreira, 2011), especially by newer parties in Portugal (Penha, 2023). These studies do not provide an analysis of the general factors that may influence MPs' Twitter use and activity.

Early studies on the use of Twitter during election campaigns in Portugal show that Twitter was mainly a communication strategy for politicians to disseminate content and for journalists who were alerted to use it as a source for their contributions (Moreira, 2011). However, recent studies show that the new Portuguese political parties have different strategies for their Twitter use. Penha (2023) concluded that the Iniciativa Liberal (IL) uses Twitter more than any other platform. Since 2019, the IL has been considered the Twitter party (Pinto, 2019) due to its high activity on the platform, including by party leaders. However, Chega (CH), a right-wing populist party, used Twitter the least compared to other social media platforms. This corroborates Jacobs and Spierings's findings (2019) that "(...) politicians of populist parties are actually slower to adopt Twitter" (p.1682). While this literature can provide some evidence on the use of Twitter for political communication in Portugal, they all examine election campaign periods and focus on use by political parties rather than by individual politicians.

Furthermore, there are no studies on what variables influence politicians' Twitter use in the specific context of Portugal – a country where the overall Twitter usage rate is low and the closed-list political system does not encourage politicians to seek direct interaction opportunities with voters.

Based on European-level (Larsson, 2015; Scherpereel et al., 2017) and country-level (Larsson & Kalsnes, 2014, Quinlan et al., 2018) research, we can say that sociodemographic characteristics (e.g., age and gender), political party characteristics (e.g. vote share, position in the political spectrum) and constituency characteristics (e.g. average age, average income, etc.) can be seen as factors influencing MPs' Twitter adoption and activity levels.

However, there is still no consensus regarding the characteristics of the political party in which politicians are more likely to use Twitter. Some authors, such as Scherpereel and colleagues (2017), conclude that left-wing party affiliation was a significant variable for both adoption and activity. Larsson and Kalsnes (2014) concluded that ideology did not influence either Twitter adoption or usage. Instead, they falsified their original hypothesis that MPs from larger and more established parties were more likely to use Twitter by finding that vote percentage and political party size influenced levels of Twitter use, but not usage. Quinlan and colleagues (2018) also find that smaller and less conservative parties, such as the Pirate Party, are more likely to adopt Twitter as they already use it to promote the party and communicate with other party members, as well as to communicate their views on Internet freedom.

While most studies focus on Twitter adoption (account ownership) and/or usage (usage at least once during the analysis period), we believe that activity levels (how many tweets MPs post during the period) should also be analyzed.

Considering the previous literature review, especially the lack of consensus on the type of political party characteristics that may influence MPs' Twitter adoption and activity, we will analyze the following hypotheses:

- *H1.* Male and young MPs are more likely to: *H1a*) have a Twitter account; *H1b*) use their Twitter account; *H1c*) use their Twitter account more often.
- H2. MPs from larger constituencies are more likely to: H2a) have a Twitter account; H2b) use their Twitter account; H3c) use their Twitter account more often.
- H3a. MPs from left-wing parties are more willing: H3a) have a Twitter account; H3b) use their Twitter account; H3c) use their Twitter account more often.

H4. MPs from smaller and less conservative political parties are more inclined: H4a) have a Twitter account; H4b) use their Twitter account; H4c) use their Twitter account more often.

# Activity and type of content on Twitter

In addition to identifying key factors that can help explain MPs' adoption, usage and activity levels on Twitter, it is also important to understand what they do on the platform. Several studies have examined what politicians do on Twitter, particularly during election campaigns (Jungherr, 2016) and in countries with high levels of uptake.

Early studies looking at politicians' use of Twitter all mention the use of Twitter to disseminate news. This is true for both the U.S. (Golbeck et al., 2010; Hemphill et al., 2013) and Europe, both during the election period (Graham et al., 2013; Larsson & Moe, 2011; Vergeer et al., 2011) and outside the election period (Enjolras, 2014; Baxter, et al., 2016). According to Small's (2010) definition, "broadcasting occurs when information follows in one direction from a single sender to the audience" (Small, 2010, p. 45), which shows that the use of Twitter is not for interaction.

More recent studies also mention the enhancer effect as "parties and politicians go online to amplify the reach of the same message they already push in other arenas" (Castanho Silva & Proksch, 2022, p. 778).

A study by Enjolras (2014) concluded that, on average, only 7% of tweets showed any form of interaction. In studies with a higher percentage – such as Ozcetin (2013), which showed that 34% of tweets represented some form of interaction – the quality of the conversation was questioned, as many of the interactions between politicians and their followers were greetings, such as good morning or thank you.

Another common research topic about the type of content politicians post on Twitter is how they use the platform in relation to traditional media. For example, how politicians can use Twitter to contextualize their participation or opinion on news in traditional media to promote online discussion (Barriga, 2015) and communicate their future presence in traditional media by announcing the program and time in which they will appear (López-Meri et al., 2017). This relationship has also been studied at the party level, showing how parties use Twitter to amplify the impact of their interventions in mass media such as televised debates (Marcos-García et al., 2021).

Finally, another common research topic on Twitter use by politicians is how they use Twitter to connect with voters, either by sharing personal tweets or using humor.

Baxter and colleagues (2016) mention that politicians are just as likely, if not more likely, to tweet about non-political events and their personal lives. Other studies (Graham et. al, 2018; Small, 2010) have shown how politicians use these tweets to reduce division and create a more intimate relationship with the electorate.

As for the use of humor, it is not used very often, but when it is used, it not only builds a connection with the other users, but also shows intelligence and makes the message easier to remember (Mendiburo-Seguel et al., 2022). As López-Meri and colleagues (2017) show, humor can be a successful tool. For example, Pablo Iglesias' humorous tweet in the 2016 Spanish election campaign was the most retweeted of the election.

It is important to analyze whether the low use of Twitter by the Portuguese population and MPs changes the trends shown in previous studies. To investigate this, our first research question is:

RQ1. What type of content is published on Twitter by Portuguese MPs??

#### Popularity and influence on Twitter

Finally, the question of what influences adoption, usage and activity levels on Twitter becomes all the more relevant when regular use of the platform – and how it is used– can influence the MP's profile and influence on the platform.

In his work, Barriga (2015) discusses theoretically whether political discussion on Twitter reinforces the presence of actors who already have a strong presence in traditional media, or whether it introduces changes in this space of public opinion. One of the factors considered is the strong presence of politicians in the space of political commentary in traditional media. As mentioned in the report on the Portuguese TV commentary of 2022 (Cardoso et al., 2022), politicians and aspiring politicians are often invited as permanent or invited TV commentators. Therefore, established political actors in traditional media could transfer their influence to social media platforms.

This notion is reinforced by a Portuguese study (Amaral, 2020), which concludes that Twitter reinforces the already established power structures, rather than challenging them, as the more active users are those with more financial resources to campaign both on and offline. In this sense, Twitter could be seen as a new outlet of the elite already established in mainstream media and political life in general (Larsson & Moe, 2011), especially in the network of followers and mentions (Rauchfleisch & Metag, 2020; Bravo & Del Valle, 2017).

However, media attention and leadership positions within the political party may not have a significant impact on the number of retweets and replies.

Thus, while media attention gives some politicians an advantage online, other politicians who use the platform very actively may also gain popularity and influence (Rauchfleisch & Metag, 2020; Bravo & Del Valle, 2017).

Considering the Portuguese context, we would like to analyze whether the conclusions of previous studies, both theoretical and empirical, hold true.

*H5.* MPs with a higher political position and presence in traditional media are more popular on Twitter, but do not have more influence.

H6. MPs with more activity on Twitter are popular and have more influence.

#### **METHODOLOGY**

#### Data collection

At the time of data collection – between April and July 2022–MPs had been newly elected following the general election in January 2022. After the election, eight political parties were represented in Parliament – four left-wing parties: Partido Comunista Português (PCP), Bloco de Esquerda (BE), Livre (L) and Partido Socialista (PS); one party that falls outside the left-right spectrum: Partido dos Animais e da Natureza (PAN), and three right-wing parties: Partido Social Democrata (PSD), Iniciativa Liberal (IL) and Chega (CH), a far-right party.

After the general elections in January 2022, at the time of data collection, the PS had the majority of seats and formed the government. The political parties had the following seats in Parliament: PS - 120; PSD - 77; CH - 12; IL - 8; PCP - 6; BE - 5; PAN - 1; Livre - 1.

Following Maireder and colleagues (2012), we adopted a user-centered approach, since the object of study is the tweets of Portuguese MPs and not a specific topic. We collected the list of 230 MPs and their public data – full name, first name, date of birth, constituency and political party–through the official website of the Parliament (www.parlamento.pt) on April 2, 2022.

Of the 230 MPs, 129 had an identifiable Twitter account and 128 of them had public access (table 1).

Using the Twitter API, we collected the tweets - and associated meta-information - of the 128 MPs with a public Twitter account in four one-week periods outside of the election campaign: April 2-9, May 2-9, June 2-9, and July 2-9. The use of one-week periods across four different months reduces bias in relation to Twitter usage at specific times such as the budget debate or party conventions. This approach followed other studies on the use of Twitter by MPs in Europe (Haman & Skolnik, 2021; Baxter et al., 2016).

	TOTAL	%	W%	%F	PCP	BE	_	PS	PAN	PSD	=	동	Average Age
# MPs	230	100%	62%	38%	2.6%	2.2%	0.4%	52.2%	0.4%	33.5%	3.5%	5.2%	51
# MPs with a Twitter account	128	56%	70%	30%	2.3%	3.9%	0.8%	50.8%	0.8%	32.0%	5.5%	3.9%	48
Adoption rate	-	-	-	-	50%	100%	100%	54%	100%	53%	88%	41%	-
% MPs with at least one tweet during the analysis period (active account)	69	54%*	72%	28%	2.9%	7.2%	1.4%	44.9%	1.4%	29.0%	8.7%	4.3%	46
# tweets/MP with active account	32**	-	33	30	41	46	101	31	38	16	55	39	-

<sup>\*</sup> Of those with Twitter.

Table 1. Socio-demographic and political analysis of MPs, MPs with a Twitter account and MPs who tweeted at least once during the analysis | Usage rate by political party

The data collection resulted in 2,192 tweets from 69 different MPs from the eight political parties represented in the Portuguese Parliament.

## Data analysis

The tweets were manually coded to better capture the use of sarcasm and humor (Baxter et al., 2016), but also to analyze the use of links.

For the content analysis, the coding categories were defined using a combined deductive and inductive approach (Corbin & Strauss, 2015). The deductive top-down approach was based on previous studies to enable a comparative analysis, namely Enjolras' (2014) coding scheme based on Hemphill and colleagues (2013) and inspired by Golbeck and colleagues' (2010) study – the so-called Goldeck scheme. Enjolras' (2014) coding scheme is the most recent variant with seven categories.

The inductive bottom-up approach aimed to complement this with relevant subcategories that used thematic analysis to identify, analyze, and report themes within the data (Braun & Clarke, 2016), such as the different possible ways of directing and narrating information, but also based on recent literature, such as the subcategory Other - Humor, based on the work of Mendiburo-Seguel and colleagues (2022) and Other - Personal, based on the work of Baxter and colleagues (2016). Therefore, we were able to develop a new coding scheme that still allows for comparative analysis, but adds a new layer.

<sup>\*\*</sup>Average.

Enjolras (2014) categories	Subcategories created	Definition		
Positioning	Positioning	Situating oneself in relation to another politician or political issue.		
Thanking	Thanking	Saying nice things about or thanking someone else or any kind of formalities; e.g., congratulations, thanking, a message of mourning, etc.		
	Directing information - Media	Directing information (usually with a link) to a media article or webpage.		
Directing	Directing information – Self promotion	Directing information (usually with a link) to a webpage that promotes the MP; e.g., their Instagram		
Directing information	Directing information – Self Promotion in media	Directing information (usually with a link) to a media article or webpage that was written by or about the MP.		
	Directing information – Other	Directing to any other form of information (usually with a link); e.g., the website of the political party.		
Conversation	Conversation	Responding to tweets or engaging another user in a conversation.		
Requesting action	Requesting action	Explicitly telling followers to do something.		
Normating	Narrating - Past	Telling a story about their day, describing current or past activities.		
Narrating	Narrating - Future	Telling what they will do during their day/week, describing future activities.		
Other	Other – Personal	Any tweet that has no political value but is of personal nature.		
	Other – Humor	Using humor or sarcasm in the tweet.		
	Other – Other	Does not fit in any other action category, or one cannot tell what they are doing; e.g., correcting a typo.		

**Table 2. Coding categories** 

The coding categories and subcategories (Table 2) were coded as non-exclusive, where a tweet can be assigned to one or two subcategories.

The coding was initially carried out by the lead author. After training, the codebook and a sample of 10% of the tweets were sent to a second coder to perform an intercoder reliability test. The Cohen's Kappa (Cohen, 1960) results for each variable can be found in Table 3. Apart from the thanking and requesting variables, all others can be interpreted as scores ranging from substantial to near perfect. The Thanking and Requesting action tweets were removed from the analysis.

Variable	Cohen's Kappa
Directing information - Media	0.960
Directing information - Other	0.720
Directing information - Self-promotion in media	0.960
Directing information - Self-promotion	0.648
Positioning	0.967
Thanking	0.496
Narrating – Past	0.865
Narrating - Future	0.939
Conversation	1.000
Other - Humor	1.000
Other - Personal	0.650
Other - Other	0.881
Requesting action	undefined*

Table 3. Cohen's Kappa results

#### Other variables and methods

Political leadership and TV commentary

For the political leadership variable, we used the official websites of the Parliament and political parties to collect available data on which MPs belonged to the party or group leadership. Using the report on Portuguese TV commentary 2022 (Cardoso et al., 2022), we also created the TV commentary variable, which identifies the MPs who regularly appear on TV to comment on political issues. According to the *Digital News Report* (DNR) by Reuters, television is the main source of information in Portugal, as 67.6% of Portuguese people use it to get news (Cardoso et al., 2023).

## Popularity and influence

The popularity and influence variables for each MP were estimated based on different types of interactions with other users. Following the method of Enjolras (2014), popularity is examined based on the number of followers and influence is examined based on the number of retweets generated by MPs to their original content (excluding retweets to posts that were already a retweet of the MP). When examining the influence, the variables number of tweets and number of MPs' positioning tweets and retweets were excluded as they are not the authors of this content.

## Electoral district and type of political party

For the analysis of *H2*, *H3* and *H4*, it is necessary to create the dummy variables MPs from a large constituency, MPs from a left-wing party and MPs from a small and non-conservative party. The first variable includes all MPs from the four larger constituencies (Lisbon, Porto, Braga and Setúbal). The variable MPs from a left-wing party included all MPs from the PCP, BE, L and PS. The variable deputies from a small and non-conservative party included all deputies from BE, IL, L, and PAN.

## Use of SPSS and models

To analyze the significance level of the variables for MPs' usage and activity level on Twitter and their level of awareness and influence, we used the Statistical Package for the Social Sciences (SPSS) to create binomial and linear regressions.

The dependent variables for H1 (having a Twitter account) and H2 (using the Twitter account) are binary, so we created two logistic binomial regressions, but for H3, since the dependent variable is discrete (number of tweets), we created a linear regression. For the three models, the independent variables were: Age, male MP (dummy), MP from a large constituency (dummy), MP from a left-wing party (dummy) or MP from a small and non-conservative party (dummy). Since there are left-wing as well as small and non-conservative parties, the last two variables cannot be fitted in the same model.

To answer questions *H5* and *H6* regarding the impact of political position or presence in traditional media on the popularity (dependent variable number of followers) and influence (dependent variable number of retweets per tweet) of MPs on Twitter, we created two hierarchical linear models with two control variables – 1) MPs of a small and non-conservative party and 2) MPs of a large constituency – and two levels of main effects: 1) regular TV commentary and political position and 2) number of tweets and number of tweets on positioning.

When testing the regression assumptions, we concluded that the discrete dependent variables (number of tweets; number of followers; number of retweets per tweet) were not fully normalized and showed a constant variance profile – with some noticeable outliers in the upper range (e.g. MPs with a much higher number of followers). As the other regression assumptions were confirmed and the sample is considered large, we performed a bootstrapping of 1,000 samples as suggested by Pek and colleagues (2018).

#### **RESULTS**

# Twitter adoption, use and level of activity by the MPs

As can be seen from table 1 in the chapter on data collection, only around half of MPs have a Twitter account (Twitter adoption), and of these, only half used it during the analysis period.

Has a Twitter account	Мо	del 1	Model 2		
	Beta	Exp(Beta)	Beta	Exp(Beta)	
Constant	2.200**	9.025	1.986*	7.283	
Male MP	0.848**	2.336	0.880**	2.412	
Large Electoral District	0.577*	1.781	0.426	1.531	
Age	(-0.056)**	0.946	(-0.051)**	0.950	
Left Party	0.067	1.069			
Small & Non-Conservative Party			2.05	7.283	
Nagelkerke R2	0.178		0.208		
Cox & Snell R2	0.133		0.155		
"- 2 log likelihood"	283.082		277.13		
No of observations	230		230		
Chi-square	32.821**		38.772**		
Correctly classified	67%		66.70%		

<sup>\*</sup>p<0.05 | \*\*p<0.01

Table 4. Logistic binomial regression results for the dichotomous dependent variable

Has a Twitter account

Uses the Twitter account	Мо	del 1	Model 2		
	Beta	Exp(Beta)	Beta	Exp(Beta)	
Constant	0.028	1.028	(-0.148)	0.862	
Male MP	0.305	1.357	0.417	1.518	
Large Electoral District	1.099***	3	0.842*	2.320	
Age	(-0.016)	0.984	(-0.014)	0.986	
Left party	0.051	1.053			
Small & non-conservative party			2.263*	9.615	
Nagelkerke R2	0.109		0.178		
Cox & Snell R2	0.082		0.133		
"- 2 log likelihood"	165.751		158.353		
No of observations	128		128		
Chi-square	10.913**		18.310**		
correctly classified	63.0%		63.3%		

<sup>\*</sup>p<0.05 | \*\*p<0.01

Table 5. Logistic binomial regression results for the dichotomous dependent variable

Uses the Twitter account

Source: Own elaboration.

As can be seen in table 4, two logistic regressions were run to determine the effects of age, gender, belonging to a larger constituency and belonging to a left-wing or a small and non-conservative political party on the likelihood of MPs having a Twitter account.

# of tweets	Model 1ª)	Model 2ª)
Constant	9.531	11.311
Constant	(10.231)	(9.537)
Mala MD	4.734	6.104
Male MP	(5.509)	(4.76)
	17.847***	11.715**
Large electoral district	(4.694)	4.451
	-0.217	-0.192
Age	(0.193)	(0.197)
	6.148	
Left party	(5.232)	
C 110		31.552**
Small & non-conservative party		(11.308)
R2	0.100	0.182
R2 adjusted	0.070	0.156
N	123	123
ANOVA	F=3.398 (p<0,05)	F=6.858 (p<0.001)

<sup>\*</sup>p<0.1| \*\*p<0.05| \*\*\*p<0.01

Table 6. Linear regression results for the discrete dependent variable "# of tweets" regarding level of activity on Twitter

In both models, the variables male and younger are significant in explaining the use of Twitter, while the type of political party does not matter.

In terms of Twitter use (table 5) and Twitter activity level (table 6), the sociodemographic variables were not significant, but in both cases the best model was the one with the significant variables from a large constituency and from a small and non-conservative party (model 2).

We were able to accept *H1a*), *H2a*), *H2b*), *H2c*), *H4b*), *H4c*) and deny all the other *H1*, *H2*, *H3* and *H4* sub-hypotheses.

# Type of Twitter content by the MPs

The most common type of content used by MPs was positioning – more than half (56%) of all MPs' tweets were used to position themselves on an issue.

a) Bootstrap 1000 samples, confidence interval 95%.

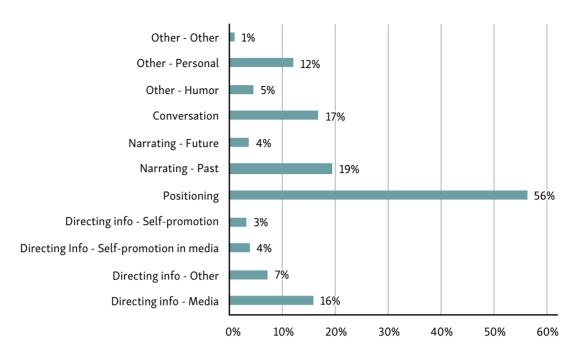


Figure 1. Percentage of Twitter usage by subcategories (non-exclusive)

As can be seen in Figure 1, this is followed by directing information, mainly to the media, with links to news articles, and narratives, mainly about past events, for example about the MP's attendance at an event. Only 17% of tweets were conversational, i.e., they were a form of direct interaction with other accounts.

There is also a high percentage of MPs' tweets that contain direct information (30%). On the one hand, they mainly refer to media content (20% - Directing Information - Media and Directing information - Self-promotion in media), but also to their own content on other platforms (3%).

Overall, MPs from different political parties appear to pursue different strategies. MPs from the far-right party Chega (CH) use Directing information - Media (26%), Directing information - Self-promotion (26%) and Positioning (72%) in a higher percentage of their total tweets and have a very low proportion of conversational tweets (less than 1%).

In contrast, L and IL, two political parties that are considered progressive, have a higher proportion of conversation tweets (29% and 27% respectively). This result confirms the idea that IL is the Twitter party (Pinto, 2019), due to the regular and unique communication style on the social media platform – both of the party and its main political actors – which can also be seen in the higher percentage of tweets with humor (12%).

To answer the *RQ1* we can say that Twitter in Portugal is mainly used by MPs as a business tool to serve the Twitter elite (Ruoho & Kuusiplao, 2019): to disseminate political positions, share news and media content, and inform about past events. However, some MPs of certain political parties have other strategies.

#### Drivers for popularity and Influence by MPs on Twitter

The results of the hierarchical linear regression models can be seen in tables 7 and 8. Based on these results, we can see that H5 was accepted as TV commentary and political position were considered significant variables in the models for popularity (table 7) but not for influence (table 8). H6 was also accepted as activity (number of tweets) and especially positioning of tweets were considered significant variables in both linear regression models for popularity and influence.

Dependent variable:	Model 1a)	Model 2b)	Model 3c)	Model 4c)
# followers	Model 1a)	Model 20)	Model 3c)	Model 4c/
Constant	999.163***	-403.964	-1002.418	-1192.372*
Constant	(327.899)	(611.101)	(687.988)	(630.338)
Small and non-	24842.975***	20290.456**	16818.555**	12919.577*
conservative political party	(7267.376)	(7428.892)	(6860.142)	(6703.712)
Larger electoral	3593.791**	1770.528	307.67	-207.549
circle	(1652.801)	(1322.011)	(1206.417)	(1177.759)
TV/Commonstant		10685.787	10519.112	9671.063
TV Commentary		(8780.826)	(11334.332)	(10325.746)
D live I ve		9821.894**	8505.445**	6593.323*
Political position		(3648.240)	(3493.358)	(3083.081)
			130.642**	
# tweets			(65.783)	
# positioning				385.107***
tweets				(109.03)
R squared	0.311	0.402	0.460	0.519
Adjusted R squared	0.300	0.382	0.438	0.499
ANOVA	F=28.175 (p<0.001)	F=20.654 (p<.001)	F=20.802 (p<.001)	F=26.327 (p<0.001)

a) Bootstrap 1000 samples (CL 95%)

Table 7. Hierarchical linear regression models for the dependent variable number of followers- popularity

Source: Own elaboration.

b) Bootstrap 999 samples (CL 95%)

c) Bootstrap 995 samples (CL 95%)

<sup>\*</sup>p<0.1 \*\*p<0.05 \*\*\*p<0.001

Dependent

variable:					
# rt/tweet (no retweets)	Model 1a)	Model 2b)	Model 3c)	Model 4d)	
Constant -	0.539*	0.444	0.170	0.057	
Constant	(0.301)	(0.389)	(0.360)	(0.319)	
Small and non-	11.332***	11.016*	9.252*	7.703*	
conservative political party	(3.614)	(4.424)	(3.998)	(3.573)	
Larger electoral	1.587**	1.409*	0.747	0.59	
circle	(0.649)	(0.649)	(0.517)	(0.533)	
TV Commontory		1.625	1.542	1.397	
TV Commentary		(2.547)	(2.268)	(2.47)	
Dolitical position		0.661	-0.074	-0.751	
Political position -		(1.976)	(1.873)	(1.948)	
" two ots (no DT)			0.083*		
# tweets (noRT)			(0.048)		
# positioning				0.226**	
tweets (noRT)				(0.088)	
R squared	0.318	0.322	0.393	0.465	
Adjusted R squared	0.307	0.300	0.368	0.443	
ANOVA	F=29.117 (p<0.001)	F=14.576 (p<0.001)	F=15.802	F=21.242 (p<0.001)	

a) Bootstrap 1000 samples (CL 95%)

Table 8. Hierarchical linear regression models for the dependent variable average number of retweets per MP tweet - Influence

Source: Own elaboration.

#### **DISCUSSION AND CONCLUSIONS**

Our first objective was to find out which variables influence the adoption, use and level of activity of Twitter in Portugal. In terms of adoption rate, our results show a higher Twitter adoption in Portugal by MPs than the study by Haman and Skolnik (2021), but it still places Portugal as the country with lower Twitter adoption by MPs compared to the other Western European countries.

Contrary to what have been discovered in previous studies (Larsson & Kalsnes, 2014; Quinlan et al., 2018; Scherpereel et al., 2017); in Portugal, not only age (younger) but also gender (male) are significant variables for the use of Twitter. In contrast to the conclusion of Scherpereel and colleagues (2017) that political actors of left-wing

b) Bootstrap 995 samples (CL 95%)

c) Bootstrap 989 samples (CL 95%)

d) Bootstrap 993 samples (CL 95%)

<sup>\*</sup>p<0.1 \*\*p<0.05 \*\*\*p<0.001

parties showed higher levels of activity, our data are more in line with the findings of Quinlan and colleagues (2018), who find that smaller and less conservative parties, such as the Pirate parties, are more likely to adopt Twitter (in this study: use it more), regardless of left-right ideology. However, these party political characteristics are only a significant variable for usage and activity levels, but not for adoption. Left-wing party affiliation is not a significant variable for Twitter adoption, usage or activity levels. Meanwhile, MPs in larger and more cosmopolitan constituencies are more likely to use Twitter, either because of the profile of MPs elected in these districts or because they use the tools that best suit their audience.

We find four possible explanations for the variables influencing Twitter use and activity levels. One factor that could influence these results is the type of population living in the larger and more cosmopolitan constituencies (e.g. education levels, internet usage levels, etc.) might be more likely to adopt a niche social medium such as Twitter in Portugal. Another factor could be the proximity and relationship that MPs from these large cities have with the media and journalists, and that they want to explore this offline relationship online as well. Thirdly, these smaller and nonconservative parties are also some of the youngest parties. Having been founded and developed their practices in an already tech-savvy society, they may be more willing to try out social media platforms that are less common in Portugal. Finally, MPs from smaller parties may feel the need to communicate more directly with their constituents and influence the political discussion on a platform with journalists and commentators (the Twitter elite), as they do not have as many opportunities to publish their communications on traditional media as MPs from the larger parties.

Regarding the type of content that an MP posts, as already found in other studies, Portuguese MPs use Twitter mainly to disseminate news – to position themselves on a political issue, to report on past activities or to share and/or comment on media content – but users with other content can also be successful, such as those who also use Twitter to share personal content and/or humor. However, in Portugal, the inclusion of personal content on Twitter by political actors is not as prevalent as in other countries, as studied by Baxter and colleagues (2016), which can be explained by the lower rate of Twitter adoption in the country (Haman & Skolnik, 2021) and the focus on political and media content to cater to the Twitter elite prevalent on the platform (Ruoho & Kuusiplao, 2019).

Another conclusion is the high percentage of tweets from MPs that are a form of information sharing. This is mainly done by forwarding information about media content, which is consistent with Barriga's (2015) suggestion that political actors in Portugal use Twitter both to communicate their presence in the media and to contextualize the media content with further discussions. As the Twitter elite is

mainly composed of political actors and media actors, it could be a cycle in which media actors produce news about political activities that are shared and contextualized by MPs on Twitter and then even read and commented on by media actors on the platform.

In terms of individual party behavior, far-right Chega MPs are very less conversational and share links to media content more frequently than MPs from other parties. This could be due to the fact that they reframe media content – both ideological and neutral – to spread their messages (Peucker et al., 2022).

Finally, our study concluded that other factors that may increase MPs' public visibility, such as holding leadership positions in the party or being regularly featured in legacy media, are significant variables for their Twitter popularity – number of followers– but not for their influence, as this makes users follow well-known names but does not increase their willingness to share their content.

However, political party (small and non-conservative) and level of Twitter activity –number of tweets, especially positioning tweets– are significant variables for both popularity and influence of MPs on Twitter. This could be due to the fact that Twitter users value the more active MPs who engage with the Twitter elite and are better known, and that these more active MPs know better what type of content they can use to attract more followers and retweets. Finally, a last explanation for the political party effect is that the same assumptions as to why MPs from smaller and non-conservative parties value the use of Twitter more and are more active there (*H4*) can also be applied to their higher levels of popularity and influence on the platform – reinforcing the success of their strategy.

These findings are partly consistent with previous studies that mention that while media attention gives some politicians an advantage online, other politicians who use the platform very actively can also gain popularity and influence (Rauchfleisch & Metag, 2020). We can conclude that on Twitter, it's not just who you are, but what you do.

Like all studies, this study has its limitations. One limitation was the sample size and time frame, as the researchers felt it was better to manually code the tweets. The time frame was also the start of a new session of parliament after the general election, which may affect the results as new MPs may still be adapting their communication style to their new office and others may still be using their Twitter style from the election campaign.

These conclusions could benefit from further work, particularly with direct input from MPs on their motivations for adopting Twitter and how they use it. In addition, the interaction between MPs and journalists and the sharing of media content could also be explored further.

#### **REFERENCES**

- Amaral, C. D. J. A. D. (2020). O Uso do Twitter enquanto ferramenta de campanhas eleitorais: o caso das eleições legislativas de outubro de 2019 em Portugal (The use of Twitter as an electoral campaign tool: the case of legislative elections in October 2019 in Portugal) (Master's thesis, Instituto Universitário de Lisboa). http://hdl.handle.net/10071/21934
- Barriga, A. D. C. (2017). Sobre a ausência de pluralismo nos média: como observar a invisibilidade do debate político nos novos média? (About the absence of pluralism in the media: how to observe the invisibility of political debate in the new media?). Im A. Moreira, E. Araújo, & H. Sousa (Eds.), Comunicação e Política: Tempos, Contextos e Desafios (Communication and Politics: Time, Contexts and Challenges) (pp. 21-43). Centro de Estudos de Comunicação e Sociedade (CECS). https://hdl.handle.net/1822/45022
- Barriga, A. C. (2015). O debate político nas "contra-esferas públicas": como se discute em 140 carateres? (Political debate in the "public counter-spheres": how is it discussed in 140 characters?). *Media e Jornalismo*, (Especial), 111-126.
- Baxter, G., Marcella, R., & O'Shea, M. (2016). Members of the Scotish Parliament on Twitter: good constituency men (and women)? *Aslib Journal of Information Management*, 68(4), 428-447. https://doi.org/10.1108/AJIM-02-2016-0010
- Braun, V. & Clarke, V. (2016). Using thematic analysis in psychology. *Qualitative Research in Psychology*, **3(2)**, 77-101. https://doi.org/10.1191/1478088706qp063oa
- Bravo, R. B. & Del Valle, M. E. (2017). Opinion leadership in parliamentary Twitter networks: A matter of layers of interaction? *Journal of Information Technology & Politics*, 14(3), 263-276. https://doi.org/10.1080/19331681.2017.1337602
- Cardoso, G., Couraceiro, P., Pinto-Martinho, A., Paisana, M., Vasconcelos, A., Crespo, M., Baldi, V., & Palma, N. (2022). *Comentário Político Televisivo 2022* (Television Political Comment 2022). ISCTE.
- Cardoso, G., Paisana, M., & Pinto-Martinho, A. (2023). Digital News Report Portugal 2023. OberCom.
- Castanho Silva, B. & Proksch, S. O. (2022). Politicians unleashed? Political communication on Twitter and in parliament in Western Europe. *Political Science Research and Methods*, 10(4), 776–792. https://doi.org/10.1017/psrm.2021.36
- Castells, M. (2007). Communication, Power and Counter-Power in the Network Society. *International Journal of Communication*, 1, 238-266. https://ijoc.org/index.php/ijoc/article/view/46
- Cohen, J. (1960). A Coefficient of Agreement for Nominal Scales. *Educational and Psychological Measurement*, 20(1), 37-46. https://doi.org/10.1177/001316446002000104
- Coleman, S. (2001). Online campaigning. In P. Norris (Ed.), *Britain Votes* 2001 (pp. 115-124). University Press Oxford.
- Coleman, S. (2005). New mediation and direct representation: reconceptualizing representation in the digital age. *New Media & Society*, 7(2), 177–198. https://doi.org/10.1177/1461444805050745
- Corbin, J. & Strauss, A. (2015). Basics of Qualitative Research. SAGE.

- Enjolras, B. (2014, January 8-9). How Politicians use Twitter and Does it Matter? The case of Norwegian National Politicians. *Paper presented to the International Conference Democracy as Idea and Practice*. University of Oslo. https://doi.org/10.13140/2.1.3177.3123
- Golbeck, J., Grimes, J. M., & Rogers, A. (2010). Twitter use by the U.S. *Journal of the American Society for Information Science and Technology*, 61(8), 1612-1621. https://doi.org/10.1002/asi.21344
- Graham, T., Broersma, M., Hazelhoff, K., & Van't Harr, G. (2013). Between broadcasting political messages and interacting with voters. *Information, Communication and Society*, 16(5), 692-716. https://doi.org/10.1080/1369118X.2013.785581
- Graham, T., Jackson, D., & Broersma, M. (2018). The Personal in the Political on Twitter: Towards a Typology of Politicians' Personalized Tweeting Behaviours. In J. Schwanholz, T. Graham, & P. Stoll (Eds.), *Managing Democracy in the Digital Age*. Springer.
- Haman, M. & Skolnik, M. A. (2021). Politicians on Social Media. The online database of members of national parliaments on Twitter. *Profesional De La Información*, 30(2). <a href="https://doi.org/10.3145/epi.2021.mar.17">https://doi.org/10.3145/epi.2021.mar.17</a>
- Hemphill, L., Otterbacher, J., & Shapiro, M. (2013). What's Congress doing on twitter? In A. Bruckman & S. Counts (Chairs), *Proceedings of the 2013 Conference on Computer Supported Cooperative Work (CSCW)* (pp. 877-886). ACM. https://doi.org/10.1145/2441776.2441876
- Jacobs, K. & Spierings, N. (2019). A populist paradise? Examining populists' Twitter adoption and use. Information, Communication & Society, 22(12), 1681-1696. https://doi.org/10.1080/1369118X.2018.1449883
- Jungherr, A. (2016). Twitter use in election campaigns: A systematic literature review. *Journal of Information Technology & Politics*, 13(1), 72-91. https://doi.org/10.1080/19331681.2015.1132401
- Kaplan, A. M. & Haenlein, M. (2010). Users of the world, unite! The challenges and opportunities of social media. *Business Horizons*, 53(1), 59-68. https://doi.org/10.1016/j.bushor.2009.09.003
- Larsson, A. O. (2015). The UE Parliament on Twitter Assessing the Permanent Online Practices of Parliamentarians. *Journal of Information Technology & Politics*, 12(2), 149-166. https://doi.org/10.1080/19331681.2014.994158
- Larsson, A. O. & Kalsnes, B. (2014). 'Of course we are on Facebook': Use and non-use of social media among Swedish and Norwegian politicians. *European Journal of Communication*, 29(6), 653-667. https://doi.org/10.1177/0267323114531383
- Larsson, A. O. & Moe, H. (2011). Studying political microblogging: Twitter users in the 2010 Swedish election campaign. *New Media & Society, 14*(5), 729-747. https://doi.org/10.1177/1461444811422894
- López-Meri, A., Marcos-García, S., & Casero-Ripollés, A. (2017). What do politicians do on Twitter? Functions and communication strategies in the Spanish electoral campaign of 2016. *Profesional De La Información*, 26(5), 795–804. https://doi.org/10.3145/epi.2017.sep.02
- Maireder, A., Ausserhofer, J., & Kittenberger, A. (2012). Mapping the Austrian Political Twittersphere: How politicians, journalists and political strategists (inter-)act on Twitter. In P. Parycek & N. Edelmann (Eds.), Proceedings of CeDem12 Conference for E-Democracy and Open Government (pp. 151-164). Danube University. http://phaidra.univie.ac.at/o:154914

- Marcos-García, S., Alonso-Muñoz, L., & López-Meri, A. (2021). Campañas electorales y Twitter. La difusión de contenidos mediáticos en el entorno digital (Electoral campaigns and Twitter. The dissemination of media content in the digital environment). *Cuadernos. Info*, (48), 27-47. https://doi.org/10.7764/cdi.48.27679
- Mendiburo-Seguel, A., Alenda, S., Ford, T. E., Olah, A. R., Navia, P. D., & Argüello-Gutiérrez, C. (2022). #funnypoliticians: How Do Political Figures Use Humor on Twitter? Frontiers in Sociology, 7. https://doi.org/10.3389/fsoc.2022.788742
- Moreira, T. E. (2011). Política 2.0 A utilização das redes sociais facebook e twitter em campanhas eleitorais e o caso das Presidenciais 2011 (Politics 2.0 The use of the social networks facebook and twitter in electoral campaigns and the case of the 2011 presidential elections) (Master's thesis, Universidade do Porto). https://repositorio-aberto.up.pt/bitstream/10216/67080/2/28301.pdf
- Ozcetin, B. (2013). Between Representation and Participation: Political Twitter Use in Turkey. In 1st International Symposium on Media Studies (pp. 585-596). Antalya.
- Pek, J., Wong, O., & Wong, A. C. (2018). How to Address Non-normality: A Taxonomy of Approaches, Reviewed, and Illustrated. *Frontiers in Psychology*, 9. https://doi.org/10.3389/fpsyg.2018.02104
- Penha, L. M. (2023). A comunicação política do CHEGA e da Iniciativa Liberal nas legislativas de 2019 e 2022: o papel dos media sociais online no agendamento político (The political communication of CHEGA and the Liberal Initiative in the 2019 and 2022 legislative elections: the role of online social media in political agenda-setting) (Doctoral dissertation, Universidade de Lisboa). http://hdl.handle.net/10400.5/27259
- Peucker, M., Fisher, T. J., & Davey, D. (2022). *Mainstream media use in far-right online ecosystems*. Centre for Resilient and Inclusive Societies. https://doi.org/10.56311/GWLU8673
- Pinto, C. G. (2019). A Força das Ideias: História de uma Eleição (The Power of Ideas: The Story of an Election). Alêtheia Editores.
- Praet, S., Martens, D., & Aelst, P. V. (2021). Patterns of democracy? Social network analysis of parliamentary Twitter networks in 12 countries. *Online Social Networks and Media*, 24, 100154. https://doi.org/10.1016/j.osnem.2021.100154
- Quinlan, S., Gummer, T., Roßmann, J., & Wolf, C. (2018). 'Show me the money and the party!' variation in Facebook and Twitter adoption by politicians. *Information, Communication & Society*, 21(8), 1031-1049. https://doi.org/10.1080/1369118X.2017.1301521
- Rauchfleisch, A. & Metag, J. (2020). Beyond normalization and equalization on Twitter: Politicians' Twitter use during non-election times and influences of media attention. *Journal of Applied Journalism & Media Studies*, 9(2), 169-189. https://doi.org/10.1386/ajms\_00021\_1
- Rodotà, S. (2007). Democracy, innovation, and the information society. In P. Goujon, S. Lavelle, P. Duquenoy, K. Kimppa, & V. Laurent (Eds.), *The Information Society: Innovations, Legitimacy, Ethics and Democracy* (pp. 17-26). IFIP.
- Ruoho, I. A. & Kuusiplao, J. (2019). The Inner Circle of Power on Twitter? How Politicians and Journalists Form a Virtual Network Elite in Finland. *Observatorio (OBS\*)*, 13(1), 70-85. https://doi.org/10.15847/obsOBS13120191326

- Scherpereel, J. A., Wohlgemuth, J., & Schmelzinger, M. (2017). The Adoption and Use of Twitter as a Representational Tool among Members of the European Parliament. *European Politics and Society*, 18(2), 111-127. https://doi.org/10.1080/23745118.2016.1151125
- Small, T. A. (2010). Canadian Politics in 140 Characters: Party Politics in the Twitterverse. *Canadian Parliamentary Review*, 39-45.
- Teixeira, C. P., Freire, A., & Belchior, A. M. (2012). Parliamentary representation in Portugal: Deputies' focus and style of representation. *Portuguese Journal of Social Science*, 11(2), 99-117. https://doi.org/10.1386/pjss.11.2.99\_1
- van Vliet, L., Törnberg, P., & Uitermark, J. (2020). The Twitter parliamentarian database: Analyzing Twitter politics across 26 countries. *PLoS ONE*, 15(9). https://doi.org/10.1371/journal.pone.0237073
- Vergeer, M., Hermans, L., & Sams, S. (2011). Online social networks and micro-blogging in political campaigning: The exploration of a new campaign tool and a new campaign style. *Party Politics*, 19(3), 477-501. https://doi.org/10.1177/1354068811407580

#### **ABOUT THE AUTHORS**

**SOFIA FERRO-SANTOS**, Ph.D. candidate in Communication Sciences at ISCTE-IUL, she holds an International Master in Management degree from Nova SBE. She is a visiting professor at the ISCTE-IPPS postgraduate program in Communication and Politics, where she teaches political marketing and a seminar course. She has also collaborated on European projects such as EUMEPLAT and IBERIFIER. She has previously worked in strategic consulting for Hiscox and Everis (now NTT Data). Her research focuses on political communication. She was awarded a Ph.D. Merit Scholarship of the ISCTE-IUL for Communication Sciences (2021-2024).

| https://orcid.org/0009-0001-1586-6339

**GUSTAVO CARDOSO**, tenured professor of Sociology of Communication at ISCTE-IUL and a researcher at CIES. He is also an associate researcher at CADIS (Center d'Analyse et d'Interventions Sociologiques) in Paris and Director of OberCom in Lisbon. He is currently the director of the Ph.D. in Communication Sciences and of three postgraduate programs in Communication at ISCTE-IUL, namely the postgraduate program in Journalism, the postgraduate program in Factchecking and disinformation, and the postgraduate program in Communication and Politics Advisory.

<u>https://orcid.org/0000-0003-2067-4718</u>

**SUSANA SANTOS**, holds a Ph.D. from the ISCTE-IUL (2012), is a research fellow at CIES-IUL, and a visiting assistant at the department of Sociology, ISCTE-IUL. Since 2002, she has been working in several research projects in the fields of Sociology of Communication, Political Sociology and Sociology of Law. Co-coordinator of the thematic section of Sociology of Law and Justice of the Portuguese Sociological Association. Co-opted member of the Board of the Research Committee on Sociology of Law (RCSL) from the International Sociological Association (ISA). Sub-director of the postgraduate program in Communication and Politics Advisory.

https://orcid.org/0000-0001-5225-6671